



وزارة التعليم العالي والبحث العلمي

جامعة بابل

كلية التمريض

فاعلية البرنامج التعليمي للرعاية الذاتية على معارف المرضى الخاضعين لعمليات القلب المفتوح في محافظات الفرات الأوسط

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بأشراف

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الخلفية: توصف الرعاية الذاتية بأنها طريقة للتعامل مع أحداث الحياة والصعوبات الناتجة عن زيادة عملية الشيخوخة ، وتستلزم الرعاية الذاتية اتخاذ إجراءات معينة للتخفيف من الأعراض والحفاظ على الصحة وتحسينها. الرعاية الذاتية هي أحد الجوانب الأساسية الشائعة في علاج مرضى جراحة القلب

الأهداف: تقييم فعالية البرنامج التعليمي لإدارة الرعاية الذاتية على معرفة المرضى الذين يخضعون لجراحات القلب المفتوح الطرق: لتحقيق أهداف هذه الدراسة، تم استخدام دراسة كمية شبه تجريبية للتصميم مع ما قبل وما بعد الاختبار لكل من المجموعات المدروسة والضابطة. بدأ هذا البحث في مركزين للقلب في شهيد المحراب و مركز النجف لأمراض وجراحة القلب كانت المواقع المخصصة لجمع البيانات من ٢٠ أغسطس ٢٠٢١ إلى ١٠ سبتمبر ٢٠٢٢. وكانت عينة هادفة غير محتملة يتم اختيارها من المجموعة المستهدفة التي يتم استيفائها المعايير المحددة خلال فترة زمنية محددة. تتكون عينة الدراسة من (٦٠) مريضاً يخضعون لعملية قلب مفتوح لديهم نفس معايير الشمول. ينقسم هؤلاء المرضى إلى مجموعتين: (٢٨) مريضاً يعملون كمجموعة دراسة والآخر (٣٢) مريضاً يعملون كمجموعة ضابطة ، وكان المرضى يزورون هذه المراكز بشكل متكرر للمتابعة والاستشارة. ووضع استبيان لتقييم المعارف المتعلقة بالرعاية الذاتية ؛ يتكون من ثلاثة أجزاء: الجزء الأول: الخصائص الديموغرافية والاجتماعية الديموغرافية للمرضى هذا الجزء يتعلق بجمع البيانات الديموغرافية التي يتم الحصول عليها من المريض من خلال ورقة استبيان مقابلة مثل [العمر، والجنس، والحالة الاجتماعية، ومستوى التعليم، والعنوان، والمهنة. عرضت الأسئلة الستة خيارات إجابة من نوع ملء. صلاحية حصل عليها ١٥ خبيراً، في حين تم الحصول على موثوقية قدرت بـ (٠,٧٩٤) للمعرفة المقبولة إحصائياً.

النتائج: معظم المشاركين في المجموعتين ١٤ (٤٣,٨) بين ٥٠-٥٩ سنة، ١٤ (٤٣,٨) في المائة) أكثر من ٥٩ سنة، ١٨ (٦٤,٣ في المائة)، ١٧ (٥٣,١ في المائة)، ذكور. فيما يتعلق بالحالة التعليمية ٧ (٢٥,٠٪) كانت المدرسة المتوسطة في مجموعة الدراسة، في حين أن ١١ (٣٤,٤٪) كانت مدرسة ثانوية في المجموعة الضابطة، وسجلت كلتا المجموعتين نسبة عالية ٢٧ (٩٦,٤٪)، و ٢٥ (٧٨,١٪)، كانوا متزوجين. يبين أن الاختلافات بين الاختبار المسبق والاختبار اللاحق لعينة البحث بعد المشاركة في البرنامج التعليمي كبيرة للغاية عند القيمة $p < 0.001$ ، في حين أنه لا توجد اختلافات كبيرة مسجلة بين أعضاء المجموعة الضابطة.

استنتاجات: تظهر النتيجة تأثيراً جيداً للبرنامج التعليمي على معرفة المرضى.

التوصية: يجب أن يحصل المرضى الذين يخضعون لجراحة القلب على برنامج تعليمي ينفذ من قبل الممرضين قبل الجراحة، بالإضافة إلى تفسيرات للمخاطر المرتبطة بجراحة القلب طوال فترة الاستشفاء وفي المنزل و افتتاح مركز خاص بتأهيل امراض القلب من ضمن المراكز المشار اليها بالدراسة تكون مسؤوليتها متابعة المرضى وتدريبهم حول كيفية الرعاية الذاتية

Ministry of Higher Education
and Scientific Research
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***Effectiveness of Self-care Educational Program
on the Knowledge of Patients Undergoing Open
Heart Surgeries in the Middle Euphrates
Governorate***

A Dissertation Submitted

By

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

﴿ إِنَّمَا الْمُؤْمِنُونَ الَّذِينَ إِذَا ذُكِرَ اللَّهُ وَجِلَتْ قُلُوبُهُمْ وَإِذَا تُلِيَتْ عَلَيْهِمْ
آيَاتُهُ زَادَتْهُمْ إِيمَانًا وَعَلَىٰ رَبِّهِمْ يَتَوَكَّلُونَ ﴾

صَدَقَ اللَّهُ الْعَلِيِّ الْعَظِيمِ

سورة الانفال الآية (2)

Dedication

All love and great respect I dedicate this work to:

- Heroes who protect Iraq and Iraqis...
- Dear parents
- Wife and my two flowers(my daughters)
- Dear brothers and sisters ...
- Friends

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Great thanks are due almighty ALLAH the most merciful the most compassionate.

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Abstract

Background: Self-care is described as a method for coping with life events and difficulties generated by an increase in the aging process and reliance, Self-care entails taking particular actions to alleviate symptoms, maintain and improve health. Self-care is one of the common consequently essential aspects of the cardiac surgery patients treatment

Objectives: Evaluating the effectiveness of the self-care educational program on the patients knowledge who undergoing open heart surgeries

Methodology : To meet the objectives of this study, a quantitative study quasi-experimental design with pre- and post-testing was carried out , in two cardiac center (Shaheed almehrab and Al-najaf Center for cardiovascular Surgery and cardiac catheterization) from the period between 20th August 2021 to 10th September 2022. Non-probability purposive sample selected from the target population who are met the specific criteria during specific time interval. The study sample consists of (60) patients undergoing open heart surgery having the same inclusion criteria. Those patients are divided into two groups: (28) patients act as study group and the other (32) patients act as a control group. The patients were visit these centers for follow up and consultation. A questionnaire was developed to assess the knowledge toward self-care ; it consisted of three parts, validity was obtained by (18) experts, and reliability calculated as (0.79) which is statistically acceptable.

Results: Most of participants in both groups 14 (43.8) were between 50-59 age group male, married related to educational status 7 (25.0%) were intermediate school in study group, , while 11 (34.4%) were secondary

school in the control group. The findings differences between pre-test and post-test of the intervention group members who attend the educational program, while no significant differences recorded among control group members.

Conclusion: The finding shows that self care educational program act effectively up on the patients knowledge .

Recommendation: Implementation of the educational program for patients undergoing cardiac surgery performed by nurses before surgery, as well as explanations of the risks associated with cardiac surgery throughout hospitalization and at home and opening of rehabilitation unit for heart diseases, which may caring out the responsibilities to educate patients and train them related to maintain their self care ,important their quality of life.

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List of Abbreviations and symbols

Abbreviations	Meaning
ACE2	Angiotensin converting enzyme 2
ACS	Acute coronary syndrome
ADH	antidiuretic hormone
AF	atrial fibrillation
ALI	acute lung injury
NSTEMI	non–ST segment elevation myocardial infarction
ANOVA	Analysis of Variance
ANS	autonomic nervous system
STEMI	ST segment elevation myocardial infarction
BMI	body mass index
C.PAP	continuous positive airway pressure
ECM	extracellular matrix
VIC	valve interstitial cells
CAD	Coronary Artery Disease
COVID-19	Coronavirus disease-2019
CT	computerized tomography
DABK	des-Arg 9-Bradykinin
df	degree of freedom
ECG	Electrocardiogram
ASD	atrial septal defect
CABG	Coronary artery bypass grafting
DALY	disability adjusted life years
H. S	Highly Significant
DM	Diabetes mellitus
QOL	quality of life
RA	Right atrium
ICU	Intensive Care Unit
RV	Right ventricle

LAD	Left anterior descending
LCX	Left circumflex
AV	Atrioventricular
CA	coronary artery
M	mean
RCA	Right coronary artery
n	numbers of Samples
N. S	Non-Significant
CRP	C-reactive protein
No	number of study sample
TIA	transient ischemic attack
VHD	Valvular heart disease
P- value	Probability value
VTE	venous thromboembolism
RHD	Rheumatic heart diseases
RF	Rheumatic fever
PICS	post intensive care syndromes
SSI	Surgical site infections
EF	ejection fraction
ACE	Angiotensin converting enzyme
sig	Significant
SPSS	statistics package program for social sciences
Std	stander deviation

Chapter One

Introduction

1.1. Introduction

Cardiovascular diseases (CVD) is the leading causes of a major health problem, highly prevalent, and the leading cause of death in the world .The diseases may cause physical disability and put a huge financial burden on the affected patients and the national healthcare system. According to the World Health Organization, coronary artery disease was responsible for 15,3 million deaths (30% of all deaths)and 10.3% of the total disability adjusted life years (DALY) . The World Health Organization calculated that cardiovascular diseases were responsible for 28.5% of all fatalities in developing nations (WHO, 2018).

According to the latest World Health Organization (WHO) data published in 2018 Coronary Heart Disease Deaths in Iraq reached 32,463 or 18.92% of total deaths. According to the Global Burden of Disease Study, 55% rise would occur in CVD between 2010 and 2030 (WHO 2019).

Quality of life has emerged as an important concept and outcome in health and health care . In public health and in medicine, the concept of health related quality of life refers to a person or groups perceived physical and mental health over time (Amsterdam et al., 2014).

The purpose of coronary artery bypass graft (CABG) to improve circulation to the heart. As a result, the patient experiences less chest pain and ischemia, has a higher quality of life, and may even live longer. It is intended that the patient will be able to lead a more normal life after the treatment, and that the risk of a heart attack would be diminished. (Benjamin et al., 2017).

The annual number of CABG procedures performed in the United States increased by 425% between 1979 and 1990, from roughly 150000 to 5980000. (Mozaffarian .et al 2013).

During the last years, there has been a dramatic increase in the number of cardiac surgical procedures involving; the surgical treatment for valvular disease and coronary artery bypass graft. In Iraq, 50% of total open-heart surgery was CABG . The success of cardiac surgery is measured by low mortality, relief of symptoms and improvement in the quality of life .Increasing attention has been given to monitoring health-related quality of life variables in relation to the outcome of surgery. (Kouchoukos. et al., 2013).

Patients' habits and awareness are linked to the majority of cardiovascular risk factors. Self-care habits are therefore one of the most critical therapy interventions for these people. (Cucato, G.,et al.2022).

Cardiac surgery as CABG is the most costly and invasive of the recommended treatments for people with CAD, but it is the only option many patients with cardiac disease . The primary benefits of this operation over alternative therapeutic techniques include reduced pain and disability, as well as improved quality of life (QoL) through relieving symptoms of angina and extending life. However, CABG surgery creates both mental and physical complications (lung, heart, and neurological difficulties; inflammation and infection; renal impairment and hemorrhage) (depression, anxiety, etc.). Self-care plays a significant part in the healing of individuals with CVDs who have undergone open-heart surgeries. Health education of the cardiac surgery patient plays a vital role in the patient's post-operative care and the recovery process (National Audit of Cardiac Rehabilitation 2018).

Investing time in pre-operative preparation for heart surgery patients helps eliminate gaps of information and avoids post-operative problems. However, pre-operative health education in cardiac surgery is a complex aspect. (Shuldham, Fleming & Goodman 2015).

According to Orem self-care is a regulatory function into human beings primarily based on the individual's ability according to function self-care practices on themselves. (Luttik M et al.2005).

Self-care is described as a method for coping with life events and difficulties generated by an increase in the aging process and reliance, Self-care entails taking particular actions to alleviate symptoms, maintain and improve health. Self-care is one of the common consequently essential aspects of the cardiac surgery patients treatment (McAlister FA and Stewart S. 2013).

Self-care comprises of weight daily assessment; physician contacting when witnessing the ankle, legs, foot, or abdomen swelling; checking the urine amount of produced daily; eating fluids as prescribed by a physician; and avoiding excessive fluid intake .There are numerous factors that influence the overall self-care performance among open heart surgery patients, including education level, hospitalization variety , awareness and perceived social support (Sayers SL and Barbara Riagel DNSC.2018).

Social assist is one regarding the almost significant elements influencing mental situation and remedy follow-up among patients with cardiac diseases (Ghaem-magham Farahani Z,et al. 2013).

Due in accordance with the debilitating nature on that disease, the plan for the care regarding these patients must take among calculation whole factors of life, including social support (Christensen,et al. 2014).

Recovery period, encourages self-care reduces the danger regarding relapse among patients. Life motivation and self-care highly correlated and may contribute to the control of symptom development, reduction among the recovery period, and prevention regarding the recurrence of the sickness in heart surgery patients (Graven, et al. 2014).

Most care activities related together with cardiac surgery are performed among the home by patients and their families or other informal caregivers. Thus, such is fundamental to that amount heart surgery patients put in among self-care, yet nearly clinicians function no longer have the coaching to prepare there sufferers according to engage among high quality self-care (National Health Service 2019).

1.2. The importance of the study

Cardiovascular disorders are the top global cause of mortality many nations' high rates of morbidity and mortality can be ascribed to cardiovascular diseases as one of the primary reasons for hospitalization (WHO, 2018).

By 2030, it is expected that the prevalence of coronary artery disease (CAD) in the United States would rise to 18%. Reportedly, over 397 thousand coronary artery bypass graft (CABG) surgeries are performed annually in the United States. In Iran, where over 50,000 cardiac surgeries are performed annually and CVDs account for 33–38% of fatalities and 23% of disability. The prevalence of VHD is rising. In the United States, approximately 2.5% of adults are deaf. (American heart association 2019).

The global prevalence of valvular heart diseases is much higher, largely owing to the burden of rheumatic heart disease in developing countries although its rate is decreasing overall (Timmis A, Townsend N et al. 2018).

The VHD prevalence increases to about 1 in 10 people over the age of 65 as a result of the degenerative changes in valve structure that occur with age (Bucholz EM .2018).

A growing elderly population, from an estimated 962.3 million in 2017 to 2080. five million in 2050, makes VHD a major public health issue. All healthcare providers, regardless of their field, may treat a patient with VHD at some point . The care of individuals with a (VHD) involves skills, knowledge, and practice standards based on a comprehensive grasp of normal anatomy, physiology, and pathophysiology. In heart surgery, the post-operative phase is regarded embarrassing for the patient and his family, as the patient may experience several physical and psychological difficulties that limit his activity and diminish his quality of life. Multiple studies have demonstrated that heart surgery patients require a great deal of information regarding their recovery at home. In clinical practice, it is generally understood that patients require information before and after heart surgery, whereas a lack of information during hospitalization and after discharge may hinder healing during these periods (Mohseni, et al. 2013).

Heart disease is currently one of the leading public health problems in the world, and its intricate or slow nature frequently results in reverse actions, such as a high rate of rehospitalization and mortality, as well as the need for improved condition and self-care (Moser, et al.2015).

Heart disease is a growing concern for American healthcare since it affects more than 5 million Americans, half of whom may die within the next five years (Phelps, 2016).

Diabetes mellitus, valvular disease, hypertension, myocardial infarction, and obesity are the leading risk factors for the cardiac diseases , which mostly affects adults over 65. (Connelly, et al.2013)

This may also be examined in accordance with the aging of the U.S. population and the prevalence of a lifestyle characterized by insufficient physical activity and poor dietary choices, which leads to the emergence of risk factors. Heart failure has numerous triggering factors that may also cause the initial heart injury, but it completely halts myocardial remodeling (Motiwala, et al, 2016.).

Life expectancy is shortened and mortality is increased in those with heart disease. It also causes 12-15 million annual visits to doctors' offices and 6.5 million annual hospitalizations (Velagaleti, et al2007).

There is currently no known cure for heart disease; however, it has been shown that familiarity with the disease and the guidelines put forth by the AHA and the Heart Disease Society of America can help reduce mortality, increase quality of life, and lessen the need for hospitalization (Mahmood, A.S., 2015).

In 2006, around 7 million individuals underwent cardiovascular surgery in the United States (Viars, 2009).

These patients experience high levels of anxiety and tension since they are unsure about the outcome of the procedure. Inadequate preoperative

education and preparation leads to unwarranted anticipations, anxieties, and problems. Delays in ambulation contribute to the risk of deep vein thrombosis, and ineffective use of incentive spirometry can lead to pneumonia, both of which can lengthen hospital stays. The lack of knowledge regarding normal discharge planning on day 5 following coronary artery bypass surgery and on days 5–7 after valve surgery can also result in patients being unprepared for the post-hospitalization period, therefore delaying their discharge. In Iraq, little is known about the self-care education component of the health education process (Ley SJ. 2009).

This study will therefore provide time to evaluate the results and provide information regarding the self-care educational program on the knowledge of patients following open-heart surgery.

1.3. Statement of the study

Effectiveness of Self-care Educational Program on the Knowledge of Patients Undergoing Open Heart Surgeries in the Middle Euphrates Governorate

1.4. Hypothesis

- H0: there is no significant relationship between the educational program and Patients Self-care knowledge.
- H1: there is significant relationship between the educational program and Patients Self-care knowledge.

1.5. Objectives of the study

1. To assess patient knowledge toward self-care management before and after conducting special educational program

2. To evaluate the effectiveness of the self-care management educational program on the patients knowledge who undergoing open heart surgeries
3. To identify the demographical characteristics of the study sample
4. To find out the relation between the self-care educational program effectiveness and demographical characteristics of the study sample such as (age ,gender , educational level

1.6. Definition of Terms

Theoretical definition of Effectiveness:

Is the ability to generate the required results or to supply the needed output. To be considered successful, an endeavor must produce the desired outcome or leave a significant effect on its audience. (Dominguez-Mayo et al., 2015).

Operational definition of Effectiveness:

The capability to provide a precise outcome or to apply a specific quantifiable effect concerning self care .

Theoretical definition of education program:

Systematic plans for development of special or general abilities (Miller and Keane, 2007).

Operational definition of education program:

Refer to systematically organized teaching plan to provide information for patients concerning self care .

Theoretical Definition of open heart surgeries

operations on the heart or the arteries that supply it with blood. Patients frequently have these operations to treat congenital heart defects,

valvular heart disease, and problems related to ischemic heart disease (such as with coronary artery bypass grafting). (Knatterud, Mary 2015)

Operational definition of open heart surgeries:

This entails the opening of the thoracic cavity (thoracotomy) by cardiothoracic personnel in order to repair or replace valve abnormalities and/or execute coronary artery bypass grafting.

Self-care Theoretical Definition:

Self-care is a naturalistic decision making process of maintaining health through positive health practices (self-care maintenance) and managing illness and disease (self-care management).

(Shuldham , et al 2017).

Self-care Operational definition :

All strategies that may used by the patient depending up on his strength , knowledge and tolerance which help him to decrease or relief the symptoms of heart failure in order to enhance the quality of life .

Theoretical Definition of knowledge :

Acquired through education or experience, knowledge is the theoretical or practical comprehension of a subject. (Graham ID, et al 2016) .

Operational definition of knowledge:

It is what an individual obtains of experiences and skills, which are mostly founded on experience and learning in the first place, and it is reflected by the individual's theoretical and practical comprehension of any concept or subject.

Chapter Two

Review of Literature

2.1. Historical Overview

Historical background of artery bypass graft and valve replacement. Cardiac operation started in 1950, when the heart/lung machine was perfected and became more reliable (Thomson, 1982). Advancement in technology related to diagnosis, anesthesia, and surgical management continued after the development of cardiopulmonary bypass (Semitzer and Bare, 1996).

Cardiac surgery is considered a new technology. Since the first exploratory operation of heart valve in 1940, advances in valvular surgery continued rapidly. In 1978, thirty three thousand valve surgeries were doing in the United States. With the reduction of incidence rheumatic heart disease, the number of valvular surgeries decreased in the United States and the ratio of valve to CABG surgery was 1:6. (Zyzanski et al., 1981; Semltzer and Bare, 1996;).

In Britain, the first successful CABG was performed in 1964. The number of patient underwent this procedure increased each year when, 1500 procedures were done in 1975. Over 30000 operations were performed between 1967 to 1977 (Macintosh and Garcia, 1978).

The first successful coronary artery bypass graft was performed in 1967, in the United States and the patients number who have undergoing this procedures each years is multiplied. In 1970, CABG procedures were performed for 14,000 patients (Lily, 1985).

The figure number rise to 95,000 in 1978 (Brunner and Suddrath, 1984). The number jumped to over 159,000 in 1989. More than 250,000 open heart surgery were performed and high percentage of them were CABG in 1996. In Iraq, the first successful operation of open heart surgery atrial septal defect

(ASD) was performed in 1964 by Iraqi surgeon Professor Yousif Al-Numan. The first real coronary artery bypass surgery started in 1989 at Al-Rashed Military Hospital by Dr. Najh Al-Asady (patal communication with Dr. Hamed Al-Ane, Dr. Najih Al-Asady and Dr. Sadick Al-Khashab). Between 1993 to 1997, more than 300 CABG surgery and about 900 operation of valve replacement were performed (Al-gersha, K., Haboubi, G., & Al-Asady, N. 2018).

In the central Euphrates governorates, heart surgery operations began at the Najaf Al-Ashraf Center for Catheterization and Cardiac Surgery and the Shaheed Al-Mihrab Center for Cardiac Diseases and Surgery in the year 2016 and witnessed a remarkable development in terms of the number and quality of operations performed in these centers after continuous training and the recruitment of a number of foreign medical delegations

2.2. Theoretical framework

According to Orem's self-care deficit nursing theory (Orem, 1995), the clinical guidance of ADA (2012) suggests attending to health deviation self-care requisites. So the person with heart diseases needs to re-regulate medical nutrition treatment and physical activity, if necessary, using drug and blood-pressure monitoring to evaluate the outcome of self-care activities. The person with heart diseases must learn how to evaluate themselves, decide what actions need to be taken to attend to their needs, and perform those actions.

According to Orem, self-care is an acquired skill that comes easily to mature people. The theory's central tenet is that encouraging people to take care of themselves helps them maintain their own health and improves the

quality of their own medical care (Orem 1983; 1985; 1991; 2001; 2003). According to Orem, there is a set of universal human characteristics that support normalcy (the encouragement of human functioning and development within social groupings in accordance with human potential, known constraints, and the intrinsic desire to be normal). Individuals' self-care routines are influenced by both basic conditioning characteristics (such as age and gender) and universal requites (such as the need for air, drink, food, activity&rest, solitude, and social connections).

The key idea behind Orem's thesis is that individuals have the competence, duty, and right to look after themselves. To Orem, a comprehensive model or theory developed for an applied science like nursing includes not only the what and why of the field, but also its who and how (Orem 2006). With this action theory, both the nurse's and the patient's duties are clearly defined. Six central ideas and one auxiliary idea form the backbone of these theories. Orem's individual research and the Nursing Development Conference Group's talks gave rise to a number of the concepts, such as the cornerstone to learning any theory is study of fundamental assumptions. Orem's conceptions were governed by five overarching assumptions or beliefs concerning humanity. On page 123 of Parker (2010)

Her ideas about human behavior and social interaction were shaped by her reading of Aristotle, Thomas Aquinas, Talcott Parsons, Pitirim Sorokin, and others (Orem, 2003). Orem divided people into two categories when considering them theoretically: those in need of nursing care, and those who provide it. According to (Parker, 2010, p. 123),

Orem has been working on her idea of Self-care deficit since the beginning of her career and has continued to improve it up until her retirement. Orem recognized a need to improve the quality of nursing at this state's general hospital throughout her time while working for the Division of hospital and Institutional Services. As a result, she has come up with her own concept of nursing practice. In 1956, she formed her initial concepts.

The nursing practice, in Dorthea Orem's view, should be directed on fostering patients' innate capacity for self-care (Orem, 1995)

Each and every theory has its roots in the real, material worlds of people and events, in the world of ideas, and in the theorist's own life and experiences. An overview of the origins, evolution, and generalization of the self-care deficit hypothesis of nursing is provided. Orem (1991), page 59

2.2. 1. Orem's Theory concept

Life, human functioning, and well-being all depend on the trained and deliberate performance of self-care, whether for one's care self or for a dependent care (that is, care provided by another, such as a family member). There are contextual factors, such as cultural norms and expectations, that influence the degree to which people take care of themselves. When caring for oneself or another, it is necessary to make educated guesses or conduct thorough research on what options are available and optimal. This is a multistep process involving knowledge and research into specific forms of treatment. Next in the self-care process is determining what needs to be done, followed by actually doing it (Orem 2001, pp.143-145). The concept of purposeful action, a voluntary conduct to attain a goal, is central to both self-care and dependent care.

Related to Orem self care agency can be explain as a human's capacity for engaging in self-care is influenced by their age, stage of development, life experience, sociocultural orientation, health, and access to resources. The capacity to recognize and address the self-care needs of a socially dependent individual; the ability to do so is known as dependent care agency (Taylor, 2001). Core Abilities

The most fundamental level. These skills apply to any kind of intentional behavior, not simply self-care. Perception, memory, and navigation skills are all part of this.

Ten qualities or strengths are necessary for self-care. Knowing how to take care of oneself, being motivated to do so, and really being able to do so are all crucial factors. Furthermore, our higher-order cognitive and motor skills (including the capacity to pay attention, reason, make decisions, and carry them out) are impaired.

The granularity of self-care agency lies in the specifics of the various parts that make up the whole of self-care need or demand. Estimative operation skills include the ability to investigate and estimate what needs to be done in order to determine what Self-care activity is required in a given nursing environment at a given time. Learning ability in health and wellness contexts is included. These types of talents demonstrate the richness of human capability, and the action sequence is crucial to the self-care notion. Self-care agency also varies in terms of its level of development and operability at the level of concrete practice.

Theoretically, therapeutic self-care demand (TSCD) is an intricate notion that encompasses every single thing a person needs to do for their own life, health, and happiness over time. It was originally called activity demand or self-care demand (Orem 2001). Building or calculating a TSCD calls for in-

depth evidence-based practice, communication, and interpersonal nursing expertise. To do this, values are conditioned and then adjusted.

Self-Care Requisites

A set of self-care requisites (or criteria for action) covering universal, developmental, and health issues was created to serve as a basis for establishing the TSCD. These are the reasons or ends for which people do action in order to sustain their own existence and that of their loved ones.

Essentials for everyone's own health and well-being

Air, food, activity, rest, solitude, and social interaction are just some of the eight USCRs that everyone, regardless of age or circumstance, needs to thrive. Preventing harm to human life, human functioning, and human well-being (the objective) requires actions to be taken throughout time, and they will look different for an infant (e.g., keeping crib rails up) than they will for an adult (e.g., ambulation safety).

The importance of self-care at every stage of development

Orem (2001) classified self-care needs into three categories: (DSCRs). The first set of terms refer to activities essential to the broad range of human development. Dependent care agents frequently fulfill these requirements when caring for newborns and children, and when caring for adults in the aftermath of natural disasters or with severe physical or mental disease.

Third, it is necessary for you to take responsibility for your own health care in the event of a

Variations in health When a person is ill, injured, or otherwise in need of medical attention, they may have special needs or objectives related to self-care. Basic conditioning factors (BCFs) like age, health status, and

sociocultural orientation are taken into account and used to tailor each TSCD's three varieties of Self-care necessities to the specific needs of the individual.

2.2.1. The self-care deficit theory

is an integration of information regarding nursing agency, self-care deficiency, dependent care, self-care agency, therapeutic self-care demand, and theoretical self-care. Limitations in one's ability to acquire knowledge, make decisions, and generate care for oneself or a dependant are central to the philosophy, required for nursing. This notion of self-care (dependent care) and what rem calls the idea of social dependency are articulated by two sets of assumptions. A person's ability to learn (know), make decisions, and control one's own life is crucial for self-care (Orem, 1991, p. 67) The Self-Care Deficit Theory of Nursing, which Orem developed, is made up of three connected theories:

- (1) the theory of self-care
- (2) the theory of self-care deficits
- (3) the theory of nursing systems. Source: (Theoretical Foundations of Nursing.1991).

The core idea of the self-care deficit theory is grounded in two sets of assumptions: the theory of self-care and the concept of social dependency.

The quality and completeness of self-care and dependent-care in families and communities rests on culture, including the scientific knowledge of social groups and the educatability of group members.

- Societies accommodate the human condition of social dependence by creating systems that provide assistance to individuals based on the specifics of their situation.

Socially dependent people can be helped by direct aid from their communities even after they are institutionalized.

Health care is one example of a direct helping service established in a social group to aid people of all ages. Direct helping operations carried out by members of social groups can be divided into two categories: those related to the age-related dependency state and those unrelated to the state (Orem, 1991, P. 70)

The following hypotheses should be used as foundational principles and exploratory guidelines for expanding the theory of self-care deficiency.

The ability of an individual to engage in self-care or dependent care are influenced by factors such as their age, stage of development, life experience, sociocultural orientation, health, and financial means.

Nursing is a valid service when

(1) care abilities are less than those required for meeting a known self-care need (deficit relationship)

(2) self-care or dependent care abilities exceed or are equal to those required to meet the self-care demand. (Orem, 1991, p. 71)

2.2.3. Metaparadigm Concepts of Nursing

Kuhn (1977) coined the term metaparadigm to describe the highest level of abstraction and generality in the nursing knowledge structure (Mcewen & Willis, 2011). A metaparadigm is the overarching a field's perspective that determines the central phenomena of study and describes the distinctive ways in which researchers in that field approach those phenomena (Mcewen & Willis, 2011). The role of the metaparadigm is to define the scope of study and provide a summary of the intellectual and social goals of the field (Mcewen & Willis, 2011).

Wagner (1986) conducted an in-depth analysis of the nursing metaparadigm (Mcewen & Willis, 2011). She concluded that the results showed that there was agreement among nurses that these occurrences

predominated in the field of nursing science. Similar to Wagner's original dissertation, Dorothea Orem defined the nursing metaparadigm notions.

2.2.3.a. Person

Wagner argues that a person is more than the sum of his parts since he has physical, intellectual, physiological, and psychosocial requirements. A person is an invisible force, a holistic being in the globe, an open system, an integrated whole, an adaptable system, and much more. (Wagner, 1986).

Self-care is the practice of actions that persons start and undertake on their own behalf in maintaining life and well-being,' according to the Orem - Person worldview (Hanucharunkul, 1989). Orem's (1985) perspective on man, however, is inconsistent when she portrays people in terms of several stages of growth (Hanucharunkul, 1989). Adults are the only demographic group portrayed positively; the elderly, the young, and the young at heart are all portrayed negatively as helpless dependents (Hanucharunkul, 1989). A human is an accessible system in Orem's view (Hanucharunkul, 1989). Orem argues that in order to meet the need for self-care, an individual must expend energy by performing some kind of intentional action in the external environment (Hanucharunkul, 1989). Humans, in Orem's opinion, are more than the sum of their parts; rather, they are a biopsychosocial whole (Hanucharunkul, 1989). A person is someone who can reflect on their own actions and make conscious decisions (Hanucharunkul, 1989).

2.2.3.b. Health

Wagner - Health is freedom from disease and incapacity; resilience in the face of adversity; realizing one's potential; and a state of complete mental, physical, and spiritual harmony (Wagner, 1986). 18

The Book of Mormon (Orem) describes health as the condition of being complete or undamaged . When a person's physical and mental systems are both in good working order, we say that they are healthy. When someone is said to be sound, it suggests they are physically and mentally unimpaired. To be whole implies that there are no missing or diminished parts . When applied to a person's health, these concepts mean that they are whole and complete in every way, both physically and mentally; that they have no genetic flaws; and that they are developing into a more whole and complete person over time (Hanuchararnkul, 1989).

Orem discusses the inseparability of one's physical, mental, interpersonal, and societal wellbeing (Orem, 1985). People's health depends on their ability to provide self-care that is both therapeutic and ongoing (Orem, 1985). Orem discusses the collective obligation of communities to prioritize the health of its citizens (Hanucharurnkul, 1989). Protection against certain diseases and injuries fall under the purview of nursing (Bassak-Nejad, et al 2014).

2.2.3.c. Environment

"Wagner - Environment often refers to the external conditions that influence the organism, the significant persons with whom the person interacts, and an open system with boundaries that allows the flow of matter, energy, and information with humans (Wagner, 1986).

Orem- Defined environment as consisting of components such as entronement factors and elements, condition and development environment (Nursing 19

Insights, 2011). Both the individual's capacity for self-care and the nurse's capacity for nursing agency are influenced by both the physical,

chemical, biologic, and social and the socio-economic, cultural aspects of the environment, which Orem further classified into two divisions (Banfield, 2011, p. 98). The environmental sphere of influence for Orem is vast and intricate."

2.2.3.d.Nursing

Human service defined as that which is necessary for the continual upkeep of one's own care is nursing. Caregiving is a profession that calls both specialized skill and the use of scientific understanding (McEwen & Wills, 2011, p.41). According to Orem (1988, 2001), nursing is a practical science, which means that nursing knowledge is formulated and organized for the benefit of actual practice (Banfield, 2011, p. 98).

The nursing profession in Orem places an emphasis on both self-care and service to others. Orem regarded nursing as an artistic pursuit. In a chat with Taylor (2011, p. 5), Orem (1956) stated that the art of nursing in hospital nursing service is offering the services essential to meet daily needs of self-care. During the 1960s, 1970s, and 1980s—a time marked by rising consumer awareness and a focus on the individual—nurses like Orem promoted the concept that their primary role was to help patients become more independent in their care. Pearson (2008, p. 1).

Initially dismissed as oversimplified, the self-care deficit theory has since evolved into a multifaceted framework with far-reaching ethical, moral, and policy implications. The SCDNT model was a significant departure from the conventional nursing practice of the time, in which nurses were expected to care for their patients and patients rarely participated in healthcare decision-making. According to Pearson (2008, p. 202) added in their writing. Orem used the work of Levin, Katz, and Holst (1976), among others, to define the

notion and build a self-care model of nursing in her important work *Nursing: Concepts of Practice*, published by Pearson (2008, p. 1)

2.3. Coronary Artery Disease

In the wall of one or more coronary arteries, plaque composed of fatty material and inflammatory cells accumulates to cause coronary artery disease (CAD). As the advances disease and these larger plaques grow, they damage begin to the artery's wall and spread into the lumen. Calcium may be deposited in large plaques, hardening them; these plaques frequently grow large enough to impede blood flow. The majority of persons with CAD are unaware of their condition until they develop symptoms. (Kaneko, H., Itoh, et al 2020.)

The symptoms of coronary artery disease are Angina or angina symptoms are due to a lack of blood flow to the heart muscle (ischemia) and are known as angina or angina symptoms. Historically, chest pain and pressure were considered the most prominent anginal symptoms, frequently accompanied by jaw or arm pain, nausea, diaphoresis, or shortness of breath. It is now understood that many individuals, particularly women, diabetics, and the elderly, may exhibit odd symptoms.

These symptoms may include sudden weakness or tiredness, nausea, indigestion, dizziness, or back pain and frequently occur in the absence of chest pain or pressure (Jacobson, Marzlin, & Webner, 2015).

Stable angina is characterized by symptoms that appear in response to physical exercise or with rest. These persistent symptoms are typically caused by the continuous deposition of atherosclerotic plaque in the coronary artery walls. As the arteries constrict, they are unable to supply enough blood to satisfy the increased demand during exercise or other pressures that raise the

heart rate. Once the heart rate lowers (often during rest), the demand for oxygen diminishes and the symptoms subside. Symptoms that persist even resting may be an indication of ACS, a deadly form of CAD (van der Wal, et al 2016)

2.3.1. Acute coronary syndrome

CAD typically begins years prior to the onset of ACS. Plaque is deposited in the coronary arteries due to an inflammatory process. Plaque deposition is more likely in individuals with certain risk factors, especially if their underlying disease is severe or if more than one risk factor is present. As the process of accumulation progresses, the plaque may become unstable and susceptible to rupture. If a coronary artery plaque ruptures, the inflammatory cells in the plaque activate platelets, initiating the clotting cascade and resulting in the production of an arterial clot. (brunner& Suddarth 2008)

The extent of the clot determines the severity of the incident and the extent of cardiac muscle damage."ACS includes unstable angina (USA), non-ST segment elevation myocardial infarction (NSTEMI), and ST segment elevation myocardial infarction (STEMI) (STEMI). USA is induced by a thrombus in the coronary artery that is resolved by the body's thrombolytic system. USA progresses to either NSTEMI or STEMI if a blood clot forms and the body is unable to dissolve it (Sanchis-Gomar, F., et al 2016)

2.3.2. Unstable Angina

Unstable Angina develops when a clot completely or partially occludes a coronary artery and the fibrinolytic enzymes broken down, restoring blood flow. symptoms of angina arise and then diminish. Symptoms may manifest at rest or with minimal exercise and often last longer than twenty minutes. These

symptoms of angina frequently reoccur, frequently with increasing frequency and intensity".

2.3.3. Segment Elevation Other Than ST Myocardial Ischemia

In NSTEMI, a coronary artery is partially occluded by a clot, resulting in symptoms of angina. the myocardium receiving some continues blood, but its insufficient supply of oxygen and nutrients to the cells . The ischemia, and can identified by 12-lead EKG changes such as ST segment depression or T-wave inversion, an increase in cardiac enzymes, or both. (Ralapanawa, U., & Sivakanesan, R. 2021).

2.3.4. The ST Elevation Segment Myocardial Infarction

STEMI occurs when the clot totally limits blood flow to the myocardium. The obstruction of blood flow produces initially ischemia and eventually necrosis (death of myocardial cells). As cardiac muscle cells perish, they lose the ability to conduct electrical current, resulting in an increase of ST segments on a 12-lead ECG. The death of cardiac cells also results in the release of enzymes ordinarily located within these muscle cells into the bloodstream. This increases the amount of cardiac enzymes in the bloodstream (Ralapanawa, U., & Sivakanesan, R. 2021).

2.3.5. Surgical intervention

Angioplasty and stenting are typically used to treat patients with a small number of localized coronary artery lesions and those that are easily accessible via percutaneous coronary intervention. The catheter is put through an artery (often the femoral or radial artery) and progressed until it reaches the

affected coronary artery. A balloon at the end of the catheter is inflated at the site of the coronary artery plaque, thereby slamming the plaque against the artery's walls to enlarge the lumen. This catheter is withdrawn, and another catheter is advanced to the same location. This catheter terminates in a little metal tube called a stent.

As the balloon at the end of the catheter is inflated, the stent grows to the size of the artery and maintains its openness. The catheter is removed, and the stent stays in place (Global, regional, and national incidence, prevalence 2016)

Numerous patients with multiple lesions or widespread disease (significant coronary artery constriction) require coronary artery bypass grafting for surgical treatment (CABG). In addition, patients with valve disease or other structural heart disease requiring surgical repair often receive CABG at the time of valve repair as opposed to percutaneous coronary intervention for CAD. Interventional cardiologist and a cardiac surgeon should assess the imaging findings and clinical presentation of patients with difficult illness or anatomy to decide the optimal revascularization method (Hillis et al., 2015).

The nurses play a crucial role in justifying PCI as opposed to cardiac surgery. Understanding the rationale for each helps nurses educate and prepare patients for surgery and other treatments.

2.3.6. Factors associated with coronary artery disease

- Age and gender: the flexibility of arteries decreases with age
- Heredity: coronary artery disease in the family

- Diabetes: intimal damage and insulin-modified lipid metabolism
- Hypertension: decreased vascular elasticity, ripping effect on arteries, and increased resistance to ventricular volume ejection.
- Tobacco usage (nicotine): To reduce the displacement of oxygen from hemoglobin by high-density lipoproteins Increase the catecholamine response to nicotine, heart rate, and blood pressure.

enhancing platelet adhesion

- A sedentary lifestyle causes alterations in lipid metabolism and insulin sensitivity

-Antiplatelets, such as aspirin or aspirin combined with clopidogrel, are used to reduce the risk of angina by preventing the formation of platelet thrombi.

-Nitrates They are vasodilators (dilates veins and arterioles) and promote collateral circulation to the heart, thereby enhancing myocardial oxygenation.

Betablockers lower heart rate and blood pressure . (Mokbel, Naiera Abd El Samad Ibrahim, et al 2020)

2.4 .Atherosclerosis

Is a proliferative and inflammatory illness of the artery wall that affects the entire body. It can affect almost the whole arterial tree in humans in mature stages, with particularly obvious symptoms in the medium and large arteries. It is a condition that primarily affects the arterial wall's endothelium and vascular smooth muscle (VSM). Its immediate clinical presentation can be caused by the rupture of a single plaque, which can result in arterial thrombosis and an abrupt myocardial infarction or stroke. This has a long

asymptomatic stage of development. Although early vascular alterations are minimal, atherosclerosis can worsen with time and is often shown in the first decade of life(Areias M, et al, 2021)

The specific factors that induce plaque generation are still being debated. However, our knowledge has developed over the last three decades, from early concepts based on lipid accumulation inside the arterial wall to a more complicated interplay between common risk factors (obesity, smoking, family history, hypertension), inflammation, and vascular malfunction. These panvascular mechanisms have established atherosclerosis as an inflammatory lipid disease, with an emphasis on immunological involvement (Stromberg H. Dewitt's Medical-Surgical Nursing 2021).

Although stenosis can produce clinical complications, plaque rupture, which exposes the thrombotic plaque contents to the circulation and can lead to rapid thrombotic occlusion, is the most serious clinical manifestation of atherosclerosis. Severe and usually fatal clinical complications, such as myocardial infarction (MI) and stroke, might occur based on the arterial location of the blockage

2.4.1 Causes

Atherosclerosis is a slow-moving, potentially childhood-onset disease. Although the precise cause of atherosclerosis is unknown, the inner layer of an artery is believed to be its origin. The following elements may contribute to disease:

- Cigarette use and other tobacco products
- Blood pressure elevated

- Cholesterol elevated

Triglycerides are a kind of fat (lipid) found in the blood.

- Inflammation due to an unidentified cause or conditions such as arthritis, lupus, psoriasis, or inflammatory bowel illness .When the inner lining of an artery is damaged, blood cells and other substances congregate near the injury site and accumulate in the inner lining. Over time, at the site of injury, cholesterol and other cellular products collect to form fatty deposits (plaque), which restrict the arteries. Organs and tissues associated with obstructed arteries receive insufficient blood for optimal operation. Eventually, particles of the fatty deposits may break off and enter the bloodstream. In addition, the smooth lining of the plaque may burst, releasing cholesterol and other substances into the bloodstream ((Stromberg H. Dewitt's Medical-Surgical Nursing 2021)

2.4.2. Risk factor

Risk of atherosclerosis may raise related to :

Elevated blood pressure, elevated cholesterol ,elevated C-reactive protein (CRP) levels, an indicator of inflammation, obesity, diabetes ,smoking and other uses of tobacco, sleep apnea ,a cardiovascular illness in familial history,an poor diet and lack of activity

2.4.3. Adverse Events

- Coronary atherosclerosis When atherosclerosis narrows the arteries close to the heart, coronary artery disease may occur, which can result in chest pain (angina), a heart attack, or heart failure.

- Carotid atherosclerosis When atherosclerosis narrows the arteries near the brain, carotid artery disease may occur, which can lead to a transient ischemic attack (TIA) or stroke.
- Disease of the peripheral arteries. When atherosclerosis narrows the arteries in the arms or legs, peripheral artery disease can cause circulation issues in the arms and legs. Consequently, inadequate circulation in the arms or legs might result in tissue death (gangrene).
- Aneurysms. Aneurysms, which can form anywhere in the body, are a dangerous complication that can be caused by atherosclerosis. An aneurysm is a protrusion in the arterial wall (Smith, S. C., Allen, et al. 2013)

Chronic renal failure. Atherosclerosis can constrict the kidney-supplying arteries, preventing oxygenated blood from reaching the kidneys. This can impair kidney function over time, preventing waste from leaving the body" (Roth GA, Mensah GA, Johnson CO, et al. 2020).

2.4.4. Prophylaxis

The same healthy lifestyle adjustments advocated for atherosclerosis treatment also aid in its prevention. These consist of:

- Quitting smoking
- Consuming wholesome meals
- Exercising consistently
- Keeping a healthy body weight
- Monitoring and sustaining a normal blood pressure

- Monitoring and maintaining appropriate levels of cholesterol and glucose

2.5. Valvular heart disease (VHD)

A pathological condition that affects one of the four heart valves and interrupts the unidirectional flow of blood. Multiple illness conditions cause pathoanatomical modifications and pathophysiological dysfunction in these essential structures. During the cardiac cycle, these alterations disrupt the unidirectional blood flow.

In valve stenosis, the valve's leaflets do not open correctly, reducing forward blood flow. In valve insufficiency or regurgitation, the leaflets of the valve do not close normally, enabling blood to flow in the opposite way (Avierinos JF, et al.2018)

It is possible to develop mixed valvular heart disease, characterized by both stenosis and insufficiency of the heart valve. Multiple heart valve malfunction constitutes concomitant valvular heart disease (VHD). As VHD advances, patho anatomical abnormalities of the afflicted valve(s) and other cardiac structures produce aberrant valve hemodynamics, cardiovascular hemodynamics, clinical symptoms, and physical examination findings. In cases of severe VHD, there are hemodynamic consequences that result in symptoms. The prevalence of VHD is rising. Mental illness affects approximately 2.5% of the adult population in the United States (Hinton RB, Yutzey KE 2011).

Globally, the prevalence of VHD is significantly higher, due in part to the prevalence of rheumatic heart disease in developing countries, despite the fact that its incidence is reducing overall. Due to age-related degenerative

changes in valve anatomy, the prevalence of valvular heart disease (VHD) increases to around 1 in 10 adults over 65. (Avierinos JF, et al. 2008)

Vulvar heart disease is a public health concern due to the rapid growth of an aging population, which is anticipated to increase from 962.3 million in 2017 to 2080.5 million in 2050. Most, if not all, healthcare practitioners across all settings and specialties may encounter a patient with VHD. Care for patients with venous thromboembolism (VTE) requires a full understanding of normal anatomy, physiology, and pathophysiology (Baumgartner H, et al. 2017).

2.5.1 Pathogenesis and Etiologies of Acquired VHD

Vulvar heart disease can be characterized as congenital or acquired. Congenital VHD is present from birth, but acquired VHD develops later in life. Acquired The VHD is then either rheumatic or non-rheumatic.

2.5.1.1 Rheumatic VHD

Streptococcal infection may result in rheumatic fever and consequent inflammatory changes and scarring of heart tissue.

2.5.1.2.Non-Rheumatic VHD

Include functional (endocarditis) and degenerative (myxomatous and calcific) etiologies and pathogenesis. Also included in the acquired nrvhD category are patients who have underwent open heart surgery , which accounts for approximately one-third of all vhd referrals(Passos LSA, Nunes MCP,et al.2021)

2.5.1.2 Rheumatic heart diseases

RHD now affects over forty million people and causes annually nearly 300,000 deaths. In developed nations with high incomes, the incidence of rheumatic fever is declining. Has dropped to less than 1 in 100,000 but still exceeds 100,000. Developed nations with low and medium incomes

Between 1990 and 2017, the global incidence of rheumatic heart disease (RHD) decreased by 8.67%. Antibiotics for the treatment and prevention of streptococcal infection, reduced congestion, improved housing and sanitation, and access to healthcare are among the strategies to minimize RHD, particularly in LMICs and LMICs. The RHD death rate has fallen by 54%, while the global death rate has decreased by 53%. Disability-adjusted life years rate (total number of years lost to premature mortality) and years lived with a disability. Despite these advances, RHD continues to be the primary cause of cardiovascular death among children and adolescents globally. RHD is a pervasive, continuous global health problem for which there is neither a cure nor a vaccination (Yadgir S, Johnson CO, et al.2020)

2.5.1.3. Pathogenesis

Rheumatic heart disease results from rheumatic fever, an autoimmune condition caused by untreated or inadequately treated of infection with Group A -hemolytic streptococcal. it is believed that:

- Tonsil lymphatic channels transport group A Streptococci to the heart.
- RF produces skin , tissues, and heart valves inflammation, the latter of which can lead to heart failure.

- Acute rheumatic fever is characterized by diffuse proliferative and exudative responses in the joints. These tissues, specifically, present with HF and necessitate surgery may active AHD, with the possibility of recurrence of rheumatic fever.
- erythema marginatum , Carditis, polyarthritis , and subcutaneous nodules, are major diagnostic criteria (Baumgartner H, Falk V, et al.2017)

2.5.1.4 Clinical manifestation

In almost all cases of RVHD, the mitral valve is damaged, however the aortic valve may also be affected. likewise be involved. Early on, regurgitation is observed, whereas stenosis is shown later on. The primary stages of RVHD, echocardiography has revealed the presence of tiny. These nodulous lesions do not result in pathoanatomic alterations on their own. Eventually, chronic inflammation can result from isolated or recurrent bouts of RF.

causing valve malfunction in people predisposed genetically. Typically, leaflets are distributed. However, three-quarters of people under 30 years old have low fibrosis and pliability. After age 40, two-thirds of patients have scars and . Variations in presentation are possible as a result of morphologic changes. In contrast to the 3% of individuals who have pure mitral regurgitation, 90% of those with mitral stenosis show obvious chordal shortening (Avierinos JF, et al.2018)

Annular dilatation was seen in 90% of those with rheumatic mitral regurgitation compared to 30% of people with just mitral stenosis.

Late in development, commissural development occurs alongside fusion and chordal shortening. breakdown of the endothelium's surface due to fusion. Fibrous tissue and inflammatory tissue are However, in those who have a

genetic predisposition to calcification, lipids may cause the process to accelerate.

Inadequate aortic and mitral murmurs are common markers of RVHD on physical examination. A high-pitched, blowing pansystolic murmur can be heard while the heart is in the pansystolic phase. Problems with the mitral valve. A systolic murmur is a transient, low-pitched sound heard in the middle of a heartbeat.

At the pinnacle, a Carey Coombs hum could be heard. When the mitral valve leaflets become stiff and swollen, the gradient across the valve increases, and the LV's compliance decreases, a Carey Coombs murmur may develop.

2.5.2. Non-rheumatic Valve Pathology

2.5.2 .1. Contagious Endocarditis

2.5.2 .2. Epidemiology

Since 1990, the incidence of endocarditis has climbed to an estimated 1.09 million cases. 66,300 cases, 1.72 million disability-adjusted life years, and 1.72 million deaths were recorded in 2019. The incidence rate is 13.8 per 100,000 people while the death rate is 0.9 per 100,000 people. The increase in deaths is attributed to infections that are more virulent and pervasive.

In critically ill individuals, Staphylococci and complex infections are prevalent. related dangers with heart surgery. The causal agent is determined by the patient's medical history, valve structure, and point of entry (Gupta A, Mendez M. Endocarditis.2021)

2.5.2 .3. Pathogenesis

Infectious endocarditis is caused by three distinct pathways. Initially, the heart .The valve must be conditioned for bacterial adhesion. Bacteria that circulate do not readily the ability to attach to normal endothelial surfaces. Changes in endothelial surfaces caused by trauma, inflammation, disturbance of the extracellular matrix (ECM), platelet deposition, and fibrin deposition may make the valve more vulnerable to infection. Other risk or priming variables include diabetes, steroid or immunosuppressant use, advanced age, and pacemaker implantation in addition to trauma. Second, circulating bacteria cling to the fibrin-platelet matrix, particularly the strains identified (Hulin A, Deroanne C, Lambert C, et al.2014).

Thirdly, antibodies may inhibit bacterial adhesion, yet bacteria may be resistant to complement cascade and leukocyte phagocytosis. Certain streptococci, for instance, induce valve cells to produce thromboplastin, which induces the deposition and development of a fibrin-platelet clot over bacterial colonies or vegetations (Bermejo J, et al.2020)

2.5.2 .4. Disease process

In the beginning stages of the illness, symptoms may be mild or absent. A lengthy, A prolonged fever that lasts for months is sometimes the only symptom. Additionally, the onset might be rapid, severe, and accompanied by a high temperature. Headache, nausea, vomiting, chills, weariness, myalgia, and arthralgia are all examples of nonspecific symptoms that have been recorded. There may be heart failure if you've just noticed a new or different heart murmur. Emboli can occur from thrombus formation, and stenosis and/or insufficiency of heart valves, especially the mitral valve, can be caused

by vegetation and fibrotic alterations. The development of abscesses increases the risk of additional injury to the myocardium and the heart's valves. Impaired cognition and localized neurological symptoms are developed in reaction to embolic strokes, cerebral abscesses, bleeding, and elevated intracranial pressure, all of which are related with Staphylococcal illness (Chen J, Li W, Xiang M 2020).

Heart block, caused by disruption of the cardiac conduction system, or purulent pericarditis, caused by abscess rupture into the pericardium, are both possible symptoms of a myocardial abscess. Roth spots (bleeding at the back of the eye), Janeway lesions (small, painless patches on the palms and soles), Osler nodes (nodules of discomfort in the fingers), splinter hemorrhages, and petechiae may be observed toward the end of the illness.

The presence of antigen-antibody complexes in the circulation is diagnostic of vasculitis, which causes these lesions. In 1955, the AHA advised penicillin prophylaxis for individuals with congenital heart disease and rheumatic heart disease who were scheduled to undergo dental treatments. Antibiotic prophylaxis was outlawed in the US and EU in 2009 because there was little data to justify it and it contributed to the rise of antibiotic resistance (Evangelista A, Tornos P, Bonow RO 2020).

2.5.3. Valvular Degeneration Disease

Historically, both aortic and mitral valve disease were included in degenerative valve disease. The pathophysiological distinction between degenerative mitral valve disease and calcific aortic valve disease has been demonstrated. Degenerative mitral valve disease affected approximately 2% of the world's population in 2017, resulting in 35,700 deaths worldwide.

Mitral valve prolapse is the most common form of mitral valve degeneration. Overall, a disproportionate number of women are affected. Disability-adjusted life years are greater for women than for men across all age groups; women also have higher mortality rates and lower surgery rates (Rajamannan N, Evans FJ, Aikawa E, et al.2016)

2.5.3.1.Pathogenesis

Myxomatous or fibrotic change are the two most common histopathological processes associated with degenerative valve disease. Proteoglycan accumulation, collagen degradation, and elastin fragmentation are defining features of myxomatous degeneration. These pathoanatomic alterations cause prolapse and regurgitation as a result of a floppy valve. Collagen accumulation, proteoglycan degradation, and elastin fragmentation are defining features of fibrotic degeneration. These pathoanatomic changes result in restricted leaflet motion and stenosis of the valve, or a stiff valve.

Early stages may exhibit sclerosis or hardening; valve calcification is a late indication of increasing fibrosis and severe illness. At the cellular level, there is valvular intracellular (VIC) activation and extracellular matrix (ECM) remodeling, and the stratified leaflet structure is disturbed. Mitral valve degeneration leads to atrial fibrillation and cardiac failure if left untreated. In subsequent sections, the hemodynamic, echocardiographic, and physical manifestations of degenerative valve disease are elaborated on.

2.5.3.2.Disease of Calcific Valves

In the early stages of a disease, symptoms may be minimal or nonexistent. A prolonged, persistent fever lasting several months could be the only symptom. Moreover, the onset can be sudden, severe, and accompanied

by a high fever. In addition, headache, nausea, vomiting, chills, exhaustion, myalgia, and arthralgia have been recorded as nonspecific symptoms. A new or fluctuating heart murmur could indicate heart failure. Vegetation and fibrotic alterations can produce mitral valve stenosis and/or insufficiency, and thrombus development can lead to emboli. Abscesses may form, causing additional damage to the inner lining and cardiac valves of the heart. Neurologic symptoms of Staphylococcal illness include reduced cognition and localized neurological symptoms caused by embolic strokes, cerebral abscesses, bleeding, and elevated intracranial pressure. Myocardial abscesses may manifest as heart block or purulent pericarditis due to abscess rupture into the pericardium. Roth spots (bleeding at the back of the eye), Janeway lesions (little painless patches on the palms and soles), Osler nodes (pain nodules on the fingertips), splinter hemorrhages, and petechiae may be observed at the end of the illness. These lesions are symptomatic of vasculitis because antigen-antibody complexes are present in the circulation (Yadgir S, Johnson CO, Aboyans V, et al. 2020).

In 1955, the AHA suggested penicillin prophylaxis prior to dental treatments for patients with congenital heart disease and rheumatic heart disease. The United States and Europe banned the use of antibiotic prophylaxis in 2009 due to a lack of scientific evidence supporting this practice and the development of antibiotic resistance.

2.5.3.1 Pathogenesis

The calcific aortic valve disease, which spans from sclerosis to stenosis, is not only a degenerative condition. Histopathological and clinical evidence suggests that calcific valve disease is comparable to atherosclerosis, which is

characterized by the accumulation of lipoproteins, chronic inflammation, and active calcification simulating bone formation in the presence of an osteoblast phenotype.

On surgically removed calcified aortic valves, osseous metaplasia was detected. Patients with calcified valves have a significantly higher incidence of atherosclerotic vascular diseases, such as coronary artery disease, peripheral arterial disease, hypercholesterolemia, and hypertension, than those without calcified valves. In later parts, calcific aortic valve disease and its hemodynamic, echocardiographic, and physical manifestations are discussed in greater detail.

2.6. Before Valvular Surgeries

The majority of preparations and evaluations for patients referred for open-heart surgery take place in outpatient day clinics or hospital wards. Therefore, when the patient arrives in the operating room (OR), the nursing team provides care based on clinical assessments and information obtained during their assessment process and pre-surgical consultations, such as surgical risk estimates.

This continuity of information is required to ensure individualized care and a patient-centric approach to perioperative nursing. Prior to the admission of elective patients, the multiple components of the consent process, such as treatment recommendation, collaborative decision-making, and risk discussion, are frequently carried out. Best practices dictate that this consent be repeated upon admission. The function of nurses within the open heart surgery perioperative team

surgical nurses' duties and responsibilities during the initial pre-operative phase differ significantly between cardiac programs. Surgical teams in the operating room consist of a lead and assistant surgeons, surgical nurses with a range of responsibilities, such as scrub nurse and floor coordinator/circulating nurse, the anesthesiologist, and the perfusionist. Also essential are the professions of anesthesia assistants, nurse anesthetists, and operating room technicians (American Nurses Association 2015).

Utilizing their collective expertise, the surgical team works to achieve the best possible outcome while guaranteeing patient safety and improving clinical efficiencies. Given the nature of cardiac surgery and the potentially fatal consequences of miscommunication and failure to adhere to safety protocols, this highly coordinated cooperation is an essential aspect of cardiac operating room nursing and multidisciplinary practice.

2.6.1. Getting patients ready for open heart surgery

Prior to induction, nurses play a crucial role by meeting the patient in the operating room, establishing a trusting environment and assuring patient comfort to alleviate anxiety, as well as delivering targeted patient education. Importantly, the nurse verifies the patient's identity, evaluates their health on the day of surgery, and fills any gaps in their understanding regarding their procedure and care journey.

Before entering the operating room, the nurse ensures that the patient has emptied their bladder and is ready for their procedure. The patient is then positioned in a supine position on the operating table. The nurse adds expertise about the patient's comfort, the protection of bony prominences, and the implementation of protocols aimed to preserve skin integrity.

Depending on local practices, the activities that follow may be performed before or after the induction of anesthesia. Important processes that require specific nursing expertise and flawless asepsis include skin preparation and surgical drapery, insertion of a urinary catheter, and placement of a central venous catheter.

The anesthesia team, with the cooperation of the nursing team, directs the anaesthetic strategy, including the administration of to the patient in accordance with particular procedures and recommendations (Al-gersha, K., Haboubi, G., & Al-Asady, N. 2018).

2.6.3. The following intrusive equipment is commonly installed prior to surgery to facilitate the monitoring, operation, and patient safety:

1. Endotracheal tube: for artificial ventilation and airway protection; when a patient is undergoing surgery, they may require a pulmonary artery catheter, a type of central venous line that allows for invasive hemodynamic monitoring by inserting a catheter into the pulmonary artery.

2. Intravenous catheters placed in the periphery: A catheter inserted into a vein of the arm to provide fluids, drugs, or blood.

3. Arterial line: a catheter with a small enough bore to be inserted into the radial artery, allowing for continuous blood pressure monitoring through a transducer system and intermittent blood collection for monitoring oxygenation status and other laboratory data;

A tiny tube introduced into the bladder to drain and monitor urine volume before, during, and after surgery to assess fluid status and evaluate renal function; a standard set of five electrodes placed on the chest to track the

heart's rhythm and rate; a urinary catheter. A nasogastric tube is a tiny tube used to drain the stomach and intestines through the nose (note: certain cardiac programs have discontinued the use of this device).

A dynamic method has developed in recent years for caring for heart surgery patients after their procedures are complete. Postoperative care has been revolutionized by developments in technology, research, and minimally invasive treatments. The success of the treatment relies heavily on the postoperative team.

Care and attention are especially important in the first few hours after a valve procedure. Recent advancements in anesthetic techniques have allowed for the earlier transfer of ICU patients to the ward, which in turn has sped up their eventual discharge home. Recognizing and Addressing Adverse Events After Emotional Infections and Other Complications After Surgery

Even while there are risks with each operation, those related with heart surgery recovery can be more severe. Myocardial depression, renal failure, acute lung damage, and multiple organ dysfunction syndrome have all been linked to the systemic inflammatory response syndrome (SIRS) that develops in response to heart surgery .

Patient risk can be considerably enhanced by factors such as age, left ventricular function, nephrological comorbidities, the existence of paroxysmal atrial fibrillation, and the presence of other comorbid illnesses. Positive patient outcomes can only be achieved with the prompt diagnosis and treatment of problems (Ali, S., & Jacoub, S. 2018)

2.6.4. Pulmonary Difficulties

During cardiopulmonary bypass, only the bronchial system is perfused, as opposed to normal physiology in which the lungs get perfusion from the pulmonary and bronchial circulation. This modification raises the likelihood of various problems by causing several hours of relative ischaemia. pleural effusions, Atelectasis, pneumothorax, pneumonia, and ARDS are typical pulmonary consequences.

The postoperative hypoxia diagnosis needed examination of various etiologies, such as the worsening of preexisting pulmonary illness and rarer events, such as an abrupt postoperative pulmonary embolus. Respiratory difficulties may lengthen the duration of intubation and increase the patient's risk of aspiration and ventilator-acquired pneumonia. CXR and physical examination are the key diagnostic techniques for lung disease (Gizella I. Bardoczky 2018).

2.6.5. Cerebrovascular Incidents

Brain damage is a major potential consequence of cardiac surgery, particularly when a cardiopulmonary bypass machine is used. Due to the presence or persistent effects of analgesia and anesthesia, it might be challenging to do a thorough neurologic examination in the immediate postoperative period. Clinicians should do a thorough evaluation and think about a sedation holiday (or sedation interruption) if possible. Recovering from an embolic ischemic neurologic event is similar to recovering from cardiac arrest in that early management and reperfusion are vital. Cross-clamping of the aorta, debridement of the valve architecture, and separation of

particles from intraoperatively all contribute to the release of embolic material from atherosclerotic plaque by employed technical equipment.

2.6.6. Bleeding and Pericardial Effusion

Mechanical factors, intraoperative hypothermia-related coagulopathy, and underlying diseases are all potential contributors to postoperative bleeding. This condition of hypovolemia can progress to hypovolemic or hemorrhagic shock and end -organ malperfusion if it is not treated and managed.

A baseline for estimating hourly output can be established by monitoring the patient's chest tube drainage upon entrance to the recovery area and taking note of its amount and consistency. Therapies, such as the reversal of coagulopathies or the need for re-intervention, may be guided by plausible causes like coagulopathy or a mechanical source. To prevent dangerous buildup of blood in the pleural region, surgeons will often insert a chest tube during the procedure. Hemothorax, hypoxia, the physiology of tamponade, and tension hemothorax are all conditions that can arise from insufficient drainage (Amal F, et al.2017)

The immediate postoperative CXR is useful for verifying the placement of the endotracheal tube, central venous catheter, and chest tube, and for detecting the presence or onset of a hemothorax. Loss of more than 500 mL of blood in an hour is considered heavy bleeding.

When the heart is compressed, it prevents the ventricles from filling properly, leading to cardiac tamponade and a low cardiac output. A narrow pulse pressure, hypotension, tachycardia, CNS changes, acidosis, and decreased urine output are all things the medical team should look for.

Immediate echocardiography order recommended for diagnosis and pericardiocentesis planning. There are two types of postoperative bleeding: medical and surgical. Failures in the coagulation cascade, platelet function, and fibrinogen are the root causes of medical bleeding. Trauma to the operative site is usually the cause of bleeding during surgery. If there is bleeding during surgery, it may be necessary to go back in and do some more exploring and try to stop the bleeding. Bleeding disorders are a leading cause of morbidity and mortality, making timely diagnosis and treatment essential for best results (Ballan A & Lee G.2017)

Nurses must consider the following results in detail:

- Persistent bleeding absent a coagulation disorder.
- Sudden commencement of new, fast bleeding, particularly in the presence of increased blood pressure.
- Blood volume exceeding 200 mL/h for two hours.

Surgical heparin can leave behind a residual impact that can result in medical bleeding. Prior to CPB, patients are anticoagulated to maintain an active clotting time (ACT) of 300–400 seconds.

Protamine is utilized to reverse heparin at the conclusion of the case; additional heparin may be supplied if patients get autotransfusion blood products (pump blood). At the time of admission, the ACT should be administered with a target score between 100 and 120 seconds. Platelet function may be compromised by CPB, liver illness, or hemodilution, which may result in medical bleeding (Suzanne. C. et al.2018).

The management of medical bleeding differs from that of surgical bleeding. Included in these measures are the correction of hypothermia, the regulation of blood pressure, the administration of protamine if the ACT level is elevated, platelet transfusions, fresh frozen plasma infusion, the elevation of the head of the bed, and the intensification of mechanical ventilation. Positive end-expiratory pressure (PEEP) or infusions of packed red blood cells are viable treatments. Cryoprecipitate, desmopressin (DDAVP), and antifibrinolytic treatment are further alternatives.

2.6.7. Complications of Surgical Site

In between 0.4% and 8% of instances, sternal site problems are documented. Site infection, dehiscence, instability/nonunion, and mediastinitis are examples of complications.

Complications are related with longer hospital stays, greater morbidity and death, and higher healthcare expenses.

Historically, upper limb and trunk use restrictions were employed to prevent excessive sternal motion. However, this approach is no longer recommended because it can prolong recuperation, healing, and hospitalization. It is recommended that nurses and allied health professionals instruct upper limb and Exercises for the trunk that enhance return to function and speed recuperation. In addition, a surgical support bra can be used to decrease pulling at the surgical site(Smith A, et al 2013).

In populations with a low prevalence of methicillin-resistant *Staphylococcus aureus* (MRSA), a single antibiotic with a multidose regimen is indicated for conventional cardiac surgery prophylaxis. Vancomycin is

advised as the primary prophylactic antibiotic with supplementary gram-negative coverage for those who are allergic to beta-lactams or penicillin .

Unrecognized or untreated sternal wound infections that progress to mediastinitis may necessitate re-exploration, hardware removal, and pectoral flap. Assessment of the surgical wound for typical signs of infection is required, as is evaluation for nonunion: pressing gently on the sternum should not produce movement or clicking, and the wound should be free of drainage and foul odor; any of these findings may necessitate a CT scan to determine the status of the sternal bone(Winkelman C,Chiang L.2016).

2.6.8. Atrial fibrillation (AF)

Is the most frequent postoperative arrhythmia; its start is typically within the first week after surgery linked with longer hospital stays is an increased risk of cerebrovascular events a stated prevalence of 20% to 50% for impaired mental status/delirium peaking on postoperative day 2 and happening most commonly in the first five days following heart surgery. Within twenty-four hours, many individuals will spontaneously switch to sinus rhythm. This emphasizes the significance of not only being knowledgeable about drugs, but sustaining the interdisciplinary team's collaboration. Many of the same drugs that are used to treat atrial fibrillation can also be used to prevent the emergence of the condition. Beta-blockers and amiodarone considerably reduce the incidence of postoperative atrial fibrillation, although beta-blockers are the first-line treatment. Medication for the prevention of POAF, with amiodarone reserved for people with POAF. Someone shouldn't use a beta-blocker because of potential health risks. Reducing the risk of drug interactions and rebound bradycardia from

excessive nodal blocker or antiarrhythmic usage can be accomplished by waiting until the first medication's effects have worn off before starting the second (Alice Y.M.Jones,Elizabeth Dean. 2014).

2.6.9. Cardiac Arrest

The surgical floors are well-established and offer patients clear direction resuscitation in numerous clinical settings. There are various approaches to controlling deadly arrhythmias in patients undergoing cardiac surgery. The European Resuscitation Council (ERC) has produced guidelines regarding the Care of the patient who recently underwent a sternotomy and suffered a heart arrest. The majority of postoperative cardiac arrests happen within the first 24 hours of skin closure, with up to 50 percent occurring during the first three hours after surgery. Frequently, tamponade or bleeding causes pulseless electrical activity (Van Laar C, et al. 2017).

This pathology can only be treated with an emergency re-sternotomy. relax the heart and major blood vessels . This liberation permits the return of spontaneous circulation and problem solving . First heart rhythm irregularity to recovery of spontaneous circulation (ROSC) time (ROSC). It's a reliable indicator of how long someone will live. Early defibrillation, as outlined by the Advanced Cardiac Life Support (ACLS) guidelines, is used to treat ventricular fibrillation (VF) and ventricular tachycardia (VT). In surgical training, three stacked shocks and a bolus are administered within one minute. If the administration of 300 mg of Amiodarone fails, an emergency re-sternotomy is performed. These guidelines can aid in the quick resuscitation of postoperative patients if they are familiarized with them (Coylewright M, et al.2020).

2.6.10. Gastrointestinal Issues

The most severe gastrointestinal (GI) problems are caused by a decreased cardiac output, insufficient blood flow, vasoconstriction, hypoxia, and intestinal ischemia. Other concerns can include bleeding due to gastritis or peptic ulcer disease, for which proton pump inhibitors are effective.

A pump inhibitor and antacid may be prescribed to prevent the formation of gastrointestinal ulcers. Other GI disorders include pancreatitis, cholecystitis, hepatic failure, and paralytic ileus, problems that require patient monitoring. Patients at risk for gastrointestinal problems include patients with advanced age, a low ejection fraction, and a lengthy surgical time. A history of peripheral vascular disease and atrial fibrillation. The nursing evaluation consists of monitoring bowel sounds and assessing changes for GI disorders. Patient complains of stomach pain and abdominal distension; nausea is evaluated and throwing up commonly, vomiting and nausea occur quickly after surgery, mostly as a result pertaining to intraoperative medicines. Vomiting and nausea raise the risk of aspiration, can interfere with surgical procedures, increase the risk of bleeding, and affect electrolyte balance. The team can reduce the risk of nausea and vomiting by examining the patient for risk factors, such as age, gender, history of motion sickness, past N & V after surgery, and knowledge of drugs administered during the procedure, and by administering prophylactic antiemetics. For the treatment of nausea and vomiting, glucocorticoids, 5-HT₃ receptor antagonists, anticholinergics and antihistamines, hydration, and pain and comfort management are used (Al-Taweel A, Almahmoud MF, et al .2019).

2.6.11. Postoperative Disorders of the Central Nervous System

During the postoperative period, cognitive function might be inhibited by numerous reasons. Postoperative cognitive dysfunction is a mild disturbance of mental functions that occurs after surgery. may have an impact on language comprehension, executive function, and memory.

Delirium is a mental disorder characterized by disorganized thinking and impaired reasoning . The objective of the neurological evaluation is to differentiate and identify the existence of a focused deficit or a global deficit. While delirium or confusion may justify obtaining a CT scan immediately, specific deficits, such as speech impairment or unilateral weakness, alterations in mental status frequently cause disability.

Postoperative delirium may manifest as, disorientation , agitation, chronic drowsiness, confusion, hallucinations, or violence. There are numerous causes, including illness, medications, sensory changes, electrolyte imbalance, and sleep deprivation. There are drugs that can aid in the management of delirium symptoms, but time and environmental adjustments are also effective in alleviating symptoms. Some therapies include the removal of all medications that could alter a patient's mental status (e.g., benzodiazepines ,opioids) and the use of hearing aids and eyeglasses to reduce the risk of sensory disorientation. Additionally, it is essential to maintain a balanced sleep-wake cycle (Nakazato R, Park H-B, et al.2013)

2.7.Postoperative management

When it comes to managing patients and providing high-quality care following medical procedures, nurses play a pivotal role. They must demonstrate high levels of critical thinking, critical judgment, and clinical

inquiry competencies as part of a robust relational practice. Patients who have undergone cardiac surgery might greatly benefit from the care of nurses in terms of both survival and the quality of life they enjoy as a result of the procedure. Administration of Respiratory Condition and Safe Extubation Improvements in anesthetic procedures and delivery have reduced the number of patients requiring intubation times.

Before surgery, a thorough preoperative evaluation is undertaken to determine the patient's health for probable anesthetic problems and respiratory status control. Knowledge of concomitant illnesses, smoking, medications, and nutritional status can aid in guiding post-procedure care, personalizing the treatment plan, and achieving the goal of expedited extubation. Despite the fact that certain patients, particularly those who are off-pump, Although extubation may be performed in the operating room, the majority of valve surgery patients are admitted to the hospital. Patients who are intubated and require mechanical ventilation. Methodologies for weaning timing extubation vary by location and region; patients are often extubated four to twelve hours after surgery. 16-hour or longer intubation is connected with a bad prognosis. Readiness for extubation is assessed by spontaneous breathing trials (SBT) and patient condition (Nishimura RA, Otto CM, et al. 2017).

A comprehensive evaluation of the patient that establishes adequate pulmonary function, the gag reflex and existence of cough, hemodynamic stability and adequate muscle strength. A HR below 140 beats per minute and a spontaneous respiratory rate below 25 breaths per minute and normal body temperature. Utilization of opioids with caution with the administration of Extubation with sufficient pain control is advised since it can reduce complications. Reduce breathing effort and respiration rate and depth among

the complications associated with extubation are pulmonary edema and hypoventilation hypoxia, bronchospasm, laryngospasm, the requirement for re-intubation, and other complications interventions designed to provide ventilation and oxygenation (Baumgartner H, Falk V, et al .2017)

2.7.1. Pain Management

Pain is linked to prospective and actual tissue damage, tachyarrhythmias, shallow respiration, and poor recovery .A patient's respiration is shallow puts them at danger for atelectasis and development of pneumonia. Although patients' experiences differ, Considering pain thresholds, 75% of heart surgery patients report discomfort(Ziehm S, Rosendahl J, et al.2017)

2.6.2. Postoperative pain.

Pain's etiology is multifaceted. Incisions on the skin, sternal retraction, and tissue damage caused by the installation of drains, tubes, and wires releases pro-inflammatory .Mediators that activate afferent nociceptive fibers and induce nociceptive transmission pain. Musculoskeletal damage resulting from sternal retraction and possible rib fractures. Surgical procedures might result in musculoskeletal pain. Causes of pleuritic discomfort include the chest tubes or other drains may be used. It is essential to identify probable pain reasons to be able to effectively treat pain with multimodal analgesia to improve recovery through promoting early mobilization and decreasing opioid use.Opioids are an effective treatment for after cardiac surgery pain, and they are particularly useful for discomfort during rest. However, there is a restricted treatment window and growing worry.Numerous adverse effects, including vomiting, nausea, constipation, disorientation, urine retention,

postoperative ileus, and kidney failure, are reported, especially at higher doses. Opioids should be incorporated within a comprehensive treatment plan that also includes local anesthetics, non-opioid anti-inflammatories, and non-pharmacologic techniques. The delivery of the tailored pain strategy is guided by periodic pain evaluation (Baumgartner H, Falk V, Bax et al.2017).

The use of cardiopulmonary bypass (CPB) is typically accompanied by hypothermia, and patients must be warmed to at least 95 degrees Fahrenheit. 34°C. Patients are deemed hypothermic if their body temperature falls below 36 degrees Celsius.

Age, co-morbidities, and comorbidities are risk factors for prolonged hypothermia. Procedure length, exposed skin, and peripheral vascular disease.

Patients who are hypothermic are more likely to experience ventricular dysrhythmias and have a lower threshold for ventricular fibrillation. Anesthesia-related recovery delays can also be caused by peripheral vasoconstriction and increased systemic vascular resistance, elevated oxygen demand, reduced carbon dioxide production, and alterations in medication metabolism. Platelet function and the coagulation cascade are both altered by hypothermia-induced coagulopathy. Rewarming can be sped up with the help of forced air warming equipment, such as a blower that blasts warm air over the body's surface to warm by convection, as well as the more traditional methods of covering yourself with a hat, a blanket, and some socks. Regular temperature monitoring is necessary for optimal rewarming (Al-gersha, K., et al. 2018) .

2.7.3. Complication of surgical site infections

Associated with higher morbidity and mortality in post-valve surgery patients, with sternal and mediastinal infections having the highest rates of morbidity and mortality as many as 5% of patients. SSI are often avoidable and are associated with substantial morbidity and mortality poorer results and rising costs. There are preoperative, intraoperative, and postoperative risk factors. Among the preoperative conditions are obesity, Diabetes, smoking, renal insufficiency, poor nutrition, COPD, and big breasts are risk factors.

Intraoperative dangers include blood transfusions, prolonged operation time, and infection. Hypoxia, increased traffic in the operating room, and compromised asepsis were observed.

Transfusions, inadequate cardiac output, extended mechanical ventilation, and sternal instability are postoperative risk factors. SSIs within 30 days are classified as superficial, deep, or organ/space. pertaining to surgery. Superficial wounds involve only the skin or subcutaneous tissue around the wound site.

The evaluation of the wound may indicate purulent discharge, discomfort, inflammation, redness, and warmth. Mediastinitis is an example of a deep wound infection that may result in surgical site dehiscence and sternal instability. In severe situations, sternectomy and flap placement may be used as a therapy. Preoperative strategies to avoid wound infection commence with hair removal. Removing the surgical scrubs, administering antibiotics, and glycemic control to assist. Reduce mortality, duration of stay, and enhance the opportunity for healing. Postoperatively, the incisional dressing should be evaluated every 4 hours while the patient is in the operating room and

intensive care, with the initial dressing left in place for 24 to 48 hours (Brown JK, Singh K, et al 2018)

2.7.4. Activity

Reduces surgical complications and accelerates functional recovery rehabilitation, improves general health, shortens hospital stays, and decreases costs. morbidity and death occurred 22 times. Self-care should be encouraged in the patient and expand their activity to the greatest extent possible. For safe ambulation or activity, the nurse should check vital signs prior to and throughout the activity, keeping a close eye out for heart problems.

Rate rise of 20 beats per minute or systolic blood pressure fluctuation of 20 mmHg or more with dyspnea, tiredness, diaphoresis, chest pain, or chest discomfort that may indicate heart disease. complications. The patient should be urged to take unbroken rest periods. sleep and proper diet. In some cardiac surgery programs, mobility equipment is utilized. Teams that arrange possibilities for mobility have been beneficial .

Access to mobility aides, shower chairs, and sitting to complete self-care can reduce the amount of energy expended to maintain the equilibrium between oxygen supply and demand. physiotherapy and occupational therapy

Physiotherapy appointments are beneficial for addressing workouts in this patient population.improve strength and create goals for physical activity. Physiotherapy is a correlated with a reduction in respiratory problems and muscle wasting enhanced cognitive function, decreased mechanical ventilation duration, and lowered morbidity and mortality (Lu SY, Lai Y, et al.2020)

2.7.5. Nutrition

After valve surgery, nutritional support is a therapeutically relevant element of treatment. Appropriate diet aids recovery, boosts energy reserves, and can prevent disease .

Prior to surgery, a nutritional evaluation should be undertaken whenever possible to anticipate postoperative nutritional. Patients who are well-nourished before to surgery had better outcomes than those who are malnourished. are susceptible to additional difficulties. Prior to surgical procedures, patients are obliged to fast resulting in catabolic stress, insulin resistance, nutritional deficits, and unfavorable immune function.

In most cases, intravenous fluids are administered prior to surgery and are continued until oral intake is resumed. Delays in proper nutritional support and poor calorie intake might result in nutritional deficiencies. With adequate knowledge of nutritional status, the team can monitor daily dietary intake with the objective of tolerating at least 80% of the specified diet by the third postoperative day (Leon, A. S., Franklin, B. A., Costa, F., et al. 2018).

2.8. Discharge Plan

Patients' discharge planning, instruction, and mentoring are crucial components. Journey of care and transition home in safety. Included in discharge planning components are an tailored plan for returning home after heart surgery that addresses social support, activity (e.g., progressive exercise program, activities of daily living, driving), nutrition, and management of probable problems. The objective is to enable the safe return of patients to their homes so they can begin their rehabilitation and reduce the risk of

hospital readmission and other issues (Coleman SR, Chen M, Patel S, et al. 2019)

2.8.1. surgical site care

Teaching patients to monitor their surgical sites and spot signs of infection is a crucial function of nurses. The incision should be cleaned daily with gentle soap and warm water, although harsh scrubbing should be avoided. Patients should evaluate the affected area for increased pain, redness, edema, drainage, site separation, and fever, and report any concerns.

In the extremely unusual occasion that the sternum shifts or pops or cracks during movement, nurses must emphasize the need of getting medical attention.

During the first year after surgery, sun exposure should be managed with the understanding that lotions, creams, and oils applied to the surgical site may result in a darkening of the scar after sun exposure and should be avoided. For up to six months, the region around the incision may feel numb, tickle, or be itchy (Leon, A. S., Franklin, B. A., Costa, F., et al. 2018).

2.7.2. Diet-Related Factors

With a focus on small portions, a high-quality dietary intake can promote recovery. The consumption of regular meals and a healthy diet. This is especially pertinent given the frequent loss of appetite, altered sense of smell, and complaints of a metallic taste, as well as the presence of a metallic taste, all point to a possible cause. The delayed recovery of sensory function following cardiac surgery. A diet abundant in vegetables, fruits, grains, nuts, and seeds can promote general health. Patients should be counseled to reduce their consumption of sugary beverages and alcohol. If the patient is taking

warfarin, there may be additional food restrictions (Toppe C, Goetzenich A, et al. 2017).

2.8.3. Exercise and Personal Care

Return to initial physical strength can be time-consuming and unpredictable.

Trajectories based on several patient-level variables. As a part of the release planning, nurses should assist patients in securing sufficient social support throughout the first two weeks following surgery. Individuals return to work at different times. Factors and physical demands of the job; the majority of patients can return to work approximately 4–6 weeks after discharge.

Physical therapists, nurses, and other allied health providers can provide valuable information and guidance to guide correct mobility and activity constraints, including lifting restrictions greater than 10 pounds (4.5 kilograms) or early morning pushing or dragging of big objects recuperation period

2.8.4. Psychological Well-Being

Due to cardiac surgery, quality of life (QOL) and mental health may be impaired hospital readmissions, greater symptom load, and other variables. A change in physical consciousness upon discharge.

Patients noted a deficiency improvement in health condition for three to six months following valve surgery. Depression is characterized by 15–60% of patients, and is associated with a higher risk of mortality and decrepitude. Psychiatric disorders are related to poor health. Quality of life and noncompliance with postoperative regimens. Women, single, older, and

unemployed patients and those with lengthy hospital stays are at greater risk for depression and other mental health problems. Sleep disorders, including insomnia and disrupted diurnal cycles, sleep disorders can be particularly difficult to manage. patients; patient education regarding sleep health, coffee avoidance, and other stimulants. Moreover, adopting appropriate sleep habits can improve patients' recuperation.

2.8.4. Pharmaceuticals

Individuals from the interdisciplinary group must instruct patients about medication use, drug interactions, and the value of self-management. It is recommended that patients with a mechanical valve, bioprosthesis, or mitral repair who also have atrial fibrillation, heart failure, or an ejection fraction (EF) of less than 30% take oral anticoagulants permanently. Patients who have had bioprosthetic or mitral valve replacement with a prosthetic annuloplasty ring are advised to take anticoagulant medication for the first three months after surgery.

The ideal INR for patients with mechanical valves is between 2.5 and 3.5; patients with thrombogenic risk factors commonly target an INR of 2.5, while those at higher risk for thrombosis need an INR closer to 3.5. Mitral, tricuspid, or pulmonary valve position, a previous thromboembolic event, atrial fibrillation, and a reduced ejection fraction of 35% are all patient-related risk factors for thrombosis (Bertrand PB, et al.2019).

When the INR is greater than 4.5, the risk of bleeding increases, and the risk multiplies exponentially when the INR is greater than or equal to 6.0.

Patients using anticoagulants should utilize a toothbrush with soft bristles, an electronic razor, and a careful touch while caring for surgical sites

or washing sensitive skin. Patients may endure postoperative pain, necessitating pain medication at discharge. Priority should be given to providing the essential knowledge regarding medicine use, purpose, and potential side effects.

The goal of administering pain medication is to reduce suffering. A side benefit of pain alleviation is a decreased likelihood of developing pneumonia. If pain is treated, patients are more likely to engage in exercises such as walking and deep breathing(Albert, N.M., 2018).

2.9. Care at home following bypass operation

Care following bypass surgery attempts to lower heart disease risk factors and includes initiatives to assist patients and family members quit smoking, regulate high blood pressure, improve cholesterol levels, begin regular exercise, if necessary, lose weight, and reduce stress. Some of these adjustments can be addressed by modifying dietary and physical activity patterns. Nevertheless, lifestyle changes alone may not be sufficient, and drugs are frequently required.

Discharge from the hospital patients with a straightforward CABG often leave the hospital after five days. In some instances, hospital stays are extended. In the event of difficulties, discharge is postponed until the patient's condition is stable (Flint N, Wunderlich et al 2020).

Prior to leaving the hospital, it is essential that the patient and family engage in and comprehend the discharge plan. Ensure that all questions are addressed and acquire written instructions on how to administer all medications (new and old). After bypass surgery, it is typical to begin new drugs and discontinue or alter the dosages of old ones.

Drugs – The majority of bypass surgery patients are sent home with prescriptions for many medications, the majority of which are taken daily. Some of these medications enhance survival, reduce the risk of complications, and prevent or cure recurrent chest discomfort.

Aspirin is an antiplatelet drug used to prevent the formation of blood clots that might obstruct coronary arteries or coronary bypass grafts. Typically, it is suggested indefinitely.

Beta blockers slow the heart rate, reduce blood pressure, and reduce the oxygen requirement of the heart. They are administered to certain individuals with high blood pressure, heart failure, certain rhythm alterations, or a heart attack, as well as certain patients in whom bypass surgery is not anticipated to alleviate all symptoms of angina. If a patient is unable to tolerate beta blockers, calcium channel blockers may be replaced.

Angiotensin converting enzyme (ACE) inhibitors are frequently employed to treat hypertension.

Captopril (trade name: Capoten), enalapril (trade name: Vasotec), lisinopril (example brand names: Zestril or Prinivil), and ramipril are ACE inhibitors (brand name: Altace).

An angiotensin II receptor blocker may be recommended to patients who cannot take an ACE inhibitor (typically due to a persistent cough) (ARB). These similar medications are adequate substitutes (Joseph J, Naqvi SY et al 2017).

Losartan (trade name: Cozaar), valsartan (trade name: Diovan), and irbesartan are examples of ARBs (brand name: Avapro).

Cholesterol-lowering therapy — After CABG, nearly all patients are given a drug to reduce their lipid levels. Reducing cholesterol can be advantageous both before and after CABG, as it can slow the progression of atherosclerosis in both native and transplant arteries.

Other drugs — Other medications may be administered on a short-term basis to avoid the onset of heart arrhythmia, to alleviate the pain associated with healing incisions, or to promote regular bowel movements (Alice Y.M. Jones 2014).

Even for those with readings within the normal range, lipid treatments are suggested. Less than 70 mg/dL (1.8 mmol/L) is considered optimal for bad cholesterol (LDL or low density lipoprotein).

Statins are the most prevalent drugs used to reduce cholesterol levels.

Wound care – Upon hospital discharge, patients are typically given instructions on how to care for chest and/or leg wounds. It is essential to carefully adhere to these directions and contact a healthcare provider promptly if any questions or concerns arise (Doherty, P. J., & Harrison, A. S. 2018).

Avoid heavy lifting and severe shoulder movement (e.g., tennis, baseball, and golf) for six to eight weeks after surgery to allow the breast bone to heal completely (sternum)

When to seek medical attention — If the patient develops any of the following signs or symptoms of a wound infection, he or she should call a healthcare practitioner immediately. The majority of wound infections arise within fourteen days of surgery.

Fever above 100.4o F (38o C).

Pain that is new or worsening in the chest or around the incision site

A quick heartbeat

Redness, bleeding, or pus-like drainage from an incision (Artinian NT, et al.2022).

2.10. Cardiac Rehabilitation Program

Participation in a systematic, all-inclusive cardiac rehabilitation program is beneficial for the majority of bypass surgery patients. Participants in cardiac rehabilitation typically have hospital or clinic appointments many times each week, allowing them to live and sleep at home. The potential benefits of rehabilitation include an increase in heart function, a decrease in heart rate at rest and during activity, and a decreased risk of death or the development of heart disease complications.

Among the components of cardiac rehabilitation include exercise, the reduction of risk factors, and the management of stress, anxiety, and depression. The benefits of cardiac rehabilitation are only seen when this multifactoral strategy is employed. In other words, a single component is insufficient (Ades PA, et al .2019)

Exercise — Several studies have demonstrated that exercise improves cardiovascular health. Importantly, the first step in beginning an exercise regimen is to assess the potential risk of heart and/or blood vessel issues. This is often accomplished through a supervised treadmill exercise test. Although nearly everyone may exercise safely after being released from the hospital, the intensity and duration of exercise should be modified based on the degree of a patient's cardiac disease.

Risk categories for exercise — Risk categories are a means to describe the risk of cardiovascular (heart-related) issues associated with physical activity. Each category has its own supervision and exercise limitation requirements. People in risk group A are generally healthy, do not need medical supervision while exercise, and have no restrictions on exercise time or intensity. People in exercise category D, on the other hand, have tight activity restrictions and should not exercise even under close medical supervision. The majority of bypass patients fall under categories B or C.

Class A: Individuals who appear to be in good health and for whom there is no indication that exercise increases their heart-related risk.

Class B - Individuals with established, stable coronary heart disease. These individuals have a reduced risk for cardiovascular problems when engaging in intensive exercise.

Class C: Individuals with a moderate to high risk of heart-related problems during physical activity. People in this category include those who have had several heart attacks and those who have chest pain at relatively low levels of exertion. Patients with certain positive exercise test results may also be included in this category.

Class D: Individuals having an illness that is unstable and who should not participate in an activity program (Lancellotti P, et al .2017)

During cardiac rehabilitation, a skilled clinician will collaborate with the patient and the patient's primary healthcare practitioner to establish a safe and beneficial exercise regimen. The program will take into account the patient's fitness level, heart health, physical constraints, the amount, intensity,

and duration of exercise required to promote heart health, as well as the requirement for supervision (Doherty, P. J., & Harrison, A. S. 2018).

Type of exercise - The exercise should involve big muscle groups and aerobic activity. Examples include walking, jogging, cycling, rowing, and stair climbing.

The suggested frequency of physical activity is three to five times a week.

It is essential that each session include a 5- to 10-minute warm-up, a conditioning phase of at least 20 minutes, and a 5- to 10-minute cool-down. Eliminating the cool-down period can increase the risk of cardiovascular problems.

Intensity - The intensity of exercise is one of the most significant components of the exercise prescription. This is determined by the heart rate or amount of effort of the patient. There are numerous formulas for calculating the optimal maximal heart rate for each subject.

- Exercise progression – Most individuals can progressively increase their exercise intensity over time. Incorporating beneficial exercise into the daily routine is also possible by taking a brisk walk or engaging in active play with children or grandchildren (Leon, A. S., Franklin, et al. 2018).

- Supervision – Class C patients should participate in a medically supervised exercise program in which their electrocardiogram (ECG) is monitored during activity. Advanced life support equipment (such as a defibrillator, drugs, and trained workers) should be readily available. This level of supervision should last at least eight to twelve weeks.

Class B patients benefit from an ECG-monitored, medically supervised program for the first 6 to 12 sessions. Consequently, a home-based fitness program is effective and safe (Ades PA, Maloney A, et al 2019)

2.11. Lower cardiovascular risk factors

Several variables raise the likelihood of getting heart disease or hasten its progression. Even if a person already has heart disease or a heart attack, reducing or eliminating these risk factors can be beneficial. The strategies for mitigating hazards are mentioned below (Ralapanawa, U., & Sivakanesan, R. (2021) .

Adhere to a heart-healthy diet — Dietary counseling is beneficial for individuals who need to lose weight or lower their cholesterol levels. A trained dietician is the best person to counsel with foods that are beneficial and those that are harmful, portion sizes, calorie recommendations, and realistic approaches to change unhealthy eating patterns. In general, a heart-healthy diet involves replacement fatty meats, cream, cheese, and high sugar or refined carbohydrate items with veal, lean meat, poultry, fish, whole grain pasta, lentils, corn, rice, beans, nuts, or vegetarian dishes. Sugar is a hidden element in many processed foods and is just as bad as those high in fat. It is normal for low fat foods to have a high sugar content and, hence, a comparable calorie count (Macchi, et al 2015).

The majority of cardiac rehabilitation clinics employ a nutritionist with education and experience in guiding those recuperating from a heart attack on their diet.

Smoking dramatically raises the risk of coronary heart disease and heart attack. Cessation of smoking can significantly minimize these hazards. The

chance of dying from coronary heart disease is approximately halved one year after quitting smoking, and the risk continues to fall over time. In other studies, quitting smoking reduced the risk of heart attack to that of nonsmokers within two years.(Lancellotti P, Ancion A, et al .2017)

Group programs, nicotine patches, gum, or nasal spray, or a prescription medicine may be recommended by cardiac rehabilitation programs to assist with quitting smoking. Treat high blood pressure and high cholesterol — Medications to treat high blood pressure and high cholesterol are typically prescribed following bypass surgery. It is essential to take these medications as prescribed.

Manage diabetes – Individuals with diabetes have a greater risk of experiencing problems following bypass surgery. Good glucose management can assist to lower the risk of these consequences as well as others. Losing weight, regulating the diet, exercising, routinely monitoring blood glucose levels, and taking oral hypoglycemic medicines (for persons with type 2 diabetes) or insulin helps achieve tight control (for people with type 1 and sometimes type 2 diabetes). Psychosocial treatment — After bypass surgery, despair, anxiety, and denial are prevalent, affecting up to 40 percent of patients. Depression can diminish a person's capacity to exercise, lower their energy levels, increase their weariness, and diminish their quality of life and sense of well-being. Women, and particularly younger women, are particularly susceptible to depression.

These signs can lead to difficulties within the family, marriage, and workplace. Individual or group psychotherapy, and occasionally antidepressant prescription treatment, might be beneficial. Numerous cardiac

rehabilitation programs employ professional personnel, such as psychologists, psychiatrists, and social workers, to assist with the management of these concerns. Depression and anxiety treatment can improve an individual's long-term attitude and overall sense of well-being. (Agvall B, Alehagen U, et al .2013)

Reduce stress — Chronic stress at home, at the workplace, or with finances can increase the risk of heart attack, stroke, and chest pain. In an effort to lessen these risks, many cardiac rehabilitation programs teach patients how to manage their stress levels (Bassak-Nejad, et al . 2013)

2.12. Nutritional education for patients

The food selections we make can have significant effects on our health. However, expert opinions regarding which and how much of these foods are best continue to shift.

This item discusses the associations between numerous foods or supplements and specific health issues and closes with basic dietary recommendations. Diets for weight loss are the subject of a separate topic overview (Azad, N., & Lemay, G. 2014).

2.12.1.Fruits and vegetables

Numerous studies have revealed the significant health advantages of fruit and vegetable consumption.

A higher consumption of fruits and vegetables is associated with a reduced risk of early death.

Fruits and vegetables reduce the risk of cardiovascular illnesses, such as coronary heart disease (CHD), stroke, and CHD-related mortality .

A high consumption of fruits and vegetables may minimize the incidence of cancer. Tomatoes and diets containing tomatoes may reduce the incidence of prostate cancer. At least five servings of fruits and/or vegetables are recommended daily (toppe C, Goetzenich A,et al.2017)

2.12.2. Fiber

A high-fiber diet can reduce the incidence of coronary heart disease (CHD), colon cancer, and mortality. Consuming fiber also protects against type 2 diabetes, and consuming soluble fiber (such as that found in vegetables, fruits, and particularly legumes) may help diabetics control their blood sugar levels.

Women should consume 25 grams of dietary fiber per day, while males should consume 38 grams per day. Numerous breakfast cereals, fruits, and vegetables are high in dietary fiber. By reading the product information panel on the side of the package, the amount of grams of fiber per serving can be determined (Aggarwal, et al. 2013).

2.12.3. Grains and sugar

Choose whole grain foods (such as 100 percent whole wheat bread, steel cut oats, and wild/brown rice) over processed grain items (like white bread and white rice). Eating whole grains on a regular basis has been demonstrated to aid in weight loss and reduce the chance of developing

diabetes. Regular consumption of refined grains and added sugars has been linked to obesity and an increased risk of developing diabetes.

2.12.4. Fat

Consuming foods with a greater proportion of good fats and fewer bad fats may minimize the risk of coronary heart disease (CHD).

It indicates that the type of fat consumed is more relevant than the total amount of fat consumed. Avoid trans fats in favor of polyunsaturated fats, especially the polyunsaturated fats found in fish (omega 3). Other potentially beneficial sources of polyunsaturated fats include some oils, nuts, and seeds (like corn oil, flax seeds, and walnuts).

Trans fats are solid at room temperature and are labeled as partially hydrogenated oils on food labels. They are found in numerous margarines, commercial baked goods, and oils maintained at high temperatures for an extended period of time, such as the frying vats in fast food restaurants .Newer evidence suggests that saturated and monounsaturated fats do not significantly increase or decrease the risk of coronary heart disease (CHD), while saturated fats do increase cholesterol levels(Coylewright M, et al 2020)..

It is essential, while reducing specific fats, not to substitute them with processed carbs (eg, white bread, white rice, most sweets). Increased consumption of refined carbohydrates may reduce levels of high-density lipoprotein (HDL) cholesterol (good cholesterol), hence increasing the risk of coronary heart disease .

2.12.5. Red meat

It is now well-established that consuming red meat frequently, especially processed meats (such as salami, pepperoni, and ham), is unhealthy. Numerous ailments, including cancer, cardiovascular disease, and diabetes, become more likely.

2.12.6. Folate

Folate is a type of B vitamin that is essential for red blood cell formation. Low folate levels in pregnant women have been associated to neural tube defects, a category of birth disorders that includes spina bifida and anencephaly. Folate-containing vitamins and folate-fortified breakfast cereal are advised as the best ways to guarantee optimal folate intake (Bonilla-Palomas, J. et al. 2013).

2.12.7. Antioxidants

The antioxidant vitamins consist of vitamins A, C, and E, as well as beta-carotene. In addition to containing these vitamins, numerous foods, notably fruits and vegetables, also possess additional antioxidant qualities. Studies have not conclusively demonstrated that antioxidant vitamins protect disease, particularly cancer, and other studies indicate that they may possibly be harmful. Except for those with specific vitamin deficits, there is little evidence to encourage the consumption of antioxidant vitamin supplements.

2.12.8. Calcium and vitamin D

In order to lower the risk of osteoporosis, adequate calcium and vitamin D intake is essential, especially for women. Depending on a patient's calcium

and vitamin D intake, a health care professional can help determine whether or not supplements are necessary.

Experts recommend that premenopausal women and men consume at least 1000 mg of calcium per day, whereas postmenopausal women consume 1200 mg. The optimal dose has not been found. No more than 2,000 milligrams of calcium per day should be eaten.

Adults over seventy years of age and postmenopausal women are advised to take 800 international units (20 micrograms) of vitamin D per day. Other adults do not have a clearly established optimum intake, however it is typically suggested that they consume 600 international units (15 micrograms) each day (Roth GA, Mensah GA, Johnson CO, et al. 2019).

2.13. General recommendations for a healthy diet

Consume an abundance of veggies, fruits, and whole grains while limiting your intake of red meat. At least five servings of fruits and vegetables should be consumed daily. Included among the suggestions for reaching this objective is: Include fruits and vegetables in every meal. Consume an assortment of fruits and vegetables. When fresh is inconvenient, frozen or canned produce may be utilized (Dreymueller, D et al. 2016).

- Eat vegetables as snacks.

Always have a bowl of fruit available for children to use as a snack.

Fruit should be added to cereal.

Replace refined grains with at least 50 percent whole grains (such as 100 percent whole wheat bread, brown rice, and whole grain cereal) (like

white bread, white rice, refined or sweetened cereals). Select smaller servings and consume them more slowly.

Reduce intake of unhealthy fats (trans fats and saturated fats) and increase your intake of healthy fats (polyunsaturated and monounsaturated fat). Choose chicken, fish, and beans instead of red meat and cheese to reach this objective. Use oils containing polyunsaturated and monounsaturated fats, such as maize, olive, and peanut oil, for cooking (Stoppe, C., et al. 2016).

Select margarines made without partly hydrogenated oils. Stick margarine has more trans fatty acids than soft margarine, namely squeeze margarine. Eat less store-bought baked items containing partly hydrogenated oil (like many types of crackers, cookies, and cupcakes). When eating at fast food places, choose nutritious options such as grilled chicken and salad .

Choose prepared or processed foods labeled(zero trans fat) when possible. They may still have some trans fat but likely less than equivalent products not branded zero

Avoid sugary drinks and excessive alcohol use. Tips for accomplishing this objective include: At meals and celebrations, choose non-sweetened and non-alcoholic beverages, such as water.

Avoid events that revolve around alcohol.

Avoid incorporating sugary drinks and alcohol into family gatherings (toppe C, Goetzenich A, et al 2017).

2.14 What to Anticipate at Home

It takes four to six weeks to recover from surgery and begin to feel better.

Normal symptoms include:

- pain around the incision on chest
- loss of appetite for two to four weeks
- mood swings and depression
- swelling in the leg from which the vein graft was taken
- itching, numbness, or tingling around the incisions on your chest and leg for 6 months or more
- trouble sleeping at night
- constipation from pain medications
- difficulty remembering things or feeling confused (or fuzzy-headed)
- fatigue or lack of energy If you already have lung problems, they could get worse. Upon returning home, some people may need to utilize oxygen.

For the first 30 days, you may feel arm weakness.

Self-care requires someone to remain at home for at least the first one to two weeks following surgery (Al-gersha, K., Haboubi, G., & Al-Asady, N. 2018).

Learn how to monitor your pulse and do so daily.

Every day, take a shower and carefully wash the incision with soap and water. Before your incision has completely healed, do not swim, use a hot tub, or take baths. Follow a diet that is heart-healthy.

If depressed, communicate with family and friends. Inquire with the health care practitioner about receiving counseling services.

Continue taking all of your medications for heart, diabetes, hypertension, and other diseases.

- Do not discontinue taking any medication without first consulting a physician.
- Provider may recommend antiplatelet (blood-thinning) medications such as aspirin, clopidogrel (Plavix), prasugrel (Effient), or ticagrelor (Brilinta) to maintain graft patency.
- If taking a blood thinner such as warfarin (Coumadin), further blood tests may be required to ensure the correct dosage.

Activity

Remain active during rehabilitation, but begin gradually.

- Do not remain standing or seated in one place for too long. Change your position a little bit.

After surgery, walking is beneficial for the lungs and heart. Do not worry about your walking speed. Take at time.

- Climbing stairs is acceptable, but use caution. Balance could be an issue. If necessary, stop halfway up the stairs to catch breath (Grimm, et al . 2015).

- Light housework such as setting the table, folding clothing, strolling, and ascending stairs should be acceptable.
- Gradually increase your activity level and intensity over the first three months.
- Do not exercise outdoors in extreme temperatures.
- Stop if feel short of breath, dizzy, or any pain in chest. Do not perform any activity or exercise that produces chest pulling or pain, such as rowing or lifting weights.
- Keep incision sites out of the sun to prevent sunburn.

Do not drive for four to six weeks following surgery. The twisting motion needed in rotating the steering wheel may cause incisions to tear. Ask your doctor when you may return to work, and plan to be out of work for six to eight weeks.

Do not travel for a minimum of two to four weeks. Ask provider if travel is permitted. Also, consult provider prior to engaging in sexual activity again. In the vast majority of cases, things will be fine after four weeks (Lu SY, Lai Y, Dalia AA 2020).

You might be referred to a structured cardiac rehabilitation program. Will receive information and guidance about activity, diet, and exercise under supervision.

Wound care

For the first six weeks after surgery, care must be taken when moving the arms and upper torso.

- Do not reach behind you.
- Do not allow anyone to tug on your arms for any reason, including when helping you move or get out of bed.
- Do not lift objects weighing more than 5 to 7 pounds (2 to 3 kilograms).
- Do not perform even mild chores for two to three weeks.

Before increasing arm and shoulder use, it is recommended to consult with a medical professional.

It is acceptable to brush your teeth, but you should not engage in any other activity that requires you to hold your arms over your shoulders for an extended amount of time. When utilizing your arms to get out of bed or a chair, keep them close to your sides.

The provider will explain how to treat a chest wound. You will likely be instructed to clean your surgery wound daily with soap and water, then pat it dry (Winkelman C, Chiang L. 2017)

2.15 When to Contact a Physician

- Experience chest pain or shortness of breath that persists even resting;
- Pulse seems erratic — it is either very sluggish (less than 60 beats per minute) or very fast (more than 100 beats per minute) (over 100 to 120 beats a minute).
- Experience vertigo, fainting, or extreme fatigue.
- Have a severe and persistent headache.

- Are experiencing a persistent cough • are coughing up blood or yellow or green mucus
 - Having trouble taking any of your heart medications.
 - Weight increases by more than 2 pounds (1 kilogram) per day for two consecutive days.
- wound alterations It is red or bloated, it has opened, or it is producing more discharge.
- Have chills or a temperature above 101 degrees Fahrenheit (38.3 degrees Celsius) (Tam, D. et al.2018)

2.16 Previous study

First study

(Ghisi GLM, Rouleau F,etal 2020) Effectiveness of an Education Intervention Among Cardiac Rehabilitation Patients in Canada: A Multi-Site Study

Although patient education is considered a core component of cardiac rehabilitation (CR) programs, to our knowledge, no educational program designed for CR has been standardized in Canada. This absence of standardization may be due to a lack of reliable resources to educate these patients. The objective of this study was to assess the effectiveness of an education intervention in improving knowledge and health behaviours among CR patients in 3 sites in Canada.

methods CR patients were exposed to an evidence- and theoretically based comprehensive education intervention. Patients completed surveys assessing

knowledge, physical activity, food intake, self-efficacy, and health literacy. All outcomes were assessed pre- and post-CR. Paired t tests were used to investigate variable changes between pre- and post-CR, Pearson correlation coefficients were used to determine the association between knowledge and behaviours, and linear regression models were computed to investigate differences in overall post-CR knowledge based on participant characteristics.

Results a total of 252 patients consented to participate, of whom 158 (63.0%) completed post-CR assessments. There was a significant improvement in patients' overall knowledge pre- to post-CR, as well as in exercise, food intake, and self-efficacy ($P < 0.05$). Results showed a significant positive correlation between post-CR knowledge and food intake ($r = 0.203$; $P = 0.01$), self-efficacy ($r = 0.201$; $P = 0.01$), and health literacy ($r = 0.241$; $P = 0.002$). Education level (unstandardized beta = -2.511 ; $P = 0.04$) and pre-CR knowledge (unstandardized beta = 0.433 ; $P < 0.001$) were influential in changing post-CR knowledge.

Conclusion In this first-ever multi-site study focusing on patient education for CR patients in Canada, the benefits of an education intervention have been supported.

Second study

Hanaa H. Ahmed*, Yousseya M. Ibrahim et al 2018 . The Effect Of Early Activity On Patients Outcome After Open Heart Surgery.

The postoperative phase is the most critical period for open heart surgery during which many serious and fatal complications can occur. Early physical activity can prevent such complications. The role of the critical care nurse is crucial in this concern. The Objectives present study aimed to examine the

effect of early activity on patient's outcome after open heart surgery. Design A comparative experimental design was applied.

Setting This study was conducted in the Intensive Care Unit (ICU) of Open Heart Surgery at Mansoura Main University Hospital.

Sample Forty adults patients of both sexes undergoing open heart surgery using cardiopulmonary bypass and showing hemodynamic stability.

Method An activity regime was applied to 20 patients who underwent such surgery. The results were compared to a matching control group. Early activity included positioning (supine, left and right sides), early ambulation (dangling, standing near the bed, chair sitting and walking) and chest physiotherapy procedures (coughing, breathing exercises, percussion, vibration and

incentive spirometry). Results Comparing the obtained data revealed a better outcome among the early activity group.

Conclusion Combination of early activity and chest physiotherapy ameliorates the outcome of patients after open heart surgery. Performing early activity to such patients is recommended.

Third study

(Nirmal Kaur, Prem Verma, Rana, Sandip Singh 2017) Effectiveness of planned preoperative teaching on self-care activities for patients undergoing cardiac surgery

The objective of the study was to assess the effect of planned preoperative teaching on self-care activities for patients undergoing cardiac surgery.

A quasi-experimental design was used based on convenient sampling technique. Total 40 subjects 20 each in the experimental (Group I) and control

group (Group II). In each group an equal number of subjects 10 each were included undergoing two types of cardiac surgery i.e. open (Group A) & closed (group B) heart A checklist with 40 items was framed to assess the level of performance during preoperative period, before the implementation of teaching on self-care activities and as well as on the 4th and 7th postoperative day. The control group did not receive any preoperative teaching. Data analysis showed that statistically there was no significant ($P>0.05$) difference of pretest performance scores was found between the two groups. A comparison of posttest performance scores between both groups shows that experimental group had strongly statistically significant ($P<0.001$) increase in performance of total scores as well as each variable of self-care activities. The findings of the study reflect that the preoperative teaching is an extremely effective media to increase the level of performance and enhance the early recovery of the subjects.

Forth study

Sundus H. Ali ,Shirroq M. Jacoub 2016) .Effectiveness of Preoperative Psycho-educational Program on Stress of Cardiac Surgery Patients

The study aimed to determine the effectiveness of preoperative psycho - educational program on cardiac surgery patients information and their level of stress. And find out the differences in the Psycho educational program with regard to patients demographic characteristics such as age and gender.

Methodology Aquazi-experimental study was carried out to determine the effectiveness of preoperative education program on stress for cardiac surgery patients in Baghdad city from the 28th of March, 2010 , to 19th of September ,2011.

The preoperative psycho - educational program, as well as the questionnaire was constructed as a tool of data collection for the purpose of the study. Purposive (non probability) samples of 40 patients who have undergone cardiac surgery (CABG & VR) are selected from Ibn AL-Bitar Specialized Center for cardiac surgery. The researcher divided the samples into two equal groups (the study and control groups) .

Data was analysis through the use of the suitable statistical methods.

Results the results of the study indicates that there are significant differences in the patients knowledge towards cardiac surgery in the study & control groups through pre-test, post-test.

Recommendations: The study recommended that such program should be implemented in the form of session for the patients before undergone cardiac surgery to prepare them to cope with the stress and improve their knowledge.

Fifth study

(Lisa O'Brien PhD, et al 2013) Pre-surgery education for elective cardiac surgery patients: A survey from the patient's perspective

Multidisciplinary pre-admission patient education is commonly recommended for elective surgery patients, and may involve the provision of written information and presentations from the health team. However, the occupational therapy role with elective sternotomy patients in our setting is confined to the post-operative period. We aimed to evaluate cardiac surgery patients' perception of the effectiveness and timing of pre-admission multidisciplinary written information and post-operative verbal education provided by occupational therapy.

Methods this cross-sectional study involved a written survey, which was posted to 375 people who had undergone cardiac surgery in 2009–2010. Questions were designed to elicit patient perceptions of both pre-operative written information and post-operative education relating to post-operative precautions and return to activity received from occupational therapy.

Results there were 118 surveys returned equalling a 31.4% response rate. Eighty-nine per cent of respondents recalled receiving and reading the pre-surgery information booklet, and this was significantly correlated with feeling prepared for the post-operative experience and adherence with precautions ($P < 0.0001$). Exactly 30.4% of respondents stated that they experienced stress and anxiety in relation to post-operative expectations, and 47.3% felt the information provided in the occupational therapy education sessions would have been more beneficial for their understanding and coping if provided prior to surgery.

Conclusions multidisciplinary written pre-surgery education appears to be providing patients with a good understanding of what to expect following surgery. The results suggest that pre-operative verbal education from occupational therapy would assist in reducing anxiety in a subgroup of patients.

Chapter Three

Methodology

3.1.Methodology:

This chapter will review the design of the study and all the steps and preparations performed to achieve it, starting with the design of study, administration of permission, choose of study setting, sampling, validity, pilot study, data collection methods, and statistical analysis of data .

3.2. Design of the Study :

To achieve the objectives of this study, a quasi-experimental design with pre- and post-testing for both the studied and control groups was employed. started from 20th August 2021 to 10th September 2022.

3.3. Administrative Agreements:

Before gathering the information written authorized permissions are obtained to conduct the study as shown by appendix (B).

1. The researcher obtains an agreement from the Nursing Science Department in College of Nursing / University of Babylon.
- 2.The premier consent was acquired from the development and training center in the MOH.
- 3.An formal consent was acquired from the Babylon health administration and AL-Najaf Alashraf from shaheed almehrab for cardiac disease and surgery and Al-najaf Center for cardiovascular Surgery and cardiac catheterization

3.4. Setting of the Study:

This study conducted in Shaheed Almehrab for cardiac disease and surgery and Al-najaf Center for cardiovascular Surgery and cardiac were

the designated sites for data collection. These centers were selected for the following reasons:

1. There are only two cardiac surgery center in middle Euphrates .
2. These centers received all adult patients with cardiac diseases who attend the clinics for treatment and follow up.
3. These centers have medical departments and cardiac care unit and outpatient department .
4. A large number of patients refer to the centers for treatment and consultation , allowing for data collection completion within a limited time period.
5. Cooperative staff for educational Program implementation .
6. Availability of physical requirements such as classrooms, chairs, tables, computers, data show, and lights during the implementation of the program.

3.5. The Study Samples :

Non-probability purposive sample selected from the target population who are met the specific criteria during specific time interval. A total sample of (84) patients who refer to the centers for treatment and consultation during the study period, participants must have met the study's requirements and consent to participation .10 patients for pilot study were excluded from the study .Ten patients for assessment need .32patients the study group selected from Shaheed Almehrhab for cardiac disease and surgery and thirty two were assigned to the control group selected from Al-najaf Center for cardiovascular Surgery and cardiac catheterization .four patients for the study group were

dropped out of the study for the following reasons : two patients who going to the ibn albitar hospital for doing surgery in this center ; two patients not complete the session of education program .Now a total are (60) patients in the study having the same inclusion criteria. Those patients are divided into two groups: (28) patients act as study group and the other (32) patients act as a control group the patients were frequent visits to these centers for follow up and consultation.

3.5.1. Inclusion Criteria

The criteria for the selection of the study sample were:

3.4.1. 1. Patients undergoing open heart surgery

3.4.1. 2. Patients who agreed to participate in the study.

3.4.1. 3. Patients more than 20 years old

3.4.1. 4. Arab nationality.

3.4.1.5. Oriented patients who did not experience any alteration in their degree of consciousness.

3.5.2. Exclusion Criteria

3.5.2. 1. patients who scored higher than 60% on the pre- test .

3.5.2.2. patients with previous cardiac surgery

2.6. Steps of the Study

The present study was conducted at the following step:

2.6 .1. Assessment of patients' need for an Educational program for self-care of cardiac surgery patients

To accomplish this phase of the study, we used a multiple choice questionnaire format used .

The objectives of this assessment was to assess the knowledge of the patients about self-care . Test applied to a sample consisted of (10) patients undergoing to open heart surgeries during the period from 12th November 2021 to 20th November 2021 in the outpatients department of cardiac surgery and cardiac care units.

The questionnaire which is related to assessing the patients need for educational program is composed of (10) questions for knowledge. Under the strict supervision of the investigator, each patient was given a time period between (10-15) minutes to answer the questions. The results of the assessment revealed that the majority of the patients (70%) have knowledge deficit in self care according to assessment result the patients' needs to construct an educational program for these patients in order to improve their knowledge toward self-care .

3.6.2. Construction of the Educational Program

The educational program was constructed based on the results of patients' needs assessment and on information gained from reviewing the relative scientific literature, previous studies.

3.6.3. Process of the program

The educational program consists of three key sections, and it was produced with respect to essential knowledge about Self-Care for patient undergoing open heart surgery .

The presentation of the educational program started from the period (from 25th January 2022 to 20th March 2022) between the sessions distributed according to the patients according dealing with them, each session take about (30-40minites), sample group session dependent related to the social with consider as protective measure related to covid 19 face mask provided the patient during their attendance to the session which used to presented in the center hall.

3.7.3. The study Instrument:

To evaluate the effectiveness of the educational program on the patients' was developed to assess the knowledge toward self-care ; it consisted of three parts:

3.7.4.Part: I: The Socio- demographic Characteristics of the patients :

This part is concerned with the collection of demographic data obtained from the patient by interview questionnaire sheet such as[age, gender, marital status, level of educations, address , occupation . The six questions offered response options of a fill in type (Appendix C).

3.7.5.Part II: Clinical Information :

This part was constructed to collect clinical information .It consisted of 5 questions :

1-Chronic disease(s)

2-Smoking

3- Previous hospitalization related cardiac disease

4- would you receive self-care education

5-Types of surgery

3.7.6.Part III. The questionnaire knowledge related to self care management of patient undergoing open heart surgeries

A questionnaire knowledge check list was constructed by the researcher to evaluate the patients knowledge .

The questionnaire checklist for patients was composed of 6 items related to self care management of patient undergoing open heart surgeries.

These items were rated according to correct and incorrect answer

the questionnaire consist of :

1. Related cardiac composed of 4 items

2. Preparation for surgery composed of 6 items

3. Patient Activity composed of 25 items

4. Problems it takes 4 to 6 weeks composed of 7 items

5. Nutrition and Medication composed of 9 items

3.7.7.Rating scoring

mean scores (1.5) due to((yes)) and ((no)) scales through two levels of assessment, under cut off point (1-1.5), and above cut off point (more than 1.5); and items based assessment based on the mean of scores (1.5) by two levels of assessment, poor (1-1.5), good (more than 1.5) for knowledge.

3.8. Group Assignment

3.8.1 Control Group

patients in the control group were participant in study without intervention

3.8.2. Study Group :

The study group received the same questioner as the control group; plus an educational program to increase the patients knowledge about self-care .

The program consisted of four session and was implemented for two weeks period in lecture room.

Each session was designed and scheduled for approximately (30-40) minutes a time for one day per week.

The study group during the giving educational program divided to small group for more than reasons, for maintaing patients safety

Teaching aids which were used during these sessions included (class-rooms, computer, data-show and discussions). All lectures of education program were taught in Education Classroom in Diabetic Center in Merjan Medical City .

First session:

This session contains an introduction to the program and it's important for the patients, general information about the self-care . this session deals the follows :

- 1- describe the program, its importance, and its goals.
- 2-Introduction of topic and explanation of the objectives of the study.
- 3-General over review of the heart .
- 4-function of the heart .
- 4-Anatomy and physiology of the heart
- 5- Heart pulse

Place and time of lecture

Education Classroom in Diabetic Center in Merjan Medical City and persist for 30 minutes at least .

Learning devices

that are used in all sessions are:

- Lecture with discussion
- Poster with pictures
- Data show slides

Second session:

The following topics were performed:

- 1- Brief about open heart surgeries and its types

Place and Time of lecture

Education Classroom in Diabetic Center in Merjan Medical City and persist for 30 minutes at least .

Learning devices

that are used in all sessions are:

- Lecture with discussion
- Poster with pictures
- Data show slides

Third session:

The following topics were performed:

Activities and safety rules for exercising after open heart surgery

Place and Time of lecture

Education Classroom in Diabetic Center in Merjan Medical City and persist for 30 minutes at least.

Learning devices that are used in all sessions are:

- Lecture with discussion
- Poster with pictures
- Data show slides

Fourth session:

The following topics were performed:

Nutrition and medication for heart patients

Place and Time of lecture

Education Classroom in Diabetic Center in Merjan Medical City and persist for 30 minutes at least.

Learning devices that are used in all sessions are:

- Lecture with discussion
- Poster with pictures
- Data show slides

3.9. Validity of the Questionnaire and the Program :

"The content validity of the program and the study instruments knowledge test and practices were determined by the panel of 18 experts, who had more than five years' experience in their field to investigate the content of the educational program and questionnaire of self-care (Appendix A). Also, experts distributed for (7) experts from the college of Nursing / University of Baghdad ,(4) experts from the college of Nursing / University of Babylon ,(2) experts from the University of Kufa , (2) expert from the college of Nursing / University of Karbala, (2) expert from the Alzahrawi university college and last one expert from Ministry of Health. Moreover, the mean of experience years for expert panel is 25 years. Those experts were asked to review the instruments; the program for content, clarity, relevancy, and adequacy; some items were excluded and others were added after a face-to-face discussion with each expert and after the instrument was considered valid after taking all

the comments and recommendations in consideration. 100% of experts agreed upon the final draft.

3.10. Pilot Study :

In order to determine the reliability of the education program and study instruments, A pilot study was carried out on (10) patients who were randomly selected from shaheed almehrab during the period from 10th December 2021 to 10th January 2022. The participants were selected according to special inclusion criteria for test collected after obtaining the participant agreement it takes about 8 days. 10 days later retest was performed up on the same participants.

3.10.1. The Purpose of Pilot Study :

1. To find out whether the contents of the program were clear and understandable by the participants of the study.
2. To estimate the time required for answering each question.
3. To determine the reliability of the questionnaires.

3.11. Reliability:

Dependability, consistency of the variables which included in the study questionnaire was measured by using correlation coefficients, it's an important indicator of an instrument's quality. The pilot study performed as a small and primary study before starting the study procedures in order to assess the stability of the instrument which is prepared to collect the data. The results of the pilot study were statistically managed and the results revealed that the reliability which estimated as (0.794) which is statistically acceptable.

3.12 Implementation of the Program :

The Implementation was carried out in two cardiac centers in Al-najaf Center for cardiovascular Surgery and cardiac catheterization in al najaf governorate and shaheed al mehirab cardiac center in babile governorate started from 25th January 2022 to 20th March 2022.

The implementation of the program which was started after complete all an formal consent was acquired from the Babylon health administration and AL-Najaf Alashraf from shaheed almehrab for cardiac disease and surgery and Al-najaf Center for cardiovascular Surgery and cardiac catheterization for Cardiac .

The study group during the giving educational program divided to four small group for more than reasons, for safety patients from corona virus, than need to personal distance and more infection control.

First group

First session is presented at 6th February 2022 for patients coming to out patients department in the shaheed almehrab for cardiac disease and surgery . This group consists of 8 patients . The lecture started at 9:30 am and take about (35) minutes. Break time was given. Second session started after break takes about (40) minutes. Third session is presented in the next week at 13th February 2022 the session started at 9:40 am and take about (35) minutes. Break time was given. The fourth session started after break and take about (45) minutes . post-test collected after the end of the fourth session .

Second group

First session is presented at 17th February 2022 for patients coming to out patients department in the shaheed almehrab for cardiac disease and surgery . This group consists of 8 patients . The lecture started at 9:30 am and take about (40) minutes. Break time was given. Second session started after break takes about (35) minutes. Third session is presented in the next week at 24th February 2022 the session started at 9:40 am and take about (35) minutes. Break time was given. The fourth session started after break and take about (40) minutes . post-test collected after the end of the fourth session .

Third group

First session is presented at 27th January 2022 for patients coming to out patients department in the shaheed almehrab for cardiac disease and surgery . This group consists of 6 patients . The lecture started at 9:30 am and take about (40) minutes. Break time was given. Second session started after break takes about (35) minutes. Third session is presented in the next week the session started at 9:30 am and take about (43) minutes. Break time was given. The fourth session started after break and take about (35) minutes . post-test collected after the end of the fourth session .

Fourth group

First session is presented at 13th march 2022 for patients coming to out patients department in the shaheed almehrab for cardiac disease and surgery . This group consists of 6 patients . The lecture started at 9:40 am and take about (40) minutes. Break time was given. Second session started after break takes about (35) minutes. Third session is presented in the next week 20th march 2022 the session started at 9:00 am and take about (45) minutes. Break

time was given. The fourth session started after break and take about (35) minutes . post-test collected after the end of the fourth session .

3.13 Statistical Analysis:

The SPSS (Statistical Package for the Social Sciences) version 26.0 application Statistical analysis system and Excel program are used to analyze the data. The following statistical data analysis techniques were utilized to investigate and evaluate the study's findings:

3.14. I. Descriptive statistic includes the following methods:

- a- Percentages and frequencies
- b- Tables and figures (Charts and Bar).
- c- Mean score and standard deviation.

3.14. II. Inferential data analysis:

These were used to accept or reject the statistical hypotheses, which included the following:

Chi-Square test: It examines the deviation between observed and expected values. It is determined by calculating the difference between the frequencies actually seen in a sample data set and the probabilistically expected frequencies. Reliability of the questionnaire estimated by .

- a- Testing the independency and measuring the association between the variables.
- b- Analysis of variance (ANOVA).
- c- P- value.

$$\text{Chi-square Test: } \chi^2 = \sum_{i=1}^k \left[\frac{(o_i - e_i)^2}{e_i} \right]$$

Independent samples t-test: comparing the means of two samples drawn at random from distinct populations. It determines the probability of obtaining these population means under the null hypothesis that population means are equal. It utilized to find out the association between patients knowledge and self-care with (gender and other variable). (gender and other variable).

T-test (paired sample t-test) : to quantify the mean difference in patient responses between two measurement levels (pre-test and post-test).

Chapter Four

Results

Study Results

In order to evaluate the effectiveness of structured educational program upon self-care educational program on the knowledge of patients undergoing open heart surgeries in the middle Euphrates governorate, data were collected from those patients by using specific instrument prepared for the mentioned purpose. Many statistical methods were used to find out the outcome and detect if these are significant differences between symptoms severity variables after applying an educational program which prepared for this reason among the participants.

Table 4.1: Allocation of the Demographic characteristics of the study sample (study and control group).

Demographic characteristics	Rating and intervals	Control group		Study group	
		F	%	F	%
Age / Years	Less than 40	4	12.5	8	28.6
	40-49	5	15.6	6	21.4
	50-59	9	28.1	13	46.4
	More than 59	14	43.8	1	3.6
	Total	32	100.0	28	100.0
Gender	male	17	53.1	18	64.3
	female	15	46.9	10	35.7
	Total	32	100.0	28	100.0
Education Status	able to read and write	2	6.25	3	10.7
	primary school	4	12.5	5	17.85
	intermediate school	9	28.1	7	25.0
	secondary school	11	34.4	5	17.85
	Institutes	4	12.5	2	7.15

	college	2	6.25	6	21.45
	Master or Doctorate	0	0	0	0
	Total	32	100.0	28	100.0
Marital Status	Single	2	6.3	0	0
	Married	25	78.1	27	96.4
	Widow	0	0	1	3.6
	Divorced	5	15.6	0	0
	separated	0	0	0	0
	Total	32	100.0	28	100.0
occupation	employer	10	31.3	7	25.0
	unemployed	8	25.0	16	57.1
	house wife	12	37.5	5	17.9
	retied	2	6.3	0	0.00
	Total	32	100.0	28	100.0
Address	rural	17	53.1	19	67.9
	urban	15	46.9	9	32.1
	Total	32	100.0	28	100.0

The demographic data is shown in this table for (60) patients their undergoing to open heart surgery who agree to participate in the study, (28) patients act as study group and the other (32) act as control group. The table shows that most of participants in both groups 14 (43.8) were between 50-59 age group, 14 (43.8%) were more than 59 years age group, 18 (64.3%) ,17 (53.1%), were male. Related to educational status 7 (25.0%) were intermediate school in study group, , while 11 (34.4%) were secondary school in the control group, Both group recorded high percentage 27 (96.4%) ,25 (78.1%) ,

were married , The patients who participate in the study group recorded high percentage 16 (57.1%) were unemployment , while the result of the control group patients show that 12 (37.5%) were house wife. Both groups recorded 19 (67.9%) ,17 (53.1%), were rural as residency area.

Table 4.2: Allocation of the clinical information of the study sample (study and control group).

clinical information	Rating and intervals	Control group		Study group	
		F	%	F	%
Chronic diseases	no have any chronic diseases	6	18.8	4	14.25
	DM	5	15.8	9	32.1
	HTN	7	21.9	5	17.9
	ASTMA	0	0	1	3.6
	RH	3	9.4	5	17.9
	Dm & HTN	11	34.1	4	14.25
	Total	32	100.0	28	100.0
Smoking	No	20	62.5	13	46.4
	Yes	12	37.5	15	53.6
	Total	32	100.0	28	100.0
Previous hospitalization	1	3	9.4	7	25.0
	2	13	40.6	10	35.7
	3	7	21.9	4	14.3
	4	9	28.1	7	25.0

	Total	32	100.0	28	100.0
Self-care education	Free of chronic diseases	29	90.7	21	75.0
	social media	1	3.1	7	25.0
	Nurse	1	3.1	0	0
	Physician	1	3.1	0	0
	Total	32	100.0	28	100.0
Types of surgery	CABG	12	37.5	9	32.1
	VALVULAR DIS	17	53.1	15	53.6
	CABG & VALVULAR	3	9.4	4	14.3
	Total	32	100.0	28	100.0

This table presents the distribution of clinical information for (60) patients, (9) patients were participant with study group suffer from diabetic mellitus and (11) patients from control group suffer from diabetic and hypertension as chronic disease, both group the high percentage were not smoking. previous hospitalization related heart diseases both groups were 2 admission to hospital, self-care education the high percentage of control and study group not receive education about self-care. the both groups were undergoing to valvular surgery related to types of surgery.

Table (3.4) Assessment of the study sample (study and control) and control group related to knowledge related to cardiac information

N	Items	Control group		Study group	
		Pretest	Posttest	Pretest	Posttest
		M ± Std	M ± Std	M ± Std	M ± Std
1.	The heart consist of four chambers	1.28 0.457	1.38 0.492	1.25 0.441	1.91 0.262
2.	CABG mean coronary artery bypass grafting surgery	1.19 0.072	1.13 0.336	1.22 .420	1.89 0.315
3.	The coronary artery are branch from aortic artery	1.15 0.053	1.22 0.420	1.18 0.341	1.82 0.390
4.	The number of normal heart rate 60-100 beat per min	1.22 0.420	1.28 0.457	1.14 0.356	2.00 0.000
General mean and SD		1.210 0.059	1.252 0.441	1.197 0.397	1.905 0.169
Evaluation		poor	poor	poor	good
No.		32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 2, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about heart anatomy, the general mean and SD for study group (1.197 ± 0.397) in their pre-test, while significant change is clearly presented in the following post-test (1.905 ± 0.169). this indicate significant improvement in patient's knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.21 ± 0.059) in their pre-test, while no significant change is presented in the following post-test (1.252 ± 0.441).

Table (4.4) comparison between the mean score of the knowledge related to cardiac information for of both groups

T-test: Independent							
	Groups	No.	M	Std.	Std. E	P-value	Assessment
Pretest	Control	32	4.84	1.023	32	0.740	N.S
	Study	28	4.78	.678	28		
Posttest	Control	32	5.05	1.136	.201	0.001	H.S
	Study	28	7.64	.559	.106		

No.= (number of study sample), M= mean, Std= (stander deviation), Std. E= (stander error), P. value= (probability value), N. S= (Non-Significant), H.S= (Highly significant)

This table shows a highly significant difference between the pre-test and post-test of the study sample after participated in the program at p-value (0.001).

Table 4.5 Assessment of the study sample (study and control) patients information related to preparation for surgery:

N	Items	Control group		Study group	
		Pretest	Posttest 1	Pretest	Posttest 1
		M ± Std	M ± Std	M ± Std	M ± Std
	a.The open heart surgery take about 3 to 6 hours	1.09 0.296	1.13 0.336	1.07 0.262	1.96 0.189
	b. The surgeon uses a healthy vein or artery to create a new path around the blocked artery	1.16 0.000	1.03 0.177	1.11 0.315	1.86 0.356
	c. The patient is given a soapy solution to bathe to reduce the risk of infection	1.03 0.177	1.06 0.246	1.07 0.262	1.93 0.262

d. The nurse shaves operation area	1.06 0.246	1.16 0.369	1.18 0.341	1.89 0.315
e. The patient stays a one day or more in the intensive care unit after the open heart surgery, depending on the patient's condition	1.18 0.341	1.09 0.296	1.14 0.356	1.79 0.418
f. The patient suffers from some symptoms and complications after operation, including	1.32 0.471	1.24 0.246	1.44 0.507	1.82 0.398
General mean and SD	1.140 0.356	1.118 0.315	1.168 0.369	1.87 0.085
Assessment	poor	poor	poor	Good
No.	32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 2, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about preparation for surgery, the general mean and SD for study group (1.168 ± 0.369) in their pre-test, while significant change is clearly presented in the following post-test (1.87 ± 0.085). this indicate significant improvement in patients knowledge regarding preparation for surgery after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.140 ± 0.356) in their pre-test, while no significant change is presented in the following post-test (1.118 ± 0.315).

Table (4.6) comparison between the mean score of the of both groups knowledge for both study group and control group

t-test: Independent							
	Groups	No.	M	Std.	Std. E	P-value	Assessment
Pretest	Control	32	6.840	.751	.133	0.800	N.S
	Study	28	7.008	.390	.074		
Posttest	Control	32	6.708	.879	.155	0.001	H.S
	Study	28	11.25	.645	.122		

No= (number of study sample), M= mean, Std= (stander deviation), Std. E= (stander error), P. value= (probability value), N. S= (Non-Significant), H.S= (Highly significant).

This table shows a highly significant difference between the pre-test and post-test of the study sample after participated in the program at p-value (0.001), and no significant difference between the pre-test and post-test of the control group

Table 4.7 Patient Activity and Movement and walking In-hospital: after discharge from ICU

N	Items	Control group		Study group	
		Pretest	Posttest	Pretest	Posttest
		M ± Std	M ± Std	M ± Std	M ± Std
	1.The patient can move after disconnected from devices from him and gradually increase movement during his stay in the	1.18	1.16	1.25	1.89
		0.246	0.369	0.440	0.315

hospital				
2. After discharge from hospital walking inside the house	1.13 0.336	1.34 0.397	1.44 0.418	1.86 0.356
3. Walking outside the house	1.32 0.369	1.25 0.440	1.32 0.441	1.82 0.390
4. After the operation, the patient can do arm stretching exercises and do personal care by himself such as ADLs	1.20 0.296	1.19 0.397	1.18 0.341	1.79 0.418
General mean and SD	1.207 0.053	1.235 0.020	1.297 0.054	1.84 0.044
Evaluation	poor	poor	poor	good
No.	32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 1.5, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity and Movement and walking In-hospital, the general mean and SD for study group (1.297 ± 0.054) in their pre-test, while significant change is clearly presented in the following post-test (1.84 ± 0.044). this indicate significant improvement in patients knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.207 ± 0.053) in their pre-test, while no significant change is presented in the following post-test (1.235 ± 0.020).

Table 4.8: patients self care knowledge related to physical activities between 1 to 4 weeks after surgery

N	Items	Control group		Study group	
		Pretest	Posttest	Pretest	Posttest
		M ± Std	M ± Std	M ± Std	M ± Std
	1. Walking at a slow pace	1.25 0.440	1.42 0.336	1.11 0.315	1.93 0.262
	2. Washing your hands and body	1.31 0.336	1.45 0.369	1.50 0.000	1.89 0.315
	3. Combing your hair while sitting or standing	1.09 0.296	1.06 0.246	1.07 0.262	1.86 0.356
	4. Showering with warm water while sitting or standing in the shower	1.03 0.177	1.03 0.177	1.04 0.189	1.82 0.390
	5. patient is able to change clothes	1.07 0.262	1.16 0.369	1.11 0.315	1.96 0.189
	6. Hobbies like playing card games, needlework, playing the piano, reading	1.00 0.000	1.09 0.296	1.13 0.336	1.79 0.418
	General mean and SD	1.125 0.107	1.201 0.076	1.160 0.103	1.88 0.085
	Assessment	Poor	poor	poor	good
	No.	32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 1.5, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 1 to 4 weeks after surgery , the general mean and SD for study group (1.160± 0.103) in their pre-test, while

significant change is clearly presented in the following post-test (1.88 ± 0.058). this indicate significant improvement in patients knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.125 ± 0.107) in their pre-test, while no significant change is presented in the following post-test (1.201 ± 0.076).

Table 4.9: patients self care knowledge related to physical activities between 4 to 6 weeks after surgery

N	Items	Control group		Study group	
		Pretest	Posttest	Pretest	Posttest
		M $\pm$ Std	M $\pm$ Std	M $\pm$ Std	M $\pm$ Std
	1. Walking at a moderate pace	1.09 0.296	1.16 0.39	1.11 0.315	1.93 0.262
	2. Lifting items that weigh less than 10 pounds (4.5 kilograms)	1.07 0.262	1.03 0.177	1.04 0.189	1.96 0.189
	3. Preparing light meals. For example: chopping salad while sitting	1.06 0.246	1.13 0.336	1.07 0.262	1.89 0.315
	4. Washing the dishes, making the bed and doing light housekeeping such as dusting or light gardening	1.19 0.397	1.22 0.420	1.13 0.336	1.86 0.448
	General mean and SD	1.102 0.164	1.130 0.104	1.087 0.117	1.91 0.110
	Assessment	Poor	poor	Poor	good
	No.	32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 1.5, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 4 to 6 weeks after, the general mean and SD for study group (1.087 ± 0.117) in their pre-test, while significant change is clearly presented in the following post-test (1.91 ± 0.110). this indicate significant

improvement in patient's knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.102 ± 0.164) in their pre-test, while no significant change is presented in the following post-test (1.130 ± 0.104).

Table 4.10 patients self care knowledge related to physical activities between 6 to 8 weeks after surgery

N	Items	Control group		Study group	
		Pretest	Posttest 1	Pretest	Posttest 1
		M $\pm$ Std	M $\pm$ Std	M $\pm$ Std	M $\pm$ Std
	1. Walking up steep hills or walking at a quicker pace	1.22 0.420	1.18 0.341	1.25 0.440	1.93 0.262
	2. Carrying things that are 13 to 27 kilograms	1.13 0.336	1.06 0.246	1.07 0.262	1.86 0.356
	3. Hanging laundry on the line to dry	1.09 0.296	1.16 0.369	1.04 0.189	1.79 0.499
	4. Cleaning at a slow pace such as vacuuming, washing floors, laundry	1.06 0.246	1.09 0.296	1.07 0.262	1.71 0.535
	5. Shopping for groceries and carrying bags	1.13 0.336	1.13 0.336	1.14 0.356	1.86 0.448
	6. Doing light home repairs. For example: hanging a small picture or gardening	1.16 0.369	1.22 0.420	1.08 0.278	1.82 0.390
General mean and SD		1.131 0.171	1.143 0.156	1.108 0.059	1.83 0.063
Assessment		Poor	Poor	poor	good
No.		32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 1.5, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 6 to 8 weeks after surgery, the general mean and SD for study group (1.108 ± 0.059) in their pre-test, while significant change is clearly presented in the following post-test (1.83 ± 0.063). this indicate significant improvement in patient's knowledge regarding Patient Activity after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.131 ± 0.171) in their pre-test, while no significant change is presented in the following post-test (1.143 ± 0.156).

Table 4.11 8 weeks after surgery

N	Items	Control group		Study group	
		Pretest	Posttest 1	Pretest	Posttest 1
		M $\pm$ Std	M $\pm$ Std	M $\pm$ Std	M $\pm$ Std
	1.Walking up hills at a fast pace	1.13 0.336	1.19 0.397	1.22 0.420	1.93 0.262
	2. Doing heavy washing or scrubbing with your arms above your shoulders	1.06 0.246	1.13 0.336	1.07 0.262	1.79 0.418
	3. Doing heavy gardening such as digging, spading, raking, trimming branches overhead	1.06 0.246	1.18 0.341	1.04 0.189	1.86 0.448
	4. Playing tennis, jogging, swimming, or bicycling at a medium or fast pace	1.00 0.000	1.04 0.136	1.11 0.315	1.82 0.390
	5. Doing heavy home repairs such as painting a room	1.03 0.177	1.09 0.296	1.16 0.369	1.71 0.535
	General mean and SD	1.056 0.125	1.126 0.186	1.120 0.179	1.82 0.099
	Assessment	Poor	Poor	Poor	Good
	No.	32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 1.5, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 8 weeks after surgery, the general mean and SD for study group (1.120 ± 0.179) in their pre-test, while significant change is clearly presented in the following post-test (1.82 ± 0.099). this indicate significant improvement in patient's knowledge regarding Patient Activity after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.056 ± 0.125) in their pre-test, while no significant change is presented in the following post-test (1.126 ± 0.186).

Table (4.12) comparison between the mean score of the of both groups knowledge for both study group and control group

t-test: Independent							
	Groups	No.	M	Std.	Std. E	P-value	Assessment
Pretest	Control	32	28.06	1.865	.330	0.120	N.S
	Study	28	28.68	.945	.179		
Posttest	Control	32	28.78	2.366	.418	0.043	S
	Study	28	46.32	2.919	.552		

No= (number of study sample), M= mean, Std= (stander deviation), Std. E= (stander error), P. value= (probability value), N. S= (Non-Significant), S= (Significant).

Table 4.13: Problems it takes 4 to 6 weeks that consider normal

N	Items	Control group		Study group	
		Pretest	Posttest	Pretest	Posttest
		M ± Std	M ± Std	M ± Std	M ± Std
	1. Incision pain	1.34 0.483	1.41 0.499	1.29 0.460	1.86 0.356
	2. Poor appetite	1.31 0.471	1.34 0.483	1.21 0.418	1.79 0.418
	3. Mood swings and feel depressed	1.06 0.246	1.03 0.177	1.07 0.262	1.61 0.497
	4. Swelling in the leg that the vein graft was taken from	1.09 0.296	1.06 0.246	1.25 0.441	1.68 0.476
	5. Feel itchy, numb, or tingly around the incisions on your chest and leg for 6 months or more	1.16 0.369	1.09 0.296	1.18 0.390	1.75 0.441
	6. trouble sleeping at night	1.13 0.336	1.06 0.246	1.14 0.356	1.71 0.460
	7. tired or not have much energy	1.22 0.420	1.19 0.397	1.11 0.315	1.82 0.390
General mean and SD		1.19 0.088	1.16 0.125	1.18 0.071	1.74 0.049
Assessment		Poor	Poor	Poor	good
No.		32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 1.5, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Problems it takes 4 to 6 weeks that consider normal, the general mean and SD for study group (1.18± 0.071) in their pre-test, while

significant change is clearly presented in the following post-test (1.74 ± 0.049). this indicate significant improvement in patients knowledge about Problems it takes 4 to 6 weeks that consider normal after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.19 ± 0.071) in their pre-test, while no significant change is presented in the following post-test (1.16 ± 0.125).

Table (4.14) comparison between the mean score of the of both groups knowledge for both study group and control group

t-test: Independent							
	Groups	No.	M	Std.	Std. E	P-value	Assessment
Pretest	Control	32	8.53	1.344	.238	0.379	N.S
	Study	28	8.25	1.076	.203		
Posttest	Control	32	8.19	1.176	.208	0.008	H.S
	Study	28	12.07	1.720	.325		

No= (number of study sample), M= mean, Std= (stander deviation), Std. E= (stander error), P. value= (probability value), N. S= (Non-Significant)

Table (4.15) Patients self care knowledge related to nutrition and medication

N	Items	Control group		Study group	
		Pretest	Posttest 1	Pretest	Posttest 1
		M $\pm$ Std	M $\pm$ Std	M $\pm$ Std	M $\pm$ Std
	1. eat food low cholesterol to prevent heart diseases	1.47 0.507	1.41 0.499	1.43 0.573	1.89 0.315
	2. eat food low salt to maintain	1.41	1.50	1.46	1.93

	normal blood pressure	0.499	0.508	0.508	0.262
	3. eat five portions of fresh fruits and vegetables a day and whole grains can reduce the risk of heart disease	1.25 0.440	1.41 0.499	1.39 0.497	1.79 0.418
	4. Olive oil contains antioxidants that can reduce the risk of heart disease	1.38 0.492	1.31 0.471	1.46 0.508	1.82 0.390
	5. Increasing the intake of green leafy vegetables helps reduce the risk of heart disease	1.34 0.483	1.38 0.492	1.39 0.497	1.75 0.518
	6. Diuretics have an onset of action 2 hours after taking them and last for 6-8 hours.	1.34 0.483	1.25 0.440	1.43 0.504	1.89 0.315
	7. Diuretics are taken during the early morning	1.16 0.369	1.28 0.457	1.25 0.441	1.86 0.356
	8. When taking blood-thinning medications and the appearance of black or blue spots on the skin or the appearance of blood in the urine or the change in the color of the urine to dark, the medication should be stop	1.25 0.440	1.22 0.420	1.32 0.476	1.82 0.390
	9. Digoxin is taken after food	1.19 0.397	1.19 0.397	1.21 0.418	1.79 0.568
General mean and SD		1.31 0.048	1.32 0.039	1.37 0.044	1.84 0.098
Assessment		poor	poor	poor	good
No.		32	32	28	28

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Nutrition and medication, the general mean and SD for study group (1.37 ± 0.044) in their pre-test, while significant change is clearly presented in the following post-test (1.84 ± 0.098). this indicate significant improvement in patients knowledge regarding heart

anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.31 ± 0.048) in their pre-test, while no significant change is presented in the following post-test (1.32 ± 0.039).

Table (4.16) comparison between the mean score of the of both groups knowledge for both study group and control group

t-test: Independent							
	Groups	No.	M	Std.	Std. E	P-value	level
Pretest	Control	32	11.78	2.075	.367	0.282	N.S
	Study	28	12.36	2.022	.382		
Posttest	Control	32	11.94	1.625	.287	0.004	H.S
	Study	28	16.54	1.319	.249		

No= (number of study sample), M= mean, Std= (stander deviation), Std. E= (stander error), P. value= (probability value), N. S= (Non-Significant)

Table (4.17) Mean score of the of both groups knowledge for both study group and control group Pretest and posttest (Overall)

	Groups	No.	M	Std.	level
Pretest	Control	32	60.44	4.134	poor
	Study	28	60.11	2.872	poor
Posttest	Control	32	59.46	5.394	poor
	Study	28	93.96	3.854	Good

No.= (number of study sample), M= mean, Std= (stander deviation), poor= (52-78), good = (79-104)

This table show significant changing in overall mean of score and stander deviation for study group between pretest, posttest with good level. while there is no change in mean of score for control group with poor level.

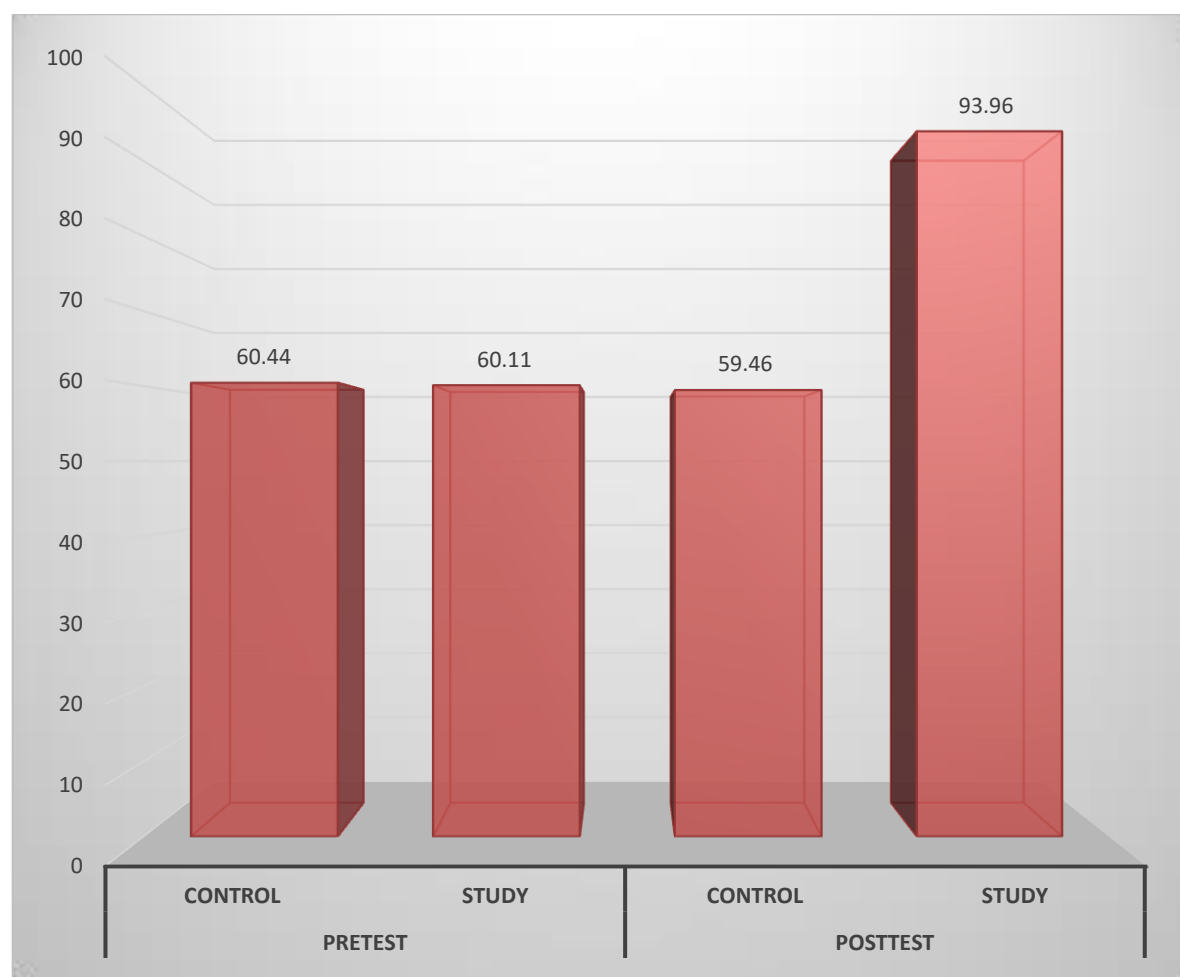


Figure (4.1) Mean score of the of both groups knowledge for both study group and control group pretest and posttest (Overall)

Table (4.18) Differentiation between the mean of score of the control group pretest and posttest

Paired Samples Statistics							
	Mean	N	Std. Deviation	Std. Error Mean	d.f	P.value	Assessment
Pretest Control	60.44	32	4.134	.731	31	0.294	N.S
Posttest Control	59.46	32	5.394	.95354			

This table shows a no significant difference between the pre-test and post-test of the control sample at p-value (0.294).

Table (4.19) Differentiation between the mean of score of the study group pretest and posttest

Paired Samples Statistics							
	Mean	N	Std. Deviation	Std. Error Mean	d.f	p.value	Assessment
Pretest study	59.46	28	2.872	.543	27	0.001	H.S
Posttest study	93.96	28	3.854	.728			

This table shows a highly significant difference between the pre-test and post-test of the study sample after participated in the educational program at p-value (0.001).

Table (4.20) Association between demographic characteristics and patient's knowledge for control group.

No.	Socio-demographic	Chi-square	d.f	P-value	ass
1.	age	49.926	3	0.113	N.S
2.	gender	12.925	1	.454	N.S
3.	Educational level	49.244	6	.583	N.S
4.	Marital status	29.600	4	.285	N.S
5.	occupation	31.400	3	.801	N.S
6.	address	19.284	1	.115	N.S
7.	Chronic disease	51.619	4	.886	N.S
8.	smoking	12.089	1	.520	N.S
9.	Previous hospitalization	37.796	4	.025	S
10.	Type of surgery	23.660	2	.595	N.S

The above table show no significant association between patients knowledge and demographical characteristics except the Previous hospitalization have significance at p.value 0.025 which is less than 0.05 .

Table (4.21) Association between demographic characteristics and patients knowledge for study group.

No.	Socio-demographic	Chi-square	d.f	P-value	ass
1.	age	16.548	3	0.977	N.S
2.	gender	10.722	1	0.379	N.S
3.	Educational level	52.640	6	0.087	N.S
4.	Marital status	3.802	2	0.956	N.S
5.	occupation	26.675	3	0.145	N.S
6.	address	15.163	1	0.126	N.S
7.	Chronic disease	52.313	4	0.384	N.S
8.	smoking	10.444	1	0.402	N.S
9.	Previous hospitalization	30.307	4	0.450	N.S
10.	Type of surgery	23.453	2	0.267	N.S

The above table show no significant association between patients knowledge and demographical characteristics.

Chapter Five

Discussion

Discussion:

Results of self care education program application toward patients undergoing to open heart surgery are discussed in this chapter. The data was collected using knowledge for patients in middle Euphrates governorate , and the data collected was analyzed and reported in accordance with the study's objectives. The education session is intended to give patients with sufficient knowledge in self care .

Patient educational process relevant to the patient's level of understanding, comprehensive, delivered at the appropriate time, as well as designed to understand can be one of the prerequisites for the patient to get some inspiration to change attitudes, increase knowledge, practice, motivation and awareness of the importance of co-responsibility to make decisions about medical treatment, the patient's behavior or change of habits. (Bēta, 2014 & Koren & Sharaf, 2016).

Interpretation and discussion of results obtained from the current study were presented in three main sections; the first section described the patients' demographic data and medical history of the study subjects. The second section was concerned with patients' level of knowledge.

socio-demographic characteristics

Table (1) which presented the results related to the demographical characteristic of the study sample shows that most of participants in both groups 13(43.8) were between 50-59 age group , 14 (43.8%) were more than 59 years age group,. This result supported by study carried out by (Lemaire A, et al 2020) titled as “The impact of age on outcomes of coronary artery bypass grafting” , the finding revealed that most of the participants A total of 67,568 patients were identified who were ≥ 70 years old and underwent

CABG. Most of the patients were reviewing to out patients department in cardiac center were more than 50 years age group .

This mean age of the present study may be due to aging which is an un-modifiable risk factor for CAD. The WHO reports that the principal cause of death of people over 65 years is CAD, and CAD risk increase as age increases. This may be due to increased life stressors even among people. This result is in accordance with Leathy & Jada (2015), Moreover a study conducted by Amaal F et al, (2017) revealed that the average age of the studied sample was ranged between 50 and 59 years

Regarding gender, the present study clarified most of the study and control group were males. This finding is in line with Mohammed (2014) who found that more than half of both the study and control group patient were males. Also the result of the present study is supported by Abdeaal, et al (2013) & Amin (2015) who indicates that 64% of coronary artery disease cases were men. On the other hand, this result may be not in line with Beltrame, et al (2012) who reported that CAD is the leading cause of mortality for both adult males and females alike worldwide. Although the initial manifestation of CAD is delayed in females by about ten years compared to males, there is no abrupt increase in CAD mortality rates for females immediately following menopause but a progressive increase over subsequent years.

Relation to marital status, the findings of the present study represent that all the patients were married. this result was agree with a study which determined that most of their patients in their study were married .The finding of present study's supportive evidence is available in the study reported that CAG was the most frequent surgery and cardiac valve surgery was increasingly performed on the patients (Ali, S., & Jacoub, S. 2018).

Regarding residence, the current study showed that more than half of studied patients were from rural areas, this may be due to lack of health care provided, take more time to diagnosed, and low educational level in rural area. This result was in the same line with Kapwata & Manda, (2018)) who found that, when increase distance from health care facilities, the cardiovascular disease was increased and morbidity and mortality also worsen. Moreover our findings were in the same line with another study conducted by Amaal F et al, (2017)) who revealed that majority of the studied patients were from rural area.

Regarding occupation status, the finding of the present study revealed that, about near half of studied patients were employed; this may be due to increase job strain and increase stress of lack income. This was in accordance with Ferrario et al, (2017) Who reported that, higher coronary heart disease incidence rates was found among manual workers.

Regarding education the present study revealed that the minority of study population had bachelor degree. The result of the present study is supported by Tillmann, et al (2018) who concluded that low education is a causal risk factor in the development of coronary heart disease.

Also the result of present study is supported by Chair, et al (2012) who mentioned that 62.8% of the participants in his study received no education or were educated at a primary school level. This result may ascertain that decreasing educational level may be a cause of the unsatisfactory level of knowledge of the patients. And increasing educational level should increase satisfactory level of knowledge.

Regarding chronic diseases history of studied patients, the results of the present study showed that, all of the studied patients had heart disease and

near two third of studied patients had hypertension and diabetic. This may be due to poor treatment adherence, genetic factor or unhealthy life style. This was in the same line with **Lancellotti et al, (2017)** who reported that, most of subjects complain of CHD and minority valvular heart disease. Moreover a study conducted by Bassand et al, (2018) found that, about two thirds of patients had hypertension and diabetic. Also, American Heart Association (AHA) (2017) which reported a positive association between hypertension and insulin resistance as when patients have both hypertension and diabetes, which is a common combination, their risk for cardiovascular disease doubles. This demonstrates the importance of prevention of hypertension and diabetes occurrence, and also demonstrates the beneficial of hypertension and diabetes control in secondary prevention of CAD.

Concerning smoking, the result revealed that more than half of study group patients had a history of smoking. The result of the present study is supported by Mohammed (2014); Amin (2015); Byrne & Espnes (2016) & Rosch & Dimsdale (2017), who mentioned that Cigarette smoking pose an established and potent risk for CVD. Also, Law & Wald (2013) who studied "Environmental tobacco smoke and ischemic heart disease" and evidenced the presence of a significant effect of tobacco smoke exposure in causing ischemic heart disease. This result ascertains that smoking is a modifiable risk factor of CAD. But the control group 62.5% were no smoking this result due to the near half of patients participants in study were female gender .

Table (3,4) presents the statistical analysis of patients undergoing to open heart surgery knowledge about heart anatomy , the general mean and SD for interventional group (1.210 ± 0.059) in their pre-test, while significant change is clearly presented in the following post-test (1.905 ± 0.169). this indicate

significant improvement in patients knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.21 ± 0.059) in their pre-test, while no significant change is presented in the following post-test (1.252 ± 0.441) and shows a highly significant difference between the pre-test and post-test of the study sample after participated in the program at p-value (0.001).

the differences between study and control groups related to their information toward heart surgery the pre –test and post-test, revealed that there were significant difference between the study and control groups related to their information to cardiac surgery thought the pre-test and post –test . This result supported by study carried out by (Arthur,H., Danicls,etal 2013).

Table 5,6 This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about preparation for surgery , the general mean and SD for interventional group (1.168 ± 0.369) in their pre-test, while significant change is clearly presented in the following post-test (1.87 ± 0.085). this indicate significant improvement in patients knowledge regarding preparation for surgery after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.140 ± 0.356) in their pre-test, while no significant change is presented in the following post-test (1.118 ± 0.315) and this table shows a highly significant difference between the pre-test and post-test of the study sample after participated in the program at p-value (0.001), and no significant difference between the pre-test and post-test of the control group

The finding of present study's supportive evidence is available in the study that examine the effect of a multidimensional preoperative preparation or intervention on the patients with cardiac surgery .They found that during the waiting period, the patients received exercise training, education was offered to the patients to improve their outcome (Emre K. 2017)

Moreover, The finding of present study's supportive evidence is available in the study that reported the effects of psychological preparation for surgery can facilitate recovery thus psychological preparation supplies information which reduced uncertainty (Smith A, Fortin A, Dwamena A ,etal2013)

Table 7 This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity and Movement and walking In-hospital, the general mean and SD for interventional group (1.297 ± 0.054) in their pre-test, while significant change is clearly presented in the following post-test (1.84 ± 0.044). this indicate significant improvement in patients knowledge regarding activity after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.207 ± 0.053) in their pre-test, while no significant(1.235 ± 0.020) change is presented in related post-test.

The finding of present study's supportive evidence is available in the study Effect of cardiac rehabilitation on functional outcomes after coronary revascularization (Pasquali SK, Alexander KP,etal 2013) reported improved physical functioning and adoption of secondary preventive measures in patients with coronary disease who participated in cardiac rehabilitation.

Table 8 This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 1 to 4 weeks after

surgery , the general mean and SD for interventional group (1.125 ± 0.107) in their pre-test, while significant change is clearly presented in the following post-test (1.88 ± 0.058). this indicate significant improvement in patients knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.160 ± 0.103) in their pre-test, while no significant change is presented in the following post-test (1.25 ± 0.107).

The reported mean life expectancy a week after the intervention was significantly higher in the intervention group (176.76 ± 43.38) compared to the control group (159.50 ± 41.87) ($P=0.035$). They also reported the mean score of life expectancy (post- intervention) had significantly increased in the intervention group compared to pre-intervention (mean difference of 13.35 ± 14.07 , $P<0.001$). Similar to our study, their participants were mainly male patients (63%) and had an undergraduate degree (67%). However, they only conducted three sessions of intervention with training

This result reported by (Salimi T, Tavangar H, Shokripour S, et al 2017).

Table 9 this table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 4 to 6 weeks after , the general mean and SD for interventional group (1.130 ± 0.104) in their pre-test, while significant change is clearly presented in the following post-test (1.91 ± 0.110). this indicate significant improvement in patients knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.21 ± 0.059) in their pre-test, while no significant change is presented in the following post-test (1.25 ± 0.441).

Table 10 This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 4 to 6 weeks after

surgery , the general mean and SD for interventional group (1.108 ± 0.059) in their pre-test, while significant change is clearly presented in the following post-test (1.83 ± 0.063). this indicate significant improvement in patients knowledge regarding Patient Activity after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.131 ± 0.171) in their pre-test, while no significant change is presented in the following post-test (1.143 ± 0.156).

This result accepted with study of (Macchi, Claudio MD; Fattirolli ,etal 2007) that reported in the end of the rehabilitation program, more than 90% of patients showed significant increases in walking distance, and during the follow-up, no significant difference was found with regard to mortality, nonfatal events, functional ability, or control of cardiovascular risk factors, independent of rehabilitation timing

Table 13 this table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Problems it takes 4 to 6 weeks that consider normal

, the general mean and SD for interventional group (1.18 ± 0.071) in their pre-test, while significant change is clearly presented in the following post-test (1.74 ± 0.049). this indicate significant improvement in patients knowledge about Problems it takes 4 to 6 weeks that consider normal after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.18 ± 0.071) in their pre-test, while no significant change is presented in the following post-test (1.16 ± 0.125).

Table 15 This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about nutrition and medication , the general

mean and SD for interventional group (1.13 ± 0.072) in their pre-test, while significant change is clearly presented in the following post-test (1.91 ± 0.169). this indicate significant improvement in patients knowledge regarding nutrition and medication after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.21 ± 0.059) in their pre-test, while no significant change is presented in the following post-test (1.25 ± 0.441).

The finding of present study's supportive evidence is available in the study Role of nutrition support in adult cardiac surgery: a consensus statement from an International Multidisciplinary Expert Group on Nutrition in Cardiac Surgery

Targeting preoperative optimization of the nutritional state may result in improved postoperative outcome. Structured scoring tools should be validated and implemented as part of preoperative assessment and to monitor the efficacy of nutrition therapy and In identified patients, the feasibility and clinical significance of early-initiated postoperative nutrition support needs to be evaluated (toppe C, Goetzenich etal 2017)

Table (4.17) This tables show simple significant changing in overall mean of score and stander deviation for interventional group between pretest, posttest with good assessment. while there is no change in mean of score for control group with poor assessment. This result due to increase the knowledge from intended to the educational program .

Table (4.18) This table shows a no significant difference between the pre-test and post-test of the control sample at p-value (0.294). This result due to the patients not exposed to the educational program .

Table (4.19) This table shows a highly significant difference between the pre-test and post-test of the study sample after participated in the educational program at p-value (0.001). The result in table 4.17,18,19 supported by (Mahnaz Rakhshan, etal 2020) .

There was no significant difference in the mean score of knowledge between the control and intervention groups before the intervention. However, a significant difference between the groups was observed post-intervention ($P < 0.001$). The results showed a significant difference in the mean score of knowledge between pre-intervention (182.36 ± 23.07) and post-intervention (216.94 ± 23.05) in the intervention group ($P < 0.001$), whereas the difference in the control group was not significant ($P = 0.095$). The measured post-intervention effect size was high (1.05).

Table 4.20 shows that there were not significant differences between male and females in all items of patients' information related to cardiac surgery, such results provide an evidence which is supported study found that there were no significant differences . Such issues also are supported by study reported that there is no statistically significant effect of preoperative information to patients according to their gender on their stress of cardiac surgery. This result supports the scientific cause of stress which is associated with sympathetic nervous activities.)Also this result is in line with the study stated that preoperative teaching which contributes to meet patients information needs would help in lowering stress .Nevertheless, the fact of gender difference in physiological responses to stress deserves attention in the preparation of patient for surgery.

In the point of view, the researcher believes that the undergoing cardiac surgery is very stressful experience for many

patients; but there is usefulness and effectiveness of information prior surgery through the result of differences with educational level. The finding of present study's supportive evidence is available in the study reported the decrease the level of knowledge by almost all the cardiac surgical patients during preoperative period of heart surgery; but preoperative preparation can help patients to be prepared for surgery and reduce complication of surgery especially in the postoperative period

Overall, the current study findings shows that the good influences of educational sessions on the patients knowledge these findings support the research hypothesis of the study there is significant effective of the educational program on the patient self care knowledge which it rejected the null hypothesis .

Chapter Six

Conclusions & Recommendations

6.1. Conclusion:

- 1- Most of participants in both groups were between 50-59 age group were male. Related to educational status most were intermediate school in study group, , while more were secondary school in the control group, Both group recorded high percentage were married .
- 2- The patients who participate in the study group recorded high percentage were unemployment , while the result of the control group patients show most were house wife. Both group recorded were rural as residency area
- 3- Related to clinical information for (60) patients, most patients were participant with study group suffer from diabetic mellitus and more patients from control group suffer from diabetic and hypertension as chronic disease ,both group the high percentage were not smoking . previous hospitalization related heart diseases both group were 2 admission to hospital , self care education the high percentage of control and study group not receive education about self care .the both group were undergoing to valvular surgery related to types of surgery.
- 4- The comparison between the responses of both groups in their first pre-test recorder low mean score and shows a highly significant difference between the pre-test and post-test of the study group after participated in the program at p-value (0.001).
- 5- No significant difference between the pre-test and post-test of the control sample at p-value (0.294).
- 6- Highly significant difference between the pre-test and post-test of the study sample after participated in the educational program at p-value (0.001).
- 7- No significant association between patients knowledge and demographical data except the previous hospitalization for the control group

and no significant association between patients knowledge and demographical data for the study group

8- The finding shows positive effect of the educational program on the patients knowledge which act a strong reason to accept the alternative hypothesis.

6.2. Recommendations:

1. Implementation of the educational program for patients undergoing cardiac surgery performed by nurses before surgery, as well as explanations of the risks associated with cardiac surgery throughout hospitalization and at home.
2. Establishing rehabilitation unit in cardiac centers , which may caring out the responsibilities of patients and training to enhance self care and improve their quality of life.

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Appendix- A

Expert who Assess the Questionnaire

Table of Experts

ت	اسم الخبير	اللقب العلمي	الاختصاص	سنين الخبرة	مكان العمل
1	د. امين عجيل الياسري	استاذ	تمريض صحة الأسرة والمجتمع	37	جامعة بابل / كلية التمريض
2	د. سلمى كاظم جهاد	استاذ	تمريض صحة الأسرة والمجتمع	36	جامعة بابل / كلية التمريض
3	د. راجحة عبد الحسن	استاذ	تمريض بالغين	36	جامعة الكوفة / كلية التمريض
4	د. وداد كامل محمد	استاذ	تمريض بالغين	35	جامعة بغداد / كلية التمريض
5	د. حسين هادي عطية	استاذ	تمريض بالغين	35	جامعة بغداد / كلية التمريض
6	د. صباح عباس احمد	استاذ	تمريض بالغين	34	جامعة بغداد / كلية التمريض
7	د. حكيمة شاكر حسن	استاذ	تمريض بالغين	34	جامعة بغداد / كلية التمريض
8	د. هدى باقر حسن	استاذ	تمريض بالغين	33	جامعة بغداد / كلية التمريض
9	د. نظيرة حسين علوان	استاذ	تمريض بالغين	33	كلية الزهراوي الجامعة
10	د. سحر ادهم علي	استاذ	تمريض بالغين	32	جامعة بابل / كلية التمريض
11	د. شذى سعدي محمد	استاذ	تمريض بالغين	25	جامعة بابل / كلية التمريض
12	د. فاطمة مكي محمود	استاذ مساعد	تمريض بالغين	27	جامعة كربلاء / كلية التمريض
13	د. حسن عبد الله عذبي	استاذ مساعد	تمريض بالغين	18	جامعة كربلاء / كلية التمريض
14	د. فائق عبد الامير الصفار	استاذ مساعد	تمريض صحة الام والوليد	29	كلية الزهراوي الجامعة
15	د. محمد باقر الجبوري	استاذ مساعد	تمريض بالغين	16	جامعة بغداد
16	د. ابراهيم علوان كاظم	استاذ مساعد	تمريض بالغين	15	جامعة الكوفة / كلية التمريض
17	د. صادق عبد الحسين	استاذ مساعد	تمريض بالغين	12	جامعة بغداد / كلية التمريض
18	د. حيدر حمزة عمران		طبيب استشاري امراض القلب	23	مركز شهيد المحراب

Appendix-B

Administrative Agreements

Ministry of Health
Babil Health Directorate
Imam Sadiq General Hospital

جمهورية العراق



وزارة الصحة
دائرة صحة بابل
مستشفى الامام الصادق (ع)
العدد ١٤٨٢٩
التاريخ ١/٩/٢٠٢١

إلى /دائرة صحة بابل /مكتب المدير العام/ مركز التدريب والتنمية البشرية

م/ تسهيل مهمة

إشارة الى كتابكم المرقم (٧٤٤) بتاريخ ١٢ /٨/ ٢٠٢١ لامانع لدينا من تسهيل مهمة طالب الدكتوراه (أمير حسن كاظم فرحان) لاتمام بحثه في مستشفىنا قدر تعلق الامر بنا وحسب الضوابط على ان لاتتحمل مؤسستنا أي تبعات مالية او قانونيه وحسب الضوابط.

....مع الاحترام .

٢
الطبيب الاختصاص

خالد فاهم نعمه الفتلاوي

مدير مستشفى الإمام الصادق (ع) التعليمي

٢٠٢١ / ٨ / ١

مرولة شارة قمر الدين
مدير التعليمي



نسخة منه الى

- مكتب مدير المستشفى
- وحدة التدريب والبحوث
- الأرشيف/الإدارية
- المعاون العلمي

جمهورية العراق

Ministry Of Health
Babylon Health Directorate
Email:-
Babel_Healthmoh@yahoo.com
Tel:282628 or 282621



وزارة الصحة والبيئة
دائرة صحة محافظة بابل
المدير العام
مركز التدريب والتنمية البشرية
وحدة إدارة البحوث

العدد : ٧٩٤
التاريخ: ٢٠٢١/٨/١٤

إلى / مستشفى الأمام الصادق (ع)
مركز شهيد المحراب لأمراض وجراحة القلب

وزارة الصحة
دائرة صحة بابل
مركز التدريب والتنمية البشرية

م/ تسهيل مهمة

السلام عليكم ...
أشارة إلى كتاب جامعة بابل/ كلية التمريض / لجنة الدراسات العليا ذي العدد
٢٣٢٣ في ٢٠٢١/٨/٨
ترفق لكم ربطا استمارات الموافقة المبذنية لمشروع البحث العائده للباحث طالب
الدكتوراه امير حسن كاظم فراحان) .
للتفضل بالاطلاع وتسهيل مهمة الموما إليه من خلال توقيع وختم استمارات اجراء
البحث المرفقة في مؤسساتكم وحسب الضوابط والإمكانات لاستحصال الموافقة
المبذنية ليتسنى لنا اجراء اللازم على أن لا تتحمل مؤسساتكم أية تبعات مادية
وقانونية مع الاحترام

المرفقات :

استمارة عدد ٢/

المعادن ليلي

٢٠٢١

الدكتور

محمد عبد الله عجرش

مدير مركز التدريب والتنمية البشرية

٢٠٢١ / /

٢٠٢١

ولي العهد

مصلح

وحدة البحوث

٢٠٢١/٨/١٤

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جمهورية العراق

Ministry Of Health
Babylon Health Directorate
Email:-
Babel_Healthmoh@yahoo.com
Tel:282628 or 282621

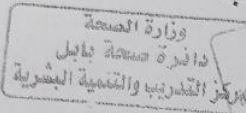


وزارة الصحة والبيئة
دائرة صحة محافظة بابل
المدير العام
مركز التدريب والتنمية البشرية
وحدة إدارة البحوث

العدد :

١٦٩٥
التاريخ: ٢٠٢١/٨/١٣

إلى / مستشفى الأمام الصادق (ع)
مركز شهيد المحراب لأمراض وجراحة القلب
مديره مربيان لطيف
م/ تسهيل مهمة

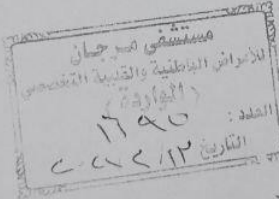


السلام عليكم ...

أشارة إلى كتاب جامعة بابل/ كلية التمريض / لجنة الدراسات العليا ذي العدد
٢٣٢٣ في ٢٠٢١/٨/٨
نرفق لكم ربطا استمارات الموافقة المبدئية لمشروع البحث العائده للباحث طالب
الدكتوراه امير حسن كاظم فراحان) .
للتفضل بالاطلاع وتسهيل مهمة الموما اليه من خلال توقيع وختم استمارات اجراء
البحث المرفقة في مؤسساتكم وحسب الضوابط والإمكانات لاستحصال الموافقة
المبدئية ليتسنى لنا اجراء اللازم على أن لا تتحمل مؤسساتكم أية تبعات مادية
وقانونية مع الاحترام

المرفقات :

استمارة عدد ٢/



١٦٩٥

الدكتور

محمد عبد الله عجرش

مدير مركز التدريب والتنمية البشرية

٢٠٢١ / /

الدكتور
الطبيب
الطبيب
الطبيب

نسخة منه إلى :

• مركز التدريب والتنمية البشرية / وحدة إدارة البحوث مع الأولويات

٨/١٢

دائرة صحة محافظة بابل / مركز التدريب والتنمية البشرية // ايميل المركز babiltraining@gmail.com



University of Babylon
College of Nursing

جامعة بابل
كلية التمريض
لجنة الدراسات العليا

Ref. No. :

Date: /



العدد : ٧٧٧
التاريخ : ٢٠٢٢ / ٢ / ١٨

الى / مستشفى الكفيل التخصصي
مستشفى الامام زين العابدين التخصصي
م/ تسهيل مهمة

تحية طبية :

يطيب لنا حسن التواصل معكم ويرجى تفضلكم بتسهيل مهمة طالب الدكتوراه (أمير حسن كاظم) لغرض جمع عينة دراسة الدكتوراه والخاصة بالبحث الموسوم
فاعلية البرنامج التعليمي للرعاية الذاتية على معارف المرضى الخاضعين لعمليات القلب المفتوح في محافظات الفرات الأوسط

Effectiveness of self – care Educational Program on the Knowledge of Patients
Undergoing Open Heart Surgeries in the Middle Euphrates Governorates

مع الاحترام ...

المرفقات //

- بروتوكول.
- استمارة.

ا.م.د. نهاد محمد قاسم الدوري
معاون العميد للشؤون العلمية والدراسات العليا
٢٠٢٢ / ٢ / ١٨

صورة عنه الى //

- مكتب السيد العميد للتفضل بالاطلاع مع الاحترام .
- لجنة الدراسات العليا
- الصادرة .

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Tel:282628 or 282621



وزارة الصحة والبيئة
دائرة صحة محافظة بابل
المدير العام
مركز التدريب والتنمية البشرية
وحدة إدارة البحوث

العدد : ٤٤٤

التاريخ: ٢٠٢١ / ٨ / ١٤

إلى / مستشفى الأمام الصادق (ع)
مركز شهيد المحراب لأمراض وجراحة القلب

وزارة الصحة
دائرة صحة بابل
مركز التدريب والتنمية البشرية

م/ تسهيل مهمة

السلام عليكم ...

أشارة إلى كتاب جامعة بابل / كلية التمريض / لجنة الدراسات العليا ذي العدد ٢٣٢٣ في ٢٠٢١/٨/٨
ترفق لكم ربطا استمارات الموافقة المبدئية لمشروع البحث العانده للباحث طالب الدكتوراه أمير حسن كاظم فراحان .

للتفضل بالاطلاع وتسهيل مهمة الموما إليه من خلال توقيع وختم استمارات اجراء البحث المرفقة في مؤسساتكم وحسب الضوابط والإمكانات لاستحصال الموافقة المبدئية ليتسنى لنا اجراء اللازم على أن لا تتحمل مؤسساتكم أية تبعات مادية وقانونية مع الاحترام

المرفقات :

استمارة عدد ٢/

١٨١

الدكتور

محمد عبد الله عجرش

مدير مركز التدريب والتنمية البشرية

٢٠٢١ / /

نسخة منه إلى :

• مركز التدريب والتنمية البشرية / وحدة إدارة البحوث مع الأوليات ...

سوزان ٨/١٢

دائرة صحة محافظة بابل / مركز التدريب والتنمية البشرية // ايميل المركز babiltraining@gmail.com



Ref. No. :

Date: /



العدد : ٧٧٨
التاريخ : ١٨ / ٤ / ٢٠٢٢

الى / دائرة صحة بابل
دائرة صحة النجف الأشرف
م/ تسهيل مهمة

تحية طيبة :

يطيب لنا حسن التواصل معكم ويرجى تفصلكم بتسهيل مهمة طالب الدكتوراه (أمير حسن كاظم) لغرض جمع عينة دراسة الدكتوراه والخاصة بالبحث الموسوم

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معاون العميد للشؤون العلمية والدراسات العليا
2022 / 2 / ١٨

صورة عه الى //

- مكتب السيد العميد للتفضل بالاطلاع مع الاحترام .
- لجنة الدراسات العليا
- الصادرة .

Appendix- C

Questionnaire

Questionnaire for the research:

((Effectiveness of self-care educational program on the knowledge of patients undergoing open heart surgeries in the middle Euphrates governorate))

Objectives the study:

1. To assess patient knowledge toward self-care management before and after conducting special educational program
2. To evaluate the effectiveness of the self-care management educational program on the patients knowledge who undergoing open heart surgeries
3. to identify the demographical characteristics of the study sample
4. to find out the relation between the self-care educational program effectiveness and demographical characteristics of the study sample such as (age ,gender , educational level

Part 1

The Demographic and Socio- demographic Characteristics.

1- gender:

- ☐ Male
- ☐ Female

2- Age years

3- Educational level

- ☐ Illiterate
- ☐ Able to read and write
- ☐ Primary school
- ☐ Intermediate school
- ☐ Secondary school
- ☐ Institutes
- ☐ College
- ☐ Master or Doctorate

4- marital status:

☐ Single ☐ married ☐ Separated ☐ divorce ☐ widow

5- Occupation:

- ☐ student
- ☐ Employer.
- ☐ unemployed.
- ☐ house wife
- ☐ Retired.

6- Address:

Rural Urban

Part 2

Clinical information

1- Chronic disease(s)

2- Smoking :- yes no

3- Previous hospitalization related cardiac disease

4- would you receive self care education yes ☐ No ☐

if yes from nurse ☐ physician ☐ friends ☐ social media ☐

5-Types of surgery

Part 3

The questionnaire knowledge related to self care management of patient undergoing open heart surgeries

Items	YES	NO
1.Related cardiac :		
a. The heart consist of four champers		
b. CABG mean coronary artery bypass grafting surgery		
c. The coronary artery are branch from aortic artery		
d. The number of normal heart rate 60-100 beat per min		
2. Preparation for surgery		
a. The open heart surgery take about 3 to 6 hours		
b. The surgeon uses a healthy vein or artery to create a new path around the blocked artery		
c. The patient is given a soapy solution to bathe to reduce the risk of infection		
d. The nurse shaves operation area		
e. The patient stays a one day or more in the intensive care unit after the open heart surgery, depending on the patient's condition		
f. The patient suffers from some symptoms and complications after operation, including: pain in the muscles and chest, and swelling in		

the feet		
3. Patient Activity		
A. Movement and walking In-hospital : after discharge from ICU		
1.The patient can move after disconnected from devices from him and gradually increase movement during his stay in the hospital		
2. After discharge from hospital walking inside the house		
3. Walking outside the house		
4. After the operation, the patient can do arm stretching exercises and do personal care by himself such as ADLs		
B. 1 to 4 weeks after surgery		
1. Walking at a slow pace		
2. Washing your hands and body		
3. Combing your hair while sitting or standing		
4. Showering with warm water while sitting or standing in the shower		
5. patient is able to change clothes		
6. Hobbies like playing card games, needlework, playing the piano, reading		
C. 4 to 6 weeks after surgery		
1. Walking at a moderate pace		
2. Lifting items that weigh less than 10 pounds (4.5 kilograms)		
3. Preparing light meals. For example: chopping salad while sitting		
4. Washing the dishes, making the bed and doing light housekeeping such as dusting or light gardening		

D. 6 to 8 weeks after surgery		
1. Walking up steep hills or walking at a quicker pace		
2. Carrying things that are 13 to 27 kilograms		
3. Hanging laundry on the line to dry		
4. Cleaning at a slow pace such as vacuuming, washing floors, laundry		
5. Shopping for groceries and carrying bags		
6. Doing light home repairs. For example: hanging a small picture or gardening		
E. 8 weeks after surgery		
1. Walking up hills at a fast pace		
2. Doing heavy washing or scrubbing with your arms above your shoulders		
3. Doing heavy gardening such as digging, spading, raking, trimming branches overhead		
4. Playing tennis, jogging, swimming, or bicycling at a medium or fast pace		
5. Doing heavy home repairs such as painting a room		
4. Problems it takes 4 to 6 weeks that consider normal :		
1. Incision pain		
2. Poor appetite		
3. Mood swings and feel depressed		
4. Swelling in the leg that the vein graft was taken from		
5. Feel itchy, numb, or tingly around the incisions on your chest and leg for 6 months or more		
6. trouble sleeping at night		
7. tired or not have much energy		

5. Nutrition and Medication		
1. eat food low cholesterol to prevent heart diseases		
2. eat food low salt to maintain normal blood pressure		
3. eat five portions of fresh fruits and vegetables a day and whole grains can reduce the risk of heart disease		
4. Olive oil contains antioxidants that can reduce the risk of heart disease		
5. Increasing the intake of green leafy vegetables helps reduce the risk of heart disease		
6. Diuretics have an onset of action 2 hours after taking them and last for 6-8 hours.		
7. Diuretics are taken during the early morning		
8. When taking blood-thinning medications and the appearance of black or blue spots on the skin or the appearance of blood in the urine or the change in the color of the urine to dark, the medication should be stop		
9. Digoxin is taken after food		

(فاعلية البرنامج التعليمي للرعاية الذاتية على معارف المرضى الخاضعين لعمليات القلب المفتوح
في محافظات الفرات الأوسط)

المحور الاول :المعلومات الشخصية :

1. الجنس : ذكر ☐ أنثى ☐

2. العمر :

3. مستوى التعليمي : 1- لا يستطيع القراءة والكتابة ☐

2- يستطيع القراءة والكتابة ☐

3- ابتدائي ☐

4- متوسط ☐

5- اعدادي ☐

6- بكالوريوس ☐

7- عالي ☐

4. المهنة: موظف ☐ كاسب(مهنه خاصه) ☐ متقاعد ☐ ربة بيت ☐

5.العنوان: ريف ☐ حضر ☐

6.الحالة الزوجية: أعزب ☐ متزوج ☐ مطلق ☐ ارمل ☐ منفصل ☐

المحور الثاني / المعلومات السريرية

1- الامراض المزمنة/ غير مصاب بأمراض مزمن / ضغط الدم / السكري / الربو / السكري
وضغط الدم

2- التدخين : نعم ☐ لا ☐

3- عدد مرات دخول المستشفى المتعلقة بأمراض القلب

4. هل تلقيت تعليمات حول العناية الذاتية نعم ☐ لا ☐

اذا نعم من قبل الطبيب ☐ الممرضة ☐ الاصدقاء ☐ وسائل التواصل الاجتماعي ☐

المحور الثالث

عناصر الاستبيان المتعلقة بالعناية الذاتية لمرضى جراحة القلب

لا	نعم	الفقرات	
		1 الاسئلة المتعلقة بفسلجة وتشريح القلب	
		أ القلب يتكون من اربع حجرات او ردهات	
		ب عملية القلب المفتوح تعني ترقيع الشرايين التاجية او اصلاح او تبديل الصمامات	
		ت الشريان التاجي هو فرع من الشريان الابهر	
		ث المعدل الطبيعي لعدد ضربات القلب في حالة الراحة هي 60 الى 100 ضربة بالدقيقة	
		2 التحضير لعملية جراحة القلب	
		أ يستخدم الجراح وريداً أو شرياناً سليماً لإنشاء مسار جديد حول الشريان المسدود	
		ب يستخدم المريض محلولاً صابونياً للاستحمام لتقليل خطر الإصابة بالعدوى	
		ت تهيئة الجلد (الحلاقة) لمنطقة العملية من قبل الممرض	
		ث يبقى المريض يوماً أو أكثر في وحدة العناية المركزة بعد جراحة القلب المفتوح حسب حالة المريض	
		ج يعاني المريض من بعض المشاكل الصحية بعد العملية ومنها: ألم في العضلات والصدر ، وتورم في القدمين.	
		3 نشاط المريض	
		أ الحركة والمشي في المستشفى: بعد الخروج من وحدة العناية المركزة	
		1 يمكن للمريض التحرك بعد فصل الأجهزة عنه وزيادة حركته تدريجياً أثناء تواجده بالمستشفى	
		2 المشي داخل المنزل بعد الخروج من المستشفى	
		3 المشي خارج المنزل	
		4 يمكن للمريض القيام بتمارين شد الذراع والقيام بالعناية الشخصية بنفسه بعد العملية	
		ب من 1 إلى 4 أسابيع بعد الجراحة	

1	المشي بوتيرة بطيئة		
2	غسل اليدين والجسم		
3	تمشيط شعرك وأنت جالس أو واقف		
4	الاستحمام بالماء الدافئ أثناء الجلوس أو الوقوف في الحمام		
5	خلع الملابس واخلع الملابس		
6	هوايات مثل لعب ألعاب الورق والتطريز ولعب البيانو والقراءة		
ج	4 إلى 6 أسابيع بعد الجراحة		
1	المشي بوتيرة معتدلة		
2	رفع الأشياء التي يقل وزنها عن (4.5 كجم)		
3	تحضير وجبات خفيفة. على سبيل المثال: تقطيع السلطة أثناء الجلوس		
4	غسل الأطباق ، وترتيب السرير والقيام بأعمال منزلية خفيفة مثل إزالة الغبار والأتربة أو البستنة الخفيفة		
د	من 6 إلى 8 أسابيع بعد الجراحة		
1	المشي بوتيرة أسرع فوق التلال شديدة الانحدار		
2	حمل الأشياء التي يتراوح وزنها بين 13 و 27 كيلوغراماً		
3	تعليق الغسيل أو نشره حتى يجف		
4	التنظيف بوتيرة بطيئة مثل التنظيف بالمكنسة الكهربائية وغسيل الأرضيات وغسيل الملابس		
5	تسوق البقالة وحمل الحقائب		
6	القيام بإصلاحات منزلية خفيفة. على سبيل المثال: تعليق صورة صغيرة أو البستنة		
هـ	8 أسابيع بعد الجراحة		
1	المشي فوق التلال بوتيرة سريعة		
2	الغسل أو التدليك بذراعيك فوق كتفيك		
3	القيام بأعمال البستنة الثقيلة مثل الحفر ، التجريف ، تقليم الأغصان العلوية		
4	لعب التنس أو الركض أو السباحة أو ركوب الدراجات بسرعة متوسطة أو سريعة		
5	القيام بإصلاحات منزلية ثقيلة مثل صباغة الغرفة		
4	المشاكل التي تستغرق من 4 إلى 6 أسابيع والتي تعتبر طبيعية:		

1	ألم الشق في منطقة الجرح		
2	ضعف الشهية		
3	تقلب المزاج ويشعر بالاكتئاب		
4	تورم في الساق تم أخذ طعم الوريد منه		
5	الشعور بالحكة أو الخدر أو الوخز حول الشقوق الموجودة على صدرك وساقك لمدة 6 أشهر أو أكثر		
6	صعوبة في النوم في الليل		
7	متعب أو ليس لديه الكثير من الطاقة		
4	التغذية والادوية		
1	تناول الطعام منخفض الكوليسترول للوقاية من أمراض القلب		
2	تناول الطعام منخفض الملح للحفاظ على ضغط الدم الطبيعي		
3	تناول خمس حصص من الفواكه والخضروات الطازجة يوميًا ويمكن للحبوب الكاملة أن تقلل من خطر الإصابة بأمراض القلب		
4	يحتوي زيت الزيتون على مضادات الأكسدة التي يمكن أن تقلل من خطر الإصابة بأمراض القلب		
5	يساعد إحداث تناول الخضار الورقية الخضراء على تقليل مخاطر الإصابة بأمراض القلب		
6	تبدأ مدرات البول بالعمل بعد ساعتين من تناولها وتستمر لمدة 6-8 ساعات.		
7	يتم تناول مدرات البول خلال النهار		
8	يجب إيقاف تناول أدوية منع تجلط الدم عند ظهور بقع سوداء أو زرقاء على الجلد أو ظهور دم في البول أو تغير لون البول إلى اللون الداكن		
9	يؤخذ الديجوكسين بعد الطعام		

Appendix - D

Interventional Program

البرنامج التثقيفي لمرضى جراحة القلب

اهداف البرنامج

1. لزيادة معرفة المريض بالقلب بخصوص التغيرات او التداخلات الجراحية التي ستجري بشكل مختصر
2. تعريف المريض حول كيفية اجراء العملية ومدتها والاجراءات والفحوصات التي يجب اجرائها قبل العملية
3. لزيادة معرفة المريض بخصوص النشاطات المسموحة والغير مسموحة له بعد العملية
4. زيادة معلومات المريض حول الاطعمة المسموحة تناولها والممنوعة التي يمكن ان تؤثر على صحة المريض
5. تعريف المريض حول كيفية استخدام الادوية ونوع الادوية المستخدمة بصورة دائمية او مؤقتة
- 6 . تعليم المريض حول معدل النبض الطبيعي لغرض مراقبة حالته الصحية وتجنب حصول المضاعفات
7. تقليل المضاعفات التي ممكن ان تحدث بسبب عدم التزام المريض بالتعليمات والتوصيات الخاصة بالغذاء
8. زيادة معلومات المريض بخصوص العلامات والاعراض التي ممكن ان تحدث بعد العملية
- 9 .تثقيف المريض حول المضار الناتجة من التدخين وبعض العادات المضرة بعد العملية وتأثيرها على صحته

المحاضرة الاولى

نبذة مختصرة عن القلب

القلب هو أحد أعضاء جسم الإنسان، ويقع بين الرئتين في منتصف الصدر؛ تحديداً خلف عظمة القص ويُشار إلى أنه يميل إلى جهة اليسار قليلاً، أمّا بالنسبة لحجمه فهو أكبر من قبضة اليد بمقدارٍ قليل ويتراوح وزنه ما بين 200-425 غرام، ويبلغ معدل نبضاته حوالي 60 الى 100 نبضة في الدقيقة الواحدة، ويتميّز القلب بأنّه يُشبه المضخة الدّم الى كافة اجزاء الجسم حيث يقوم الجزء الأيمن من القلب باستقبال الدّم من أجزاء الجسم المختلفة ثمّ ضخّه إلى الرئتين، ويقوم الجزء الأيسر منه باستقبال الدّم من الرئتين وضخّه إلى أجزاء الجسم ويطلق على هذه العملية اسم الدورة الدّموية

وظيفة القلب

يمكن القول بأنّ القلب يشكل أحد أهم الأعضاء في جسم الإنسان؛ نظراً لكونه مسؤول بشكلٍ رئيسي عن ضخّ الدّم وتوزيع الأكسجين والمواد الغذائية حول أجزاء الجسم، ويُمكن أن تحدث تغيرات جذرية في أعضاء جسم الإنسان بمجرد وجود تشوّهات أو اختلالات في القلب بغضّ النظر عن شدّتها

أجزاء القلب

يُنظّم القلب التدفق الطبيعي للدّم في جسم الإنسان عن طريق تركيبته؛ فهو يتكوّن من أربعة حُجرات والعديد من الصمامات كما أنّ للقلب جداراً يتكوّن من ثلاثة طبقات، وفيما يأتي توضيح لهذه المكونات:

طبقات القلب يتكوّن القلب من ثلاثة طبقاتٍ من الأنسجة، نُبيناها كما يأتي:

التامور: وهو غشاء رقيق ثنائيّ أو مُزدوج الطبقات يُمثّل البطانة الخارجيّة التي تُحيط بالقلب وتحميه كال كيس، ومن الجدير ذكره أنّ الطبقة الخارجيّة من التامور تُحيط بجذور الأوعية الدّموية الرئيسة في القلب

أما الطبقة الداخليّة من التامور فترتبط بعضلة القلب ويفصل بينهما سائل يسمح للقلب بالحركة أثناء النبض.

الحجرات:

الأذنين: وهما الحُجرتان العلويتان الصغيرتان. تقع في الحجرة العلويّة اليمنى من القلب منطقة تُسمّى العقدة الجببيّة والتي تُمثّل منظّم ضربات القلب الطبيعيّ؛ حيث تُساهم هذه العقدة في المحافظة على عمليّة ضخّ القلب عن طريق إرسال إشارات كهربائيّة عبره.

البُطينين: وهما الحُجرتان السفليتان الأكبر حجمًا.

الصمامات

تُشكّل الصمّامات لوحات أو وريقات تعمل كمداخل ذات اتجاه واحد تُنظّم دخول الدّم إلى البُطين، ومخارج أحادية الاتجاه تنظم خروج الدّم من البُطين؛ وبالتالي فإنّها تمنع من حدوث التدفق العكسي للدّم، وفيما يأتي بيان لصمّامات القلب الأربعة للقلب:

الصمام ثلاثي : ويقع بين البُطين الأيمن والأذين الأيمن.

الصمام الرئوي: ويقع بين الشريان الرئويّ والبُطين الأيمن.

الصمام الثنائي : ويحتوي على لوحتين فقط ويقع بين البُطين الأيسر والأذين الأيسر.

الصمام الأبهرى: ويقع بين البطين الأيسر والأبهر.

آليّة عمل القلب يستقبل الأذين الأيمن الدّم من الأوردة الدميّة ويضخّه إلى البُطين الأيمن الذي يقوم بدوره بضخّه للرئتين؛ حيث يُحمّل بالأوكسجين، ثمّ ينتقل الدم المؤكسج للأذين الأيسر من الرئتين ويضخّه للبُطين الأيسر الذي يتميّز بأنّه أكثر الحُجرات قوّة؛ حيث إنّهُ يضخ الدّم الغني بالأوكسجين لبقية أجزاء الجسم، حيث أنّ ضغط الدّم في الجسم ينتج عن طريق الانقباضات القويّة للبُطين الأيسر، ويتمّ توفير الدّم الغنيّ بالأوكسجين لعضلة القلب عن طريق الشرايين التاجية الموجودة على طول سطح القلب

أما بالنسبة لتوقيت مضخة الدّم فيتمّ التحكّم به عن طريق النظام الكهربائي الذي يُحافظ على انتظام إيقاع القلب ويضبط معدّل نبضاته مع أداء مهامه بشكل صحيح.

نبض القلب

تتضمّن عمليّة نبض القلب دفع الدّم في جميع أنحاء الجسم، ويُقاس النبض الذي يُمكن الإحساس به في الرّقبة أو الرّسغ عن طريق حساب عدد نبضات القلب في الدقيقة الواحدة بما يُعرف بمعدل ضربات القلب

حيث أنّ المعدّل الطبيعي لضربات القلب يتراوح في حالة الرّاحة وعدم النشاط ما بين 60-100 نبضة في الدقيقة الواحدة.

امراض الشرايين التّاجية: ويُمثّل حدوث اضطراب أو تلف في الشرايين التّاجيّة التي تزوّد عضلة القلب بحاجتها من العناصر الغذائيّة والأكسجين، وعادةً ما يُعزى السبب وراء هذا المرض إلى تراكم الرواسب التي تحتوي على الكوليسترول.

فشل القلب أو فشل القلب الاحتقاني وتتمثل بعدم قدرة القلب على ضخ الدّم إلى أجزاء الجسم بكفاءة.

امراض صمامات القلب: قد يؤدّي حدوث اضطراب في صمام القلب إلى جعل عمليه فتحها وإغلاقها بالشكل الصحيح أمراً أكثر صعوبة، الأمر الذي يؤثر في وظيفته التي تتمثّل بالفتح والإغلاق لتوجيه تدفق الدّم بين حجرات القلب الأربعة والرئتين والأوعية الدّموية. (Michigan Medicine 2019)

المحاضرة الثانية

نبذة عن عمليات القلب المفتوح وانواعها

جراحة القلب المفتوح هي نوع من الجراحة يتم فيه فتح الصدر، ويتم إجراء الجراحة على عضلات القلب أو الصمامات أو الشرايين، تسمى جراحة القلب المفتوح أحياناً جراحة القلب

يمكن إجراء جراحة القلب المفتوح لإجراء عملية تحويل مسار الشريان التاجي، لكونه ضرورياً للأشخاص المصابين بأمراض القلب التاجية.

يحدث مرض القلب التاجي عندما تصبح الأوعية الدموية التي تزود عضلة القلب بالدم والأكسجين ضيقة وصلبة غالباً ما يسمى هذا "تصلب الشرايين".

يحدث التصلب عندما تشكل المادة الدهنية لوحة على جدران الشرايين التاجية. تضيق هذه اللوحة الشرايين ، مما يجعل من الصعب مرور الدم. عندما لا يتدفق الدم بشكل صحيح إلى القلب ، قد تحدث نوبة قلبية.

تُجرى جراحة القلب المفتوح أيضاً من أجل:

1:إصلاح أو استبدال صمامات القلب التي تسمح للدم بالمرور عبر القلب.

2:إصلاح المناطق التالفة أو غير الطبيعية من القلب.

3:زرع الأجهزة الطبية التي تساعد القلب على الخفقان بشكل صحيح.

4:استبدال القلب التالف بقلب متبرع (زراعة القلب).

كيف يتم إجراء جراحة القلب المفتوح

بحسب المصادر العلمية ان تستغرق عملية تحويل مسار الشريان التاجي من ثلاث إلى ست ساعات، و يتم إجراؤه عموماً باتباع الخطوات الأساسية التالية:

- 1: يعطى المريض تخدير عام هذا يضمن أنه سيكون نائم وخالي من الألم خلال الجراحة بأكملها.
- 2: يقوم الجراح بعمل جرح في الصدر.
- 3: يقوم الجراح بفتح جزء من عظام الصدر لكشف القلب.
- 4: يستخدم الجراح وريداً أو شرياناً سليماً لعمل مسار جديد حول الشريان المسدود.
- 5: يغلق الجراح عظام الصدر .

كيفية التحضير للعملية

يتم تجهيز المريض مُسبقاً للعملية بمبيته قبل عدّة أيام من العملية لمتابعة ضغطه، وإجراء بعض الاختبارات التشخيصية واختيار الوقت الملائم لإجراء العملية، حيث يتم إعطاء المريض محلول صابوني خاص يغتسل به للتقليل خطر الإصابة بالالتهابات التي تُسببها الجراثيم والميكروبات، ثم تتم حلاقة الشعر من منطقة الصدر التي سيُجرى فيها الفتح، ومن ثم إعطاء المريض بعض الأدوية عن طريق الوريد حتى يتم إدخاله إلى غرفة العمليات وتخديره تخديراً كاملاً لإجراء العملية New York Heart Association (NYHA)

بعد جراحة القلب المفتوح يوضع المريض في وحدة العناية المركزة مدّة يوم أو أكثر حسب حالة المريض الصحية حتى يفيق من التخدير ويبدأ بالتحرّك، يتم إعطاء المريض بعض السوائل تدريجياً وبعدها يتم تزويد المريض بأوكسجين إضافي عن طريق قناع الأوكسجين عند الحاجة له، ثم يتم إخراج المريض من وحدة العناية المركزة ويبقى في المستشفى لعدّة أيام قبل العودة إلى المنزل، وخلال هذه الفترة يتم فحص سرعة قلب المريض، وضغط الدّم، والتنفّس. يسترجع المريض صحته تدريجياً، ويُنصح بعدم زيارة المريض خلال الأسبوع الأول من إجراء العملية، حيث يكون جسم

المريض حساساً لأي نوع من الجراثيم والميكروبات التي قد تُسبب له العدوى وبعض المضاعفات، الأمر الذي قد يؤثر على نجاح عملياته.

تختلف استجابة المرضى للعمليات حسب نوع المشكلة القلبية، والعمليات المُجرّاة، وقد يخبر الطبيب بعد الجراحة كيفية الاهتمام بالجرح، وتمييز أعراض الإصابة بالعدوى والالتهابات، وكيفية التعامل مع الآثار اللاحقة للعمليات ومضاعفاتها. يحتاج المريض إلى فترة نقاهة لاسترداد صحته، وقد يُصاب المريض ببعض الأعراض والمضاعفات بعد إجراء العملية، منها:

1. ألم في العضلات والصدر، وانتفاخ في القدم بعد العملية

2. احتباس البول والإمساك والاكنتاب والعصبية الزائدة، وفقدان الشهية، والشعور بطعم مر أثناء تناول الطعام، والقلق ليلاً وعدم الرغبة في النوم. وتُعد جميع هذه الأعراض طبيعية تبدأ بالزوال تدريجياً، حيث يرجع المريض إلى كامل صحته ويبدأ بالتعافي بشكل ملحوظ بعد الشهور الأولى من إجراء العملية،

ويُحدّد الطبيب حسب حالة المريض الصحية متى يستطيع الشخص ممارسة حياته بشكل طبيعي، مثل العودة للعمل، والقيادة، والقيام بالأنشطة البدنية دون أية مُعوقات. تستمر العناية بالمريض عن طريق إجراء فحوصات طبية دورية لمراقبة عمل القلب بعد الجراحة، وقد تتطلب حالة المريض تغييرات في نمط حياته، مثل: الإقلاع عن التدخين، وتغيير النظام الغذائي الخاص به، وممارسة النشاط البدني، والتقليل من التوتر والإجهاد النفسي

المحاضرة الثالثة

النشاطات وقواعد الأمان لممارسة التمارين بعد جراحة القلب المفتوح

عمليات القلب المفتوح من العمليات الكبرى التي يشعر المريض بعدها بالتعب والضعف ومن الممكن ان يستعيد نشاطه بالتدريج لذا ينصح المريض بالتحرك بعد رفع الاجهزة عنه وزيادة الحركة له تدريجيا خلال وجودة في المستشفى وكذلك عليه القيام بتمارين شد للذراع ويشجع المريض على القيام بالعناية الشخصية بنفسه مثل تناول الطعام وغسل الوجه وتفريش الاسنان . ويشجع ايضا على

ممارسة بعض التمارين والأنشطة الرياضية البسيطة خلال وجودة في المستشفى والاستمرار على التمارين بعد خروجه من المستشفى .

مرحلة الاستشفاء

- يمكن أن تستغرق هذه المرحلة بعد جراحة القلب المفتوح ما بين ستة إلى ثمانية أسابيع.
 - في هذه المرحلة الراحة في الفراش مهمة
 - يجب أن تلتزم بالمبادئ التوجيهية المحددة المقدمة من قبل الجراح أو طبيب القلب.
 - ومن المهم بنفس القدر أن تقوم بنشاط منخفض المستوى أثناء مرحلة الاستشفاء.
- حيث تعتبر الأنشطة العملية مثل المشي، حتى بوتيرة بطيئة، مهمة لتجنب الآثار السلبية لكل من الجراحة والراحة في الفراش (أي لمنع ضمور العضلات وتصلب المفاصل وفقدان التوازن والتنسيق)

بعد الجراحة ، يستغرق الشفاء التام من 4 إلى 6 أسابيع والبدء في الشعور بالتحسن. من الطبيعي أن :

- ❖ تشعر بألم في منطقة صدرك حول الشق
- ❖ ضعف الشهية لمدة 2 إلى 4 أسابيع
- ❖ لديك تقلبات مزاجية وتشعر بالاكتئاب
- ❖ لديك تورم في الساق التي تم أخذ الوريد منها في حالة ترقيع الشرايين التاجية
- ❖ تشعر بالحكة أو التميل أو الوخز حول الشقوق الموجودة في صدرك ورجلك لمدة 6 أشهر أو أكثر
- ❖ يجدون صعوبة في النوم ليلاً
- ❖ يكون ممسكاً من أدوية الألم
- ❖ لديك مشكلة في الذاكرة قصيرة المدى أو تشعر بالارتباك ("ذهول ضبابي")
- ❖ كن متعباً أو ليس لديك الكثير من الطاقة
- ❖ ضيق تنفس و ضعف في ذراعيك في الشهر الأول

إرشادات حول الأنشطة التي يمكن للمريض القيام بها ومتى

من 1 إلى 4 أسابيع بعد الجراحة - أنشطة خفيفة جداً

• المشي بوتيرة بطيئة

• غسل يديك وجسمك

• تمشيط شعرك أثناء الجلوس أو الوقوف

• الاستحمام بالماء الدافئ أثناء الجلوس أو الوقوف أثناء الاستحمام

• خلع الملابس

• الهوايات مثل لعب الورق والتطريز والعزف على البيانو والقراءة

4 إلى 6 أسابيع بعد الجراحة - أنشطة خفيفة

• المشي بوتيرة معتدلة

• رفع الأشياء التي يقل وزنها عن 10 أرطال (4.5 كجم)

• تحضير وجبات خفيفة. على سبيل المثال: تقطيع السلطة أثناء الجلوس

• غسل الأطباق وترتيب السرير وتنظيف المنزل بشكل خفيف مثل إزالة الغبار أو أعمال البستنة

الخفيفة (The British Association for Cardiovascular Prevention and Rehabilitation)

6 إلى 8 أسابيع بعد الجراحة - أنشطة معتدلة

• المشي فوق التلال شديدة الانحدار أو المشي بوتيرة أسرع

• حمل أشياء تزن من (13 كجم)

• تعليق الغسيل على الخط حتى يجف

• التنظيف بوتيرة بطيئة. على سبيل المثال: الكنس ، غسل الأرضيات ، الغسيل

• تسوق البقالة وحمل الحقائب

• عمل إصلاحات منزلية خفيفة. على سبيل المثال: تعليق صورة صغيرة أو البستنة

8 أسابيع بعد الجراحة - أنشطة شاقة

• المشي فوق التلال بوتيرة سريعة

- الغسل المكثف أو الدعك بذراعيك فوق كتفيك
- القيام بأعمال البستنة الثقيلة. على سبيل المثال: الحفر ، التجريف ، التجريف ، تقليم الفروع
- لعب التنس أو الركض أو السباحة أو ركوب الدراجات بوتيرة متوسطة أو سريعة

ملاحظة

في حالة حدوث ألم في الصدر أو ضيق في الصدر يجب على المريض التوقف عن الحركة

دليل النشاطات البيئية :

1. الموازنة بين الراحة والنشاط
2. النوم من 8 الى 10 ساعات خلال الليل مع اخذ قيلولة 20 الى 30 خلال النهار
3. الراحة بعد كل وجبة طعام او التعب
4. تستطيع تسلق السلم
5. لا تحاول شد جسمك عند ممارسة اي نشاط كرفع جسم ثقيل او فتح شباك محكم
6. الامتناع عن التدخين نهائيا
7. السفر بالسيارة مسموح بعد مرور اسبوع من خروجك من المستشفى اما السفر بالطائرة فهو بعد مرور اسبوعين من خروجك من المستشفى

المحاضرة الرابعة

الاغذية والادوية لمرضى القلب

أهمية اتباع نظام غذائي لمرضى القلب

يلعب النظام الغذائي دورًا مهمًا في صحة القلب ويمكن أن يؤثر على خطر الإصابة بأمراض القلب؛ حيث يمكن لبعض الأطعمة أن تؤثر على ضغط الدم والدهون الثلاثية ومستويات الكوليسترول، وكلها عوامل خطر للإصابة بأمراض القلب، وبالنسبة لشخص مُصاب بأحد أمراض القلب، فإن اتباع

نظام غذائي لمرضى القلب هو أحد أهم أركان العلاج جنبًا إلى جنب مع العادات الصحية الأخرى، والتي يمكن أن تُبطئ أو حتى تعكس جزئيًا تضيق شرايين القلب وتساعد في منع المزيد من المضاعفات.

نظام غذائي لمرضى القلب

هناك بعض الأطعمة المفيدة لصحة القلب نظرًا لاحتوائها على العناصر الغذائية المهمة مثل الفيتامينات والمعادن والدهون الأحادية غير المُشبعة وغيرها من العناصر المفيدة لصحة القلب؛ ولذلك يُفضل تناول هذه الأطعمة عند اتباع نظام غذائي لمرضى القلب، وتشمل هذه الأطعمة:

❖ الخضروات الخضراء. الحبوب الكاملة، بعض الفواكه، الأسماك الدهنية، وزيت السمك. الجوز. الفول. الشوكولاتة الداكنة. الطماطم. اللوز. الثوم. زيت الزيتون. الشاي الأخضر. كما أن هناك أطعمة أخرى قد تضر القلب أو تزيد من عوامل خطر الإصابة بأمراض القلب، ولذلك فمن المُفضل تجنبها عند اتباع نظام غذائي لمرضى القلب، وتشمل هذه الأطعمة:

❖ جوز الهند. الخضروات المقلية. الفواكه المُعلبة، الفواكه المُجمدة مع السكر المُضاف. الدقيق الأبيض المكرر، الخبز الأبيض وخبز الذرة، الفشار بالزبدة. الأطعمة عالية الدهون. صلصة اللحم. زبدة الكاكاو الموجودة في الشوكولاتة. زيوت جوز الهند والنخيل. الحليب كامل الدسم ومنتجات الألبان الأخرى. اللحوم الدهنية. ملح الطعام. التوابل مثل الكاتشب والمايونيز وصلصة الصويا. الأطعمة الجاهزة.

الأطعمة المُفضَّل تناولها في نظام غذائي لمرضى القلب

إن لمن الضروري التعرف على ماهية الأطعمة المُفضَّل تناولها في نظام غذائي لمرضى القلب، لضمان الصحة العامة، وفيما يأتي شرح لهذه الأطعمة وبيان فوائد كلٍ منها بالتفصيل:

الخضروات الخضراء إن الخضروات ذات الأوراق الخضراء مثل الغنية بالفيتامينات والمعادن ومضادات الأكسدة، كما تُعدّ مصدرًا كبيرًا لفيتامين ك، الذي يساعد على حماية الشرايين وتعزيز تخثر الدم بشكل مناسب، كما أنها تحتوي على نسب عالية من النترات الغذائية، والتي ثبت أنها تُقلل من ضغط الدم، وتُقلل من تصلب الشرايين، وتُحسن وظيفة الخلايا المبطنة للأوعية الدموية، وقد وجدت بعض الدراسات أيضًا وجود صلة بين زيادة

تناول الخضروات ذات الأوراق الخضراء وبين انخفاض خطر الإصابة بأمراض القلب بنسبة 16%؛ لذلك يُفضل زيادة تناولها عند اتباع نظام غذائي لمرضى القلب.

الحبوب الكاملة الحبوب الكاملة تحتوي على نسب أعلى من الألياف مقارنةً بالحبوب المكررة، مما قد يساعد في تقليل الكوليسترول الضار ويقلل من خطر الإصابة بأمراض القلب، بعض الفواكه مثل التوت والفراولة وتوت العليق وعنب العليق والعنب البري تحتوي على العديد من العناصر الغذائية المهمة التي تلعب دورًا هامًا في صحة القلب؛ فالتوت غني بمضادات الأكسدة .

زيت الزيتون يحتوي زيت الزيتون على مضادات أكسدة يمكن أن تقلل من خطر الإصابة بالأمراض المزمنة، كما أنه غني بالأحماض الدهنية الأحادية غير مشبعة، وقد أظهرت إحدى الدراسات أن أولئك الذين يتناولون زيت الزيتون يقل لديهم خطر الإصابة بأمراض القلب بنسبة 35%؛ لذلك يُفضل زيادة تناوله عند اتباع نظام غذائي لمرضى القلب.

ان اتباع نظام غذائي متوازن، مع الالتزام بالأطعمة قليلة الدسم الغنية بالألياف والحرص على تناول خمسة أجزاء من الفواكه والخضروات الطازجة يوميًا، وزيادة تناول الحبوب الكاملة وتقليل كمية الملح والسكر في النظام الغذائي. ممارسة التمارين الرياضية بانتظام. الحفاظ على وزن الجسم ضمن المعدل الطبيعي. الابتعاد عن التدخين. تجنب شرب الكحول. السيطرة على الأمراض التي تؤثر على صحة القلب، مثل ارتفاع ضغط الدم ومرض السكري.

الادوية بعد عملية جراحة القلب

الوضع الصحي للمريض بعد إجراء عملية القلب المفتوح يتطلب عناية خاصة، وتبعاً لهذه النقطة فإن استخدام الأدوية بعد عملية القلب المفتوح قد يكون ضروريا للحصول على نتائج جيدة من العملية، أو ممنوعاً لتفادي حدوث أية مشاكل صحية وضمان مرور العملية بأمان

والأدوية المستخدمة والموصوفة من قبل الطبيب بعد عملية القلب المفتوح تعمل على:

- تحسين كفاءة القلب
- زيادة الامداد الدموي للقلب عن طريق توسيع الشرايين
- منع تكون الجلطات الدموية و باستعمال أدوية السيولة

• الوقاية من النوبة القلبية

وينبغي الالتزام بالأدوية الموصوفة والتي تشمل

• ACE inhibitor

تعمل على تقليل الجهد على عضلة القلب وتوسيع الاوعية الدموية وبالتالي تقليل ضغط الدم

Beta blockers

يعمل تعمل على تقليل الجهد على عضلة القلب وله اثار جانبية تتمثل بالارهاق

stains مضادات الدهون

يمكن لهذه المجموعة من الادوية ان تتحكم وتقلل نسبة الكولسترول والدهون بالدم مما يقلل فرصة الاصابة بنوبات قلبية وتصلب الشرايين

مسكنات الالم

تستخدم لتخفيف الالم بعد العملية وتوصف على شكل حبوب

المدرات

من ادوية المدررات هي (موديوريتك , لازكس- الدكتون) يكون بداية عملها 2 ساعة بعد أخذها ويستمر عملها من 6-8 ساعة .

ارشادات للمريض الذي يأخذ مدررات

١ - هذه الأدوية تسبب ادرار كثير فعليك تنظيم نشاطك عند اخذك للدواء .

٢ - تناول سوائل كافية .

٣ - هذه الأدوية تتعارض مع بعض الأدوية لذا لا تأخذ دواء غير موصوف لك من قبل

الطبيب وخصوصا الاسبرين ومضادات السكر .

4- تناول الدواء خلال النهار وذلك لتفادي ازعاجك في الليل (اذا كانت الجرعة لمرة واحدة

فتناولوها عند الصباح اما اذا كانت الجرعة لمرتين فتناول الدواء واحدة في الساعة الثامنة صباحا وواحد في الساعة الثانية ظهرا .

5- طعامك يكون غني بالبوتاسيوم و الحمضيات (البرتقال ، الليمون ، العنب ، والتفاح ، والأجاص ، والكمثرى ، والمشمش ، والموز ، واللحوم ، والسّمك ، ولحم الطيور ، والدجاج) .

مميعات الدم

وهو من العلاجات التي يتناولها المريض مدى الحياة وهو يزيد من وقت تخثر الدم والهدف منه هو المحافظة على وقت التخثر من ١٠٪ الى ٣٠٪ من وقت التخثر الطبيعي ويعطى عن طريق الفم والجرعة تنظم حسب ما يشير اليه التحليل الذي يجري للمريض وهو (وقت التخثر)

نصائح للمرضى الذين يتناولون مميع ادم.

- 1- اذا كان هناك أي علامات للنرف (مثلا النزف من اللثة خلال تفريش او بقع سوداء او زرقاء على الجلد او ظهور دم في الادرار او تغير لون الادرار الى غامق) فعليك التوقف عن اخذ الدواء وراجع طبيبك المعالج.
- 2 -لا تأخذ دواء غير موصوف لك من قبل طبيبك لان هذا الدواء ليس كباقي الادوية انه يتعارض مع أدوية كثيرة وخصوصا الاسبرين والفيتامين الذي في تركيبه فيتامين K وكذلك عدم تناول الكحول.

3- عند مر اجعتك لطبيب غير طبيبك اخبره انك تأخذ مميعات الدم

4- استعمل ماكينة حاقه كهر بائية عند الحلاقة لمنع تخدش الجلد .

5- استعمل فرشاة اسنان ناعمة عند تفريش الاسنان.

الديجوكسين

يتركز عمله على زيادة انقباضيه عضلة القلب وتقليل النبض

ارشادات للمريض

1- نظم جرعة الدواء بحيث المحددة تاخذ الدواء وعدم نسيانه واذا كنت تنسى تأخذ الدواء في اوقاته

اعمل ورقة لتأشير وقت اخذ الدواء

2 - تناول الدواء بعد الطعام.

3 - احسب نبضك قبل دقيقة على الاقل قبل اخذ الدواء واذا كان النبض ٦٠ مرة في الدقيقة

او اقل وغير منتظم توقف عن اخذ الدواء وراجع طبيبك مباشرة.

4- عند حدوث بعض العلامات والاعراض مثل عدم الشهية للأكل او الم او التعب او ضعف

عام بالعضلات او كسل او عدم انتظام النبض ايضا، توقف عن اخذ الدواء وراجع طبيب

مباشره. .

5- تأكد من طعامك يجب ان يكون قليل الملح خلال فترة اخذ العلاج (Michigan Medicine

. 2019)

الخلفية: توصف الرعاية الذاتية بأنها طريقة للتعامل مع أحداث الحياة والصعوبات الناتجة عن زيادة عملية الشيخوخة ، وتستلزم الرعاية الذاتية اتخاذ إجراءات معينة للتخفيف من الأعراض والحفاظ على الصحة وتحسينها. الرعاية الذاتية هي أحد الجوانب الأساسية الشائعة في علاج مرضى جراحة القلب

الأهداف: تقييم فعالية البرنامج التعليمي لإدارة الرعاية الذاتية على معرفة المرضى الذين يخضعون لجراحات القلب المفتوح الطرق: لتحقيق أهداف هذه الدراسة، تم استخدام دراسة كمية شبه تجريبية للتصميم مع ما قبل وما بعد الاختبار لكل من المجموعات المدروسة والضابطة. بدأ هذا البحث في مركزين للقلب في شهيد المحراب و مركز النجف لأمراض وجراحة القلب كانت المواقع المخصصة لجمع البيانات من 20 أغسطس 2021 إلى 10 سبتمبر 2022. وكانت عينة هادفة غير محتملة يتم اختيارها من المجموعة المستهدفة التي يتم استيفائها المعايير المحددة خلال فترة زمنية محددة. تتكون عينة الدراسة من (60) مريضاً يخضعون لعملية قلب مفتوح لديهم نفس معايير الشمول. ينقسم هؤلاء المرضى إلى مجموعتين: (28) مريضاً يعملون كمجموعة دراسة والآخر (32) مريضاً يعملون كمجموعة ضابطة ، وكان المرضى يزورون هذه المراكز بشكل متكرر للمتابعة والاستشارة. ووضع استبيان لتقييم المعارف المتعلقة بالرعاية الذاتية ؛ يتكون من ثلاثة أجزاء: الجزء الأول: الخصائص الديموغرافية والاجتماعية الديموغرافية للمرضى هذا الجزء يتعلق بجمع البيانات الديموغرافية التي يتم الحصول عليها من المريض من خلال ورقة استبيان مقابلة مثل [العمر، والجنس، والحالة الاجتماعية، ومستوى التعليم، والعنوان، والمهنة. عرضت الأسئلة الستة خيارات إجابة من نوع ملء. صلاحية حصل عليها 15 خبيراً، في حين تم الحصول على موثوقية قدرت بـ (0.794) للمعرفة المقبولة إحصائياً.

النتائج: معظم المشاركين في المجموعتين 14 (43.8) بين 50-59 سنة، 14 (43.8) في المائة) أكثر من 59 سنة، 18 (64.3 في المائة)، 17 (53.1 في المائة)، ذكور. فيما يتعلق بالحالة التعليمية 7 (25.0٪) كانت المدرسة المتوسطة في مجموعة الدراسة، في حين أن 11 (34.4٪) كانت مدرسة ثانوية في المجموعة الضابطة، وسجلت كلتا المجموعتين نسبة عالية 27 (96.4٪)، و 25 (78.1٪)، كانوا متزوجين. يبين أن الاختلافات بين الاختبار المسبق والاختبار اللاحق لعينة البحث بعد المشاركة في البرنامج التعليمي كبيرة للغاية عند القيمة (0.001 p)، في حين أنه لا توجد اختلافات كبيرة مسجلة بين أعضاء المجموعة الضابطة.

استنتاجات: تظهر النتيجة تأثيراً جيداً للبرنامج التعليمي على معرفة المرضى.

التوصية: يجب أن يحصل المرضى الذين يخضعون لجراحة القلب على برنامج تعليمي ينفذ من قبل الممرضين قبل الجراحة، بالإضافة إلى تفسيرات للمخاطر المرتبطة بجراحة القلب طوال فترة الاستشفاء وفي المنزل و افتتاح مركز خاص بتأهيل امراض القلب من ضمن المراكز المشار اليها بالدراسة تكون مسؤوليتها متابعة المرضى وتدريبهم حول كيفية الرعاية الذاتية

1.1. Introduction

Cardiovascular diseases (CVD) is the leading causes of a major health problem, highly prevalent, and the leading cause of death in the world .The diseases may cause physical disability and put a huge financial burden on the affected patients and the national healthcare system. According to the World Health Organization, coronary artery disease was responsible for 15,3 million deaths (30% of all deaths)and 10.3% of the total disability adjusted life years (DALY) . The World Health Organization calculated that cardiovascular diseases were responsible for 28.5% of all fatalities in developing nations (WHO, 2018).

According to the latest World Health Organization (WHO) data published in 2018 Coronary Heart Disease Deaths in Iraq reached 32,463 or 18.92% of total deaths. According to the Global Burden of Disease Study, 55% rise would occur in CVD between 2010 and 2030 (WHO 2019).

Quality of life has emerged as an important concept and outcome in health and health care . In public health and in medicine, the concept of health related quality of life refers to a person or groups perceived physical and mental health over time (Amsterdam et al., 2014).

The purpose of coronary artery bypass graft (CABG) to improve circulation to the heart. As a result, the patient experiences less chest pain and ischemia, has a higher quality of life, and may even live longer. It is intended that the patient will be able to lead a more normal life after the treatment, and that the risk of a heart attack would be diminished. (Benjamin et al., 2017).

The annual number of CABG procedures performed in the United States increased by 425% between 1979 and 1990, from roughly 150000 to 5980000. (Mozaffarian .et al 2013).

During the last years, there has been a dramatic increase in the number of cardiac surgical procedures involving; the surgical treatment for valvular disease and coronary artery bypass graft. In Iraq, 50% of total open-heart surgery was CABG . The success of cardiac surgery is measured by low mortality, relief of symptoms and improvement in the quality of life .Increasing attention has been given to monitoring health-related quality of life variables in relation to the outcome of surgery. (Kouchoukos. et al., 2013).

Patients' habits and awareness are linked to the majority of cardiovascular risk factors. Self-care habits are therefore one of the most critical therapy interventions for these people. (Cucato, G.,et al.2022).

Cardiac surgery as CABG is the most costly and invasive of the recommended treatments for people with CAD, but it is the only option many patients with cardiac disease . The primary benefits of this operation over alternative therapeutic techniques include reduced pain and disability, as well as improved quality of life (QoL) through relieving symptoms of angina and extending life. However, CABG surgery creates both mental and physical complications (lung, heart, and neurological difficulties; inflammation and infection; renal impairment and hemorrhage) (depression, anxiety, etc.). Self-care plays a significant part in the healing of individuals with CVDs who have undergone open-heart surgeries. Health education of the cardiac surgery patient plays a vital role in the patient's post-operative care and the recovery process (National Audit of Cardiac Rehabilitation 2018).

Investing time in pre-operative preparation for heart surgery patients helps eliminate gaps of information and avoids post-operative problems. However, pre-operative health education in cardiac surgery is a complex aspect. (Shuldham, Fleming & Goodman 2015).

According to Orem self-care is a regulatory function into human beings primarily based on the individual's ability according to function self-care practices on themselves. (Luttik M et al.2005).

Self-care is described as a method for coping with life events and difficulties generated by an increase in the aging process and reliance, Self-care entails taking particular actions to alleviate symptoms, maintain and improve health. Self-care is one of the common consequently essential aspects of the cardiac surgery patients treatment (McAlister FA and Stewart S. 2013).

Self-care comprises of weight daily assessment; physician contacting when witnessing the ankle, legs, foot, or abdomen swelling; checking the urine amount of produced daily; eating fluids as prescribed by a physician; and avoiding excessive fluid intake .There are numerous factors that influence the overall self-care performance among open heart surgery patients, including education level, hospitalization variety , awareness and perceived social support (Sayers SL and Barbara Riagel DNSC.2018).

Social assist is one regarding the almost significant elements influencing mental situation and remedy follow-up among patients with cardiac diseases (Ghaem-magham Farahani Z,et al. 2013).

Due in accordance with the debilitating nature on that disease, the plan for the care regarding these patients must take among calculation whole factors of life, including social support (Christensen,et al. 2014).

Recovery period, encourages self-care reduces the danger regarding relapse among patients. Life motivation and self-care highly correlated and may contribute to the control of symptom development, reduction among the recovery period, and prevention regarding the recurrence of the sickness in heart surgery patients (Graven, et al. 2014).

Most care activities related together with cardiac surgery are performed among the home by patients and their families or other informal caregivers. Thus, such is fundamental to that amount heart surgery patients put in among self-care, yet nearly clinicians function no longer have the coaching to prepare there sufferers according to engage among high quality self-care (National Health Service 2019).

1.2. The importance of the study

Cardiovascular disorders are the top global cause of mortality many nations' high rates of morbidity and mortality can be ascribed to cardiovascular diseases as one of the primary reasons for hospitalization (WHO, 2018).

By 2030, it is expected that the prevalence of coronary artery disease (CAD) in the United States would rise to 18%. Reportedly, over 397 thousand coronary artery bypass graft (CABG) surgeries are performed annually in the United States. In Iran, where over 50,000 cardiac surgeries are performed annually and CVDs account for 33–38% of fatalities and 23% of disability. The prevalence of VHD is rising. In the United States, approximately 2.5% of adults are deaf. (American heart association 2019).

The global prevalence of valvular heart diseases is much higher, largely owing to the burden of rheumatic heart disease in developing countries although its rate is decreasing overall (Timmis A, Townsend N et al. 2018).

The VHD prevalence increases to about 1 in 10 people over the age of 65 as a result of the degenerative changes in valve structure that occur with age (Bucholz EM .2018).

A growing elderly population, from an estimated 962.3 million in 2017 to 2080. five million in 2050, makes VHD a major public health issue. All healthcare providers, regardless of their field, may treat a patient with VHD at some point . The care of individuals with a (VHD) involves skills, knowledge, and practice standards based on a comprehensive grasp of normal anatomy, physiology, and pathophysiology. In heart surgery, the post-operative phase is regarded embarrassing for the patient and his family, as the patient may experience several physical and psychological difficulties that limit his activity and diminish his quality of life. Multiple studies have demonstrated that heart surgery patients require a great deal of information regarding their recovery at home. In clinical practice, it is generally understood that patients require information before and after heart surgery, whereas a lack of information during hospitalization and after discharge may hinder healing during these periods (Mohseni, et al. 2013).

Heart disease is currently one of the leading public health problems in the world, and its intricate or slow nature frequently results in reverse actions, such as a high rate of rehospitalization and mortality, as well as the need for improved condition and self-care (Moser, et al.2015).

Heart disease is a growing concern for American healthcare since it affects more than 5 million Americans, half of whom may die within the next five years (Phelps, 2016).

Diabetes mellitus, valvular disease, hypertension, myocardial infarction, and obesity are the leading risk factors for the cardiac diseases , which mostly affects adults over 65. (Connelly, et al.2013)

This may also be examined in accordance with the aging of the U.S. population and the prevalence of a lifestyle characterized by insufficient physical activity and poor dietary choices, which leads to the emergence of risk factors. Heart failure has numerous triggering factors that may also cause the initial heart injury, but it completely halts myocardial remodeling (Motiwala, et al, 2016.).

Life expectancy is shortened and mortality is increased in those with heart disease. It also causes 12-15 million annual visits to doctors' offices and 6.5 million annual hospitalizations (Velagaleti, et al2007).

There is currently no known cure for heart disease; however, it has been shown that familiarity with the disease and the guidelines put forth by the AHA and the Heart Disease Society of America can help reduce mortality, increase quality of life, and lessen the need for hospitalization (Mahmood, A.S., 2015).

In 2006, around 7 million individuals underwent cardiovascular surgery in the United States (Viars, 2009).

These patients experience high levels of anxiety and tension since they are unsure about the outcome of the procedure. Inadequate preoperative

education and preparation leads to unwarranted anticipations, anxieties, and problems. Delays in ambulation contribute to the risk of deep vein thrombosis, and ineffective use of incentive spirometry can lead to pneumonia, both of which can lengthen hospital stays. The lack of knowledge regarding normal discharge planning on day 5 following coronary artery bypass surgery and on days 5–7 after valve surgery can also result in patients being unprepared for the post-hospitalization period, therefore delaying their discharge. In Iraq, little is known about the self-care education component of the health education process (Ley SJ. 2009).

This study will therefore provide time to evaluate the results and provide information regarding the self-care educational program on the knowledge of patients following open-heart surgery.

1.3. Statement of the study

Effectiveness of Self-care Educational Program on the Knowledge of Patients Undergoing Open Heart Surgeries in the Middle Euphrates Governorate

1.4. Hypothesis

- H0: there is no significant relationship between the educational program and Patients Self-care knowledge.
- H1: there is significant relationship between the educational program and Patients Self-care knowledge.

1.5. Objectives of the study

1. To assess patient knowledge toward self-care management before and after conducting special educational program

2. To evaluate the effectiveness of the self-care management educational program on the patients knowledge who undergoing open heart surgeries
3. To identify the demographical characteristics of the study sample
4. To find out the relation between the self-care educational program effectiveness and demographical characteristics of the study sample such as (age ,gender , educational level

1.6. Definition of Terms

Theoretical definition of Effectiveness:

Is the ability to generate the required results or to supply the needed output. To be considered successful, an endeavor must produce the desired outcome or leave a significant effect on its audience. (Dominguez-Mayo et al., 2015).

Operational definition of Effectiveness:

The capability to provide a precise outcome or to apply a specific quantifiable effect concerning self care .

Theoretical definition of education program:

Systematic plans for development of special or general abilities (Miller and Keane, 2007).

Operational definition of education program:

Refer to systematically organized teaching plan to provide information for patients concerning self care .

Theoretical Definition of open heart surgeries

operations on the heart or the arteries that supply it with blood. Patients frequently have these operations to treat congenital heart defects,

valvular heart disease, and problems related to ischemic heart disease (such as with coronary artery bypass grafting). (Knatterud, Mary 2015)

Operational definition of open heart surgeries:

This entails the opening of the thoracic cavity (thoracotomy) by cardiothoracic personnel in order to repair or replace valve abnormalities and/or execute coronary artery bypass grafting.

Self-care Theoretical Definition:

Self-care is a naturalistic decision making process of maintaining health through positive health practices (self-care maintenance) and managing illness and disease (self-care management).

(Shuldham , et al 2017).

Self-care Operational definition :

All strategies that may used by the patient depending up on his strength , knowledge and tolerance which help him to decrease or relief the symptoms of heart failure in order to enhance the quality of life .

Theoretical Definition of knowledge :

Acquired through education or experience, knowledge is the theoretical or practical comprehension of a subject. (Graham ID, et al 2016) .

Operational definition of knowledge:

It is what an individual obtains of experiences and skills, which are mostly founded on experience and learning in the first place, and it is reflected by the individual's theoretical and practical comprehension of any concept or subject.

2.1. Historical Overview

Historical background of artery bypass graft and valve replacement. Cardiac operation started in 1950, when the heart/lung machine was perfected and became more reliable (Thomason, 1982). Advancement in technology related to diagnosis, anesthesia, and surgical management continued after the development of cardiopulmonary bypass (Semitzer and Bare, 1996).

Cardiac surgery is considered a new technology. Since the first exploratory operation of heart valve in 1940, advances in valvular surgery continued rapidly. In 1978, thirty three thousand valve surgeries were doing in the United States. With the reduction of incidence rheumatic heart disease, the number of valvular surgeries decreased in the United States and the ratio of valve to CABG surgery was 1:6. (Zyzanski et al., 1981; Semltzer and Bare, 1996;).

In Britain, the first successful CABG was performed in 1964. The number of patient underwent this procedure increased each year when, 1500 procedures were done in 1975. Over 30000 operations were performed between 1967 to 1977 (Macintosh and Garcia, 1978).

The first successful coronary artery bypass graft was performed in 1967, in the United States and the patients number who have undergoing this procedures each years is multiplied. In 1970, CABG procedures were performed for 14,000 patients (Lily, 1985).

The figure number rise to 95,000 in 1978 (Brunner and Suddrath, 1984). The number jumped to over 159,000 in 1989. More than 250,000 open heart surgery were performed and high percentage of them were CABG in 1996. In Iraq, the first successful operation of open heart surgery atrial septal defect

(ASD) was performed in 1964 by Iraqi surgeon Professor Yousif Al-Numan. The first real coronary artery bypass surgery started in 1989 at Al-Rashed Military Hospital by Dr. Najh Al-Asady (patal communication with Dr. Hamed Al-Ane, Dr. Najih Al-Asady and Dr. Sadick Al-Khashab). Between 1993 to 1997, more than 300 CABG surgery and about 900 operation of valve replacement were performed (Al-gersha, K., Haboubi, G., & Al-Asady, N. 2018).

In the central Euphrates governorates, heart surgery operations began at the Najaf Al-Ashraf Center for Catheterization and Cardiac Surgery and the Shaheed Al-Mihrab Center for Cardiac Diseases and Surgery in the year 2016 and witnessed a remarkable development in terms of the number and quality of operations performed in these centers after continuous training and the recruitment of a number of foreign medical delegations

2.2. Theoretical framework

According to Orem's self-care deficit nursing theory (Orem, 1995), the clinical guidance of ADA (2012) suggests attending to health deviation self-care requisites. So the person with heart diseases needs to re-regulate medical nutrition treatment and physical activity, if necessary, using drug and blood-pressure monitoring to evaluate the outcome of self-care activities. The person with heart diseases must learn how to evaluate themselves, decide what actions need to be taken to attend to their needs, and perform those actions.

According to Orem, self-care is an acquired skill that comes easily to mature people. The theory's central tenet is that encouraging people to take care of themselves helps them maintain their own health and improves the

quality of their own medical care (Orem 1983; 1985; 1991; 2001; 2003). According to Orem, there is a set of universal human characteristics that support normalcy (the encouragement of human functioning and development within social groupings in accordance with human potential, known constraints, and the intrinsic desire to be normal). Individuals' self-care routines are influenced by both basic conditioning characteristics (such as age and gender) and universal requisites (such as the need for air, drink, food, activity&rest, solitude, and social connections).

The key idea behind Orem's thesis is that individuals have the competence, duty, and right to look after themselves. To Orem, a comprehensive model or theory developed for an applied science like nursing includes not only the what and why of the field, but also its who and how (Orem 2006). With this action theory, both the nurse's and the patient's duties are clearly defined. Six central ideas and one auxiliary idea form the backbone of these theories. Orem's individual research and the Nursing Development Conference Group's talks gave rise to a number of the concepts, such as the cornerstone to learning any theory is study of fundamental assumptions. Orem's conceptions were governed by five overarching assumptions or beliefs concerning humanity. On page 123 of Parker (2010)

Her ideas about human behavior and social interaction were shaped by her reading of Aristotle, Thomas Aquinas, Talcott Parsons, Pitirim Sorokin, and others (Orem, 2003). Orem divided people into two categories when considering them theoretically: those in need of nursing care, and those who provide it. According to (Parker, 2010, p. 123),

Orem has been working on her idea of Self-care deficit since the beginning of her career and has continued to improve it up until her retirement. Orem recognized a need to improve the quality of nursing at this state's general hospital throughout her time while working for the Division of hospital and Institutional Services. As a result, she has come up with her own concept of nursing practice. In 1956, she formed her initial concepts.

The nursing practice, in Dorthea Orem's view, should be directed on fostering patients' innate capacity for self-care (Orem, 1995)

Each and every theory has its roots in the real, material worlds of people and events, in the world of ideas, and in the theorist's own life and experiences. An overview of the origins, evolution, and generalization of the self-care deficit hypothesis of nursing is provided. Orem (1991), page 59

2.2. 1. Orem's Theory concept

Life, human functioning, and well-being all depend on the trained and deliberate performance of self-care, whether for one's care self or for a dependent care (that is, care provided by another, such as a family member). There are contextual factors, such as cultural norms and expectations, that influence the degree to which people take care of themselves. When caring for oneself or another, it is necessary to make educated guesses or conduct thorough research on what options are available and optimal. This is a multistep process involving knowledge and research into specific forms of treatment. Next in the self-care process is determining what needs to be done, followed by actually doing it (Orem 2001, pp.143-145). The concept of purposeful action, a voluntary conduct to attain a goal, is central to both self-care and dependent care.

Related to Orem self care agency can be explain as a human's capacity for engaging in self-care is influenced by their age, stage of development, life experience, sociocultural orientation, health, and access to resources. The capacity to recognize and address the self-care needs of a socially dependent individual; the ability to do so is known as dependent care agency (Taylor, 2001). Core Abilities

The most fundamental level. These skills apply to any kind of intentional behavior, not simply self-care. Perception, memory, and navigation skills are all part of this.

Ten qualities or strengths are necessary for self-care. Knowing how to take care of oneself, being motivated to do so, and really being able to do so are all crucial factors. Furthermore, our higher-order cognitive and motor skills (including the capacity to pay attention, reason, make decisions, and carry them out) are impaired.

The granularity of self-care agency lies in the specifics of the various parts that make up the whole of self-care need or demand. Estimative operation skills include the ability to investigate and estimate what needs to be done in order to determine what Self-care activity is required in a given nursing environment at a given time. Learning ability in health and wellness contexts is included. These types of talents demonstrate the richness of human capability, and the action sequence is crucial to the self-care notion. Self-care agency also varies in terms of its level of development and operability at the level of concrete practice.

Theoretically, therapeutic self-care demand (TSCD) is an intricate notion that encompasses every single thing a person needs to do for their own life, health, and happiness over time. It was originally called activity demand or self-care demand (Orem 2001). Building or calculating a TSCD calls for in-

depth evidence-based practice, communication, and interpersonal nursing expertise. To do this, values are conditioned and then adjusted.

Self-Care Requisites

A set of self-care requisites (or criteria for action) covering universal, developmental, and health issues was created to serve as a basis for establishing the TSCD. These are the reasons or ends for which people do action in order to sustain their own existence and that of their loved ones.

Essentials for everyone's own health and well-being

Air, food, activity, rest, solitude, and social interaction are just some of the eight USCRs that everyone, regardless of age or circumstance, needs to thrive. Preventing harm to human life, human functioning, and human well-being (the objective) requires actions to be taken throughout time, and they will look different for an infant (e.g., keeping crib rails up) than they will for an adult (e.g., ambulation safety).

The importance of self-care at every stage of development

Orem (2001) classified self-care needs into three categories: (DSCRs). The first set of terms refer to activities essential to the broad range of human development. Dependent care agents frequently fulfill these requirements when caring for newborns and children, and when caring for adults in the aftermath of natural disasters or with severe physical or mental disease.

Third, it is necessary for you to take responsibility for your own health care in the event of a

Variations in health When a person is ill, injured, or otherwise in need of medical attention, they may have special needs or objectives related to self-care. Basic conditioning factors (BCFs) like age, health status, and

sociocultural orientation are taken into account and used to tailor each TSCD's three varieties of Self-care necessities to the specific needs of the individual.

2.2.1. The self-care deficit theory

is an integration of information regarding nursing agency, self-care deficiency, dependent care, self-care agency, therapeutic self-care demand, and theoretical self-care. Limitations in one's ability to acquire knowledge, make decisions, and generate care for oneself or a dependant are central to the philosophy, required for nursing. This notion of self-care (dependent care) and what rem calls the idea of social dependency are articulated by two sets of assumptions. A person's ability to learn (know), make decisions, and control one's own life is crucial for self-care (Orem, 1991, p. 67) The Self-Care Deficit Theory of Nursing, which Orem developed, is made up of three connected theories:

- (1) the theory of self-care
- (2) the theory of self-care deficits
- (3) the theory of nursing systems. Source: (Theoretical Foundations of Nursing.1991).

The core idea of the self-care deficit theory is grounded in two sets of assumptions: the theory of self-care and the concept of social dependency.

The quality and completeness of self-care and dependent-care in families and communities rests on culture, including the scientific knowledge of social groups and the educatability of group members.

- Societies accommodate the human condition of social dependence by creating systems that provide assistance to individuals based on the specifics of their situation.

Socially dependent people can be helped by direct aid from their communities even after they are institutionalized.

Health care is one example of a direct helping service established in a social group to aid people of all ages. Direct helping operations carried out by members of social groups can be divided into two categories: those related to the age-related dependency state and those unrelated to the state (Orem, 1991, P. 70)

The following hypotheses should be used as foundational principles and exploratory guidelines for expanding the theory of self-care deficiency.

The ability of an individual to engage in self-care or dependent care are influenced by factors such as their age, stage of development, life experience, sociocultural orientation, health, and financial means.

Nursing is a valid service when

(1) care abilities are less than those required for meeting a known self-care need (deficit relationship)

(2) self-care or dependent care abilities exceed or are equal to those required to meet the self-care demand. (Orem, 1991, p. 71)

2.2.3. Metaparadigm Concepts of Nursing

Kuhn (1977) coined the term metaparadigm to describe the highest level of abstraction and generality in the nursing knowledge structure (Mcewen & Willis, 2011). A metaparadigm is the overarching a field's perspective that determines the central phenomena of study and describes the distinctive ways in which researchers in that field approach those phenomena (Mcewen & Willis, 2011). The role of the metaparadigm is to define the scope of study and provide a summary of the intellectual and social goals of the field (Mcewen & Willis, 2011).

Wagner (1986) conducted an in-depth analysis of the nursing metaparadigm (Mcewen & Willis, 2011). She concluded that the results showed that there was agreement among nurses that these occurrences

predominated in the field of nursing science. Similar to Wagner's original dissertation, Dorothea Orem defined the nursing metaparadigm notions.

2.2.3.a. Person

Wagner argues that a person is more than the sum of his parts since he has physical, intellectual, physiological, and psychosocial requirements. A person is an invisible force, a holistic being in the globe, an open system, an integrated whole, an adaptable system, and much more. (Wagner, 1986).

Self-care is the practice of actions that persons start and undertake on their own behalf in maintaining life and well-being,' according to the Orem - Person worldview (Hanucharunkul, 1989). Orem's (1985) perspective on man, however, is inconsistent when she portrays people in terms of several stages of growth (Hanucharunkul, 1989). Adults are the only demographic group portrayed positively; the elderly, the young, and the young at heart are all portrayed negatively as helpless dependents (Hanucharunkul, 1989). A human is an accessible system in Orem's view (Hanucharunkul, 1989). Orem argues that in order to meet the need for self-care, an individual must expend energy by performing some kind of intentional action in the external environment (Hanucharunkul, 1989). Humans, in Orem's opinion, are more than the sum of their parts; rather, they are a biopsychosocial whole (Hanucharunkul, 1989). A person is someone who can reflect on their own actions and make conscious decisions (Hanucharunkul, 1989).

2.2.3.b. Health

Wagner - Health is freedom from disease and incapacity; resilience in the face of adversity; realizing one's potential; and a state of complete mental, physical, and spiritual harmony (Wagner, 1986). 18

The Book of Mormon (Orem) describes health as the condition of being complete or undamaged . When a person's physical and mental systems are both in good working order, we say that they are healthy. When someone is said to be sound, it suggests they are physically and mentally unimpaired. To be whole implies that there are no missing or diminished parts . When applied to a person's health, these concepts mean that they are whole and complete in every way, both physically and mentally; that they have no genetic flaws; and that they are developing into a more whole and complete person over time (Hanuchararnkul, 1989).

Orem discusses the inseparability of one's physical, mental, interpersonal, and societal wellbeing (Orem, 1985). People's health depends on their ability to provide self-care that is both therapeutic and ongoing (Orem, 1985). Orem discusses the collective obligation of communities to prioritize the health of its citizens (Hanuchararnkul, 1989). Protection against certain diseases and injuries fall under the purview of nursing (Bassak-Nejad, et al 2014).

2.2.3.c. Environment

"Wagner - Environment often refers to the external conditions that influence the organism, the significant persons with whom the person interacts, and an open system with boundaries that allows the flow of matter, energy, and information with humans (Wagner, 1986).

Orem- Defined environment as consisting of components such as enthronelement factors and elements, condition and development environment (Nursing 19

Insights, 2011). Both the individual's capacity for self-care and the nurse's capacity for nursing agency are influenced by both the physical,

chemical, biologic, and social and the socio-economic, cultural aspects of the environment, which Orem further classified into two divisions (Banfield, 2011, p. 98). The environmental sphere of influence for Orem is vast and intricate."

2.2.3.d.Nursing

Human service defined as that which is necessary for the continual upkeep of one's own care is nursing. Caregiving is a profession that calls both specialized skill and the use of scientific understanding (McEwen & Wills, 2011, p.41). According to Orem (1988, 2001), nursing is a practical science, which means that nursing knowledge is formulated and organized for the benefit of actual practice (Banfield, 2011, p. 98).

The nursing profession in Orem places an emphasis on both self-care and service to others. Orem regarded nursing as an artistic pursuit. In a chat with Taylor (2011, p. 5), Orem (1956) stated that the art of nursing in hospital nursing service is offering the services essential to meet daily needs of self-care. During the 1960s, 1970s, and 1980s—a time marked by rising consumer awareness and a focus on the individual—nurses like Orem promoted the concept that their primary role was to help patients become more independent in their care. Pearson (2008, p. 1).

Initially dismissed as oversimplified, the self-care deficit theory has since evolved into a multifaceted framework with far-reaching ethical, moral, and policy implications. The SCDNT model was a significant departure from the conventional nursing practice of the time, in which nurses were expected to care for their patients and patients rarely participated in healthcare decision-making. According to Pearson (2008, p. 202) added in their writing. Orem used the work of Levin, Katz, and Holst (1976), among others, to define the

notion and build a self-care model of nursing in her important work *Nursing: Concepts of Practice*, published by Pearson (2008, p. 1)

2.3. Coronary Artery Disease

In the wall of one or more coronary arteries, plaque composed of fatty material and inflammatory cells accumulates to cause coronary artery disease (CAD). As the advances disease and these larger plaques grow, they damage begin to the artery's wall and spread into the lumen. Calcium may be deposited in large plaques, hardening them; these plaques frequently grow large enough to impede blood flow. The majority of persons with CAD are unaware of their condition until they develop symptoms. (Kaneko, H., Itoh, et al 2020.)

The symptoms of coronary artery disease are Angina or angina symptoms are due to a lack of blood flow to the heart muscle (ischemia) and are known as angina or angina symptoms. Historically, chest pain and pressure were considered the most prominent anginal symptoms, frequently accompanied by jaw or arm pain, nausea, diaphoresis, or shortness of breath. It is now understood that many individuals, particularly women, diabetics, and the elderly, may exhibit odd symptoms.

These symptoms may include sudden weakness or tiredness, nausea, indigestion, dizziness, or back pain and frequently occur in the absence of chest pain or pressure (Jacobson, Marzlin, & Webner, 2015).

Stable angina is characterized by symptoms that appear in response to physical exercise or with rest. These persistent symptoms are typically caused by the continuous deposition of atherosclerotic plaque in the coronary artery walls. As the arteries constrict, they are unable to supply enough blood to satisfy the increased demand during exercise or other pressures that raise the

heart rate. Once the heart rate lowers (often during rest), the demand for oxygen diminishes and the symptoms subside. Symptoms that persist even resting may be an indication of ACS, a deadly form of CAD (van der Wal, et al 2016)

2.3.1. Acute coronary syndrome

CAD typically begins years prior to the onset of ACS. Plaque is deposited in the coronary arteries due to an inflammatory process. Plaque deposition is more likely in individuals with certain risk factors, especially if their underlying disease is severe or if more than one risk factor is present. As the process of accumulation progresses, the plaque may become unstable and susceptible to rupture. If a coronary artery plaque ruptures, the inflammatory cells in the plaque activate platelets, initiating the clotting cascade and resulting in the production of an arterial clot. (brunner& Suddarth 2008)

The extent of the clot determines the severity of the incident and the extent of cardiac muscle damage."ACS includes unstable angina (USA), non-ST segment elevation myocardial infarction (NSTEMI), and ST segment elevation myocardial infarction (STEMI) (STEMI). USA is induced by a thrombus in the coronary artery that is resolved by the body's thrombolytic system. USA progresses to either NSTEMI or STEMI if a blood clot forms and the body is unable to dissolve it (Sanchis-Gomar, F., et al 2016)

2.3.2. Unstable Angina

Unstable Angina develops when a clot completely or partially occludes a coronary artery and the fibrinolytic enzymes broken down, restoring blood flow. symptoms of angina arise and then diminish. Symptoms may manifest at rest or with minimal exercise and often last longer than twenty minutes. These

symptoms of angina frequently reoccur, frequently with increasing frequency and intensity".

2.3.3. Segment Elevation Other Than ST Myocardial Ischemia

In NSTEMI, a coronary artery is partially occluded by a clot, resulting in symptoms of angina. the myocardium receiving some continues blood, but its insufficient supply of oxygen and nutrients to the cells . The ischemia, and can identified by 12-lead EKG changes such as ST segment depression or T-wave inversion, an increase in cardiac enzymes, or both. (Ralapanawa, U., & Sivakanesan, R. 2021).

2.3.4. The ST Elevation Segment Myocardial Infarction

STEMI occurs when the clot totally limits blood flow to the myocardium. The obstruction of blood flow produces initially ischemia and eventually necrosis (death of myocardial cells). As cardiac muscle cells perish, they lose the ability to conduct electrical current, resulting in an increase of ST segments on a 12-lead ECG. The death of cardiac cells also results in the release of enzymes ordinarily located within these muscle cells into the bloodstream. This increases the amount of cardiac enzymes in the bloodstream (Ralapanawa, U., & Sivakanesan, R. 2021).

2.3.5. Surgical intervention

Angioplasty and stenting are typically used to treat patients with a small number of localized coronary artery lesions and those that are easily accessible via percutaneous coronary intervention. The catheter is put through an artery (often the femoral or radial artery) and progressed until it reaches the

affected coronary artery. A balloon at the end of the catheter is inflated at the site of the coronary artery plaque, thereby slamming the plaque against the artery's walls to enlarge the lumen. This catheter is withdrawn, and another catheter is advanced to the same location. This catheter terminates in a little metal tube called a stent.

As the balloon at the end of the catheter is inflated, the stent grows to the size of the artery and maintains its openness. The catheter is removed, and the stent stays in place (Global, regional, and national incidence, prevalence 2016)

Numerous patients with multiple lesions or widespread disease (significant coronary artery constriction) require coronary artery bypass grafting for surgical treatment (CABG). In addition, patients with valve disease or other structural heart disease requiring surgical repair often receive CABG at the time of valve repair as opposed to percutaneous coronary intervention for CAD. Interventional cardiologist and a cardiac surgeon should assess the imaging findings and clinical presentation of patients with difficult illness or anatomy to decide the optimal revascularization method (Hillis et al., 2015).

The nurses play a crucial role in justifying PCI as opposed to cardiac surgery. Understanding the rationale for each helps nurses educate and prepare patients for surgery and other treatments.

2.3.6. Factors associated with coronary artery disease

- Age and gender: the flexibility of arteries decreases with age
- Heredity: coronary artery disease in the family

- Diabetes: intimal damage and insulin-modified lipid metabolism
- Hypertension: decreased vascular elasticity, ripping effect on arteries, and increased resistance to ventricular volume ejection.
- Tobacco usage (nicotine): To reduce the displacement of oxygen from hemoglobin by high-density lipoproteins Increase the catecholamine response to nicotine, heart rate, and blood pressure.

enhancing platelet adhesion

- A sedentary lifestyle causes alterations in lipid metabolism and insulin sensitivity

-Antiplatelets, such as aspirin or aspirin combined with clopidogrel, are used to reduce the risk of angina by preventing the formation of platelet thrombi.

-Nitrates They are vasodilators (dilates veins and arterioles) and promote collateral circulation to the heart, thereby enhancing myocardial oxygenation.

Betablockers lower heart rate and blood pressure . (Mokbel, Naiera Abd El Samad Ibrahim, et al 2020)

2.4 .Atherosclerosis

Is a proliferative and inflammatory illness of the artery wall that affects the entire body. It can affect almost the whole arterial tree in humans in mature stages, with particularly obvious symptoms in the medium and large arteries. It is a condition that primarily affects the arterial wall's endothelium and vascular smooth muscle (VSM). Its immediate clinical presentation can be caused by the rupture of a single plaque, which can result in arterial thrombosis and an abrupt myocardial infarction or stroke. This has a long

asymptomatic stage of development. Although early vascular alterations are minimal, atherosclerosis can worsen with time and is often shown in the first decade of life(Areias M, et al, 2021)

The specific factors that induce plaque generation are still being debated. However, our knowledge has developed over the last three decades, from early concepts based on lipid accumulation inside the arterial wall to a more complicated interplay between common risk factors (obesity, smoking, family history, hypertension), inflammation, and vascular malfunction. These panvascular mechanisms have established atherosclerosis as an inflammatory lipid disease, with an emphasis on immunological involvement (Stromberg H. Dewitt's Medical-Surgical Nursing 2021).

Although stenosis can produce clinical complications, plaque rupture, which exposes the thrombotic plaque contents to the circulation and can lead to rapid thrombotic occlusion, is the most serious clinical manifestation of atherosclerosis. Severe and usually fatal clinical complications, such as myocardial infarction (MI) and stroke, might occur based on the arterial location of the blockage

2.4.1 Causes

Atherosclerosis is a slow-moving, potentially childhood-onset disease. Although the precise cause of atherosclerosis is unknown, the inner layer of an artery is believed to be its origin. The following elements may contribute to disease:

- Cigarette use and other tobacco products
- Blood pressure elevated

- Cholesterol elevated

Triglycerides are a kind of fat (lipid) found in the blood.

- Inflammation due to an unidentified cause or conditions such as arthritis, lupus, psoriasis, or inflammatory bowel illness .When the inner lining of an artery is damaged, blood cells and other substances congregate near the injury site and accumulate in the inner lining. Over time, at the site of injury, cholesterol and other cellular products collect to form fatty deposits (plaque), which restrict the arteries. Organs and tissues associated with obstructed arteries receive insufficient blood for optimal operation. Eventually, particles of the fatty deposits may break off and enter the bloodstream. In addition, the smooth lining of the plaque may burst, releasing cholesterol and other substances into the bloodstream ((Stromberg H. Dewitt's Medical-Surgical Nursing 2021)

2.4.2. Risk factor

Risk of atherosclerosis may raise related to :

Elevated blood pressure, elevated cholesterol ,elevated C-reactive protein (CRP) levels, an indicator of inflammation, obesity, diabetes ,smoking and other uses of tobacco, sleep apnea ,a cardiovascular illness in familial history,an poor diet and lack of activity

2.4.3. Adverse Events

- Coronary atherosclerosis When atherosclerosis narrows the arteries close to the heart, coronary artery disease may occur, which can result in chest pain (angina), a heart attack, or heart failure.

- Carotid atherosclerosis When atherosclerosis narrows the arteries near the brain, carotid artery disease may occur, which can lead to a transient ischemic attack (TIA) or stroke.
- Disease of the peripheral arteries. When atherosclerosis narrows the arteries in the arms or legs, peripheral artery disease can cause circulation issues in the arms and legs. Consequently, inadequate circulation in the arms or legs might result in tissue death (gangrene).
- Aneurysms. Aneurysms, which can form anywhere in the body, are a dangerous complication that can be caused by atherosclerosis. An aneurysm is a protrusion in the arterial wall (Smith, S. C., Allen, et al. 2013)

Chronic renal failure. Atherosclerosis can constrict the kidney-supplying arteries, preventing oxygenated blood from reaching the kidneys. This can impair kidney function over time, preventing waste from leaving the body" (Roth GA, Mensah GA, Johnson CO, et al. 2020).

2.4.4. Prophylaxis

The same healthy lifestyle adjustments advocated for atherosclerosis treatment also aid in its prevention. These consist of:

- Quitting smoking
- Consuming wholesome meals
- Exercising consistently
- Keeping a healthy body weight
- Monitoring and sustaining a normal blood pressure

- Monitoring and maintaining appropriate levels of cholesterol and glucose

2.5. Valvular heart disease (VHD)

A pathological condition that affects one of the four heart valves and interrupts the unidirectional flow of blood. Multiple illness conditions cause pathoanatomical modifications and pathophysiological dysfunction in these essential structures. During the cardiac cycle, these alterations disrupt the unidirectional blood flow.

In valve stenosis, the valve's leaflets do not open correctly, reducing forward blood flow. In valve insufficiency or regurgitation, the leaflets of the valve do not close normally, enabling blood to flow in the opposite way (Avierinos JF, et al.2018)

It is possible to develop mixed valvular heart disease, characterized by both stenosis and insufficiency of the heart valve. Multiple heart valve malfunction constitutes concomitant valvular heart disease (VHD). As VHD advances, patho anatomical abnormalities of the afflicted valve(s) and other cardiac structures produce aberrant valve hemodynamics, cardiovascular hemodynamics, clinical symptoms, and physical examination findings. In cases of severe VHD, there are hemodynamic consequences that result in symptoms. The prevalence of VHD is rising. Mental illness affects approximately 2.5% of the adult population in the United States (Hinton RB, Yutzey KE 2011).

Globally, the prevalence of VHD is significantly higher, due in part to the prevalence of rheumatic heart disease in developing countries, despite the fact that its incidence is reducing overall. Due to age-related degenerative

changes in valve anatomy, the prevalence of valvular heart disease (VHD) increases to around 1 in 10 adults over 65. (Avierinos JF, et al. 2008)

Vulvar heart disease is a public health concern due to the rapid growth of an aging population, which is anticipated to increase from 962.3 million in 2017 to 2080.5 million in 2050. Most, if not all, healthcare practitioners across all settings and specialties may encounter a patient with VHD. Care for patients with venous thromboembolism (VTE) requires a full understanding of normal anatomy, physiology, and pathophysiology (Baumgartner H, et al. 2017).

2.5.1 Pathogenesis and Etiologies of Acquired VHD

Vulvar heart disease can be characterized as congenital or acquired. Congenital VHD is present from birth, but acquired VHD develops later in life. Acquired The VHD is then either rheumatic or non-rheumatic.

2.5.1.1 Rheumatic VHD

Streptococcal infection may result in rheumatic fever and consequent inflammatory changes and scarring of heart tissue.

2.5.1.2.Non-Rheumatic VHD

Include functional (endocarditis) and degenerative (myxomatous and calcific) etiologies and pathogenesis. Also included in the acquired nrvhD category are patients who have underwent open heart surgery , which accounts for approximately one-third of all vhd referrals(Passos LSA, Nunes MCP,et al.2021)

2.5.1.2 Rheumatic heart diseases

RHD now affects over forty million people and causes annually nearly 300,000 deaths. In developed nations with high incomes, the incidence of rheumatic fever is declining. Has dropped to less than 1 in 100,000 but still exceeds 100,000. Developed nations with low and medium incomes

Between 1990 and 2017, the global incidence of rheumatic heart disease (RHD) decreased by 8.67%. Antibiotics for the treatment and prevention of streptococcal infection, reduced congestion, improved housing and sanitation, and access to healthcare are among the strategies to minimize RHD, particularly in LMICs and LMICs. The RHD death rate has fallen by 54%, while the global death rate has decreased by 53%. Disability-adjusted life years rate (total number of years lost to premature mortality) and years lived with a disability. Despite these advances, RHD continues to be the primary cause of cardiovascular death among children and adolescents globally. RHD is a pervasive, continuous global health problem for which there is neither a cure nor a vaccination (Yadgir S, Johnson CO, et al.2020)

2.5.1.3. Pathogenesis

Rheumatic heart disease results from rheumatic fever, an autoimmune condition caused by untreated or inadequately treated of infection with Group A -hemolytic streptococcal. it is believed that:

- Tonsil lymphatic channels transport group A Streptococci to the heart.
- RF produces skin , tissues, and heart valves inflammation, the latter of which can lead to heart failure.

- Acute rheumatic fever is characterized by diffuse proliferative and exudative responses in the joints. These tissues, specifically, present with HF and necessitate surgery may active AHD, with the possibility of recurrence of rheumatic fever.
- erythema marginatum , Carditis, polyarthritis , and subcutaneous nodules, are major diagnostic criteria (Baumgartner H, Falk V, et al.2017)

2.5.1.4 Clinical manifestation

In almost all cases of RVHD, the mitral valve is damaged, however the aortic valve may also be affected. likewise be involved. Early on, regurgitation is observed, whereas stenosis is shown later on. The primary stages of RVHD, echocardiography has revealed the presence of tiny. These nodulous lesions do not result in pathoanatomic alterations on their own. Eventually, chronic inflammation can result from isolated or recurrent bouts of RF.

causing valve malfunction in people predisposed genetically. Typically, leaflets are distributed. However, three-quarters of people under 30 years old have low fibrosis and pliability. After age 40, two-thirds of patients have scars and . Variations in presentation are possible as a result of morphologic changes. In contrast to the 3% of individuals who have pure mitral regurgitation, 90% of those with mitral stenosis show obvious chordal shortening (Avierinos JF, et al.2018)

Annular dilatation was seen in 90% of those with rheumatic mitral regurgitation compared to 30% of people with just mitral stenosis.

Late in development, commissural development occurs alongside fusion and chordal shortening. breakdown of the endothelium's surface due to fusion. Fibrous tissue and inflammatory tissue are However, in those who have a

genetic predisposition to calcification, lipids may cause the process to accelerate.

Inadequate aortic and mitral murmurs are common markers of RVHD on physical examination. A high-pitched, blowing pansystolic murmur can be heard while the heart is in the pansystolic phase. Problems with the mitral valve. A systolic murmur is a transient, low-pitched sound heard in the middle of a heartbeat.

At the pinnacle, a Carey Coombs hum could be heard. When the mitral valve leaflets become stiff and swollen, the gradient across the valve increases, and the LV's compliance decreases, a Carey Coombs murmur may develop.

2.5.2. Non-rheumatic Valve Pathology

2.5.2 .1. Contagious Endocarditis

2.5.2 .2. Epidemiology

Since 1990, the incidence of endocarditis has climbed to an estimated 1.09 million cases. 66,300 cases, 1.72 million disability-adjusted life years, and 1.72 million deaths were recorded in 2019. The incidence rate is 13.8 per 100,000 people while the death rate is 0.9 per 100,000 people. The increase in deaths is attributed to infections that are more virulent and pervasive.

In critically ill individuals, Staphylococci and complex infections are prevalent. related dangers with heart surgery. The causal agent is determined by the patient's medical history, valve structure, and point of entry (Gupta A, Mendez M. Endocarditis.2021)

2.5.2 .3. Pathogenesis

Infectious endocarditis is caused by three distinct pathways. Initially, the heart .The valve must be conditioned for bacterial adhesion. Bacteria that circulate do not readily the ability to attach to normal endothelial surfaces. Changes in endothelial surfaces caused by trauma, inflammation, disturbance of the extracellular matrix (ECM), platelet deposition, and fibrin deposition may make the valve more vulnerable to infection. Other risk or priming variables include diabetes, steroid or immunosuppressant use, advanced age, and pacemaker implantation in addition to trauma. Second, circulating bacteria cling to the fibrin-platelet matrix, particularly the strains identified (Hulin A, Deroanne C, Lambert C, et al.2014).

Thirdly, antibodies may inhibit bacterial adhesion, yet bacteria may be resistant to complement cascade and leukocyte phagocytosis. Certain streptococci, for instance, induce valve cells to produce thromboplastin, which induces the deposition and development of a fibrin-platelet clot over bacterial colonies or vegetations (Bermejo J, et al.2020)

2.5.2 .4. Disease process

In the beginning stages of the illness, symptoms may be mild or absent. A lengthy, A prolonged fever that lasts for months is sometimes the only symptom. Additionally, the onset might be rapid, severe, and accompanied by a high temperature. Headache, nausea, vomiting, chills, weariness, myalgia, and arthralgia are all examples of nonspecific symptoms that have been recorded. There may be heart failure if you've just noticed a new or different heart murmur. Emboli can occur from thrombus formation, and stenosis and/or insufficiency of heart valves, especially the mitral valve, can be caused

by vegetation and fibrotic alterations. The development of abscesses increases the risk of additional injury to the myocardium and the heart's valves. Impaired cognition and localized neurological symptoms are developed in reaction to embolic strokes, cerebral abscesses, bleeding, and elevated intracranial pressure, all of which are related with Staphylococcal illness (Chen J, Li W, Xiang M 2020).

Heart block, caused by disruption of the cardiac conduction system, or purulent pericarditis, caused by abscess rupture into the pericardium, are both possible symptoms of a myocardial abscess. Roth spots (bleeding at the back of the eye), Janeway lesions (small, painless patches on the palms and soles), Osler nodes (nodules of discomfort in the fingers), splinter hemorrhages, and petechiae may be observed toward the end of the illness.

The presence of antigen-antibody complexes in the circulation is diagnostic of vasculitis, which causes these lesions. In 1955, the AHA advised penicillin prophylaxis for individuals with congenital heart disease and rheumatic heart disease who were scheduled to undergo dental treatments. Antibiotic prophylaxis was outlawed in the US and EU in 2009 because there was little data to justify it and it contributed to the rise of antibiotic resistance (Evangelista A, Tornos P, Bonow RO 2020).

2.5.3. Valvular Degeneration Disease

Historically, both aortic and mitral valve disease were included in degenerative valve disease. The pathophysiological distinction between degenerative mitral valve disease and calcific aortic valve disease has been demonstrated. Degenerative mitral valve disease affected approximately 2% of the world's population in 2017, resulting in 35,700 deaths worldwide.

Mitral valve prolapse is the most common form of mitral valve degeneration. Overall, a disproportionate number of women are affected. Disability-adjusted life years are greater for women than for men across all age groups; women also have higher mortality rates and lower surgery rates (Rajamannan N, Evans FJ, Aikawa E, et al.2016)

2.5.3.1.Pathogenesis

Myxomatous or fibrotic change are the two most common histopathological processes associated with degenerative valve disease. Proteoglycan accumulation, collagen degradation, and elastin fragmentation are defining features of myxomatous degeneration. These pathoanatomic alterations cause prolapse and regurgitation as a result of a floppy valve. Collagen accumulation, proteoglycan degradation, and elastin fragmentation are defining features of fibrotic degeneration. These pathoanatomic changes result in restricted leaflet motion and stenosis of the valve, or a stiff valve.

Early stages may exhibit sclerosis or hardening; valve calcification is a late indication of increasing fibrosis and severe illness. At the cellular level, there is valvular intracellular (VIC) activation and extracellular matrix (ECM) remodeling, and the stratified leaflet structure is disturbed. Mitral valve degeneration leads to atrial fibrillation and cardiac failure if left untreated. In subsequent sections, the hemodynamic, echocardiographic, and physical manifestations of degenerative valve disease are elaborated on.

2.5.3.2.Disease of Calcific Valves

In the early stages of a disease, symptoms may be minimal or nonexistent. A prolonged, persistent fever lasting several months could be the only symptom. Moreover, the onset can be sudden, severe, and accompanied

by a high fever. In addition, headache, nausea, vomiting, chills, exhaustion, myalgia, and arthralgia have been recorded as nonspecific symptoms. A new or fluctuating heart murmur could indicate heart failure. Vegetation and fibrotic alterations can produce mitral valve stenosis and/or insufficiency, and thrombus development can lead to emboli. Abscesses may form, causing additional damage to the inner lining and cardiac valves of the heart. Neurologic symptoms of Staphylococcal illness include reduced cognition and localized neurological symptoms caused by embolic strokes, cerebral abscesses, bleeding, and elevated intracranial pressure. Myocardial abscesses may manifest as heart block or purulent pericarditis due to abscess rupture into the pericardium. Roth spots (bleeding at the back of the eye), Janeway lesions (little painless patches on the palms and soles), Osler nodes (pain nodules on the fingertips), splinter hemorrhages, and petechiae may be observed at the end of the illness. These lesions are symptomatic of vasculitis because antigen-antibody complexes are present in the circulation (Yadgir S, Johnson CO, Aboyans V, et al. 2020).

In 1955, the AHA suggested penicillin prophylaxis prior to dental treatments for patients with congenital heart disease and rheumatic heart disease. The United States and Europe banned the use of antibiotic prophylaxis in 2009 due to a lack of scientific evidence supporting this practice and the development of antibiotic resistance.

2.5.3.1 Pathogenesis

The calcific aortic valve disease, which spans from sclerosis to stenosis, is not only a degenerative condition. Histopathological and clinical evidence suggests that calcific valve disease is comparable to atherosclerosis, which is

characterized by the accumulation of lipoproteins, chronic inflammation, and active calcification simulating bone formation in the presence of an osteoblast phenotype.

On surgically removed calcified aortic valves, osseous metaplasia was detected. Patients with calcified valves have a significantly higher incidence of atherosclerotic vascular diseases, such as coronary artery disease, peripheral arterial disease, hypercholesterolemia, and hypertension, than those without calcified valves. In later parts, calcific aortic valve disease and its hemodynamic, echocardiographic, and physical manifestations are discussed in greater detail.

2.6. Before Valvular Surgeries

The majority of preparations and evaluations for patients referred for open-heart surgery take place in outpatient day clinics or hospital wards. Therefore, when the patient arrives in the operating room (OR), the nursing team provides care based on clinical assessments and information obtained during their assessment process and pre-surgical consultations, such as surgical risk estimates.

This continuity of information is required to ensure individualized care and a patient-centric approach to perioperative nursing. Prior to the admission of elective patients, the multiple components of the consent process, such as treatment recommendation, collaborative decision-making, and risk discussion, are frequently carried out. Best practices dictate that this consent be repeated upon admission. The function of nurses within the open heart surgery perioperative team

surgical nurses' duties and responsibilities during the initial pre-operative phase differ significantly between cardiac programs. Surgical teams in the operating room consist of a lead and assistant surgeons, surgical nurses with a range of responsibilities, such as scrub nurse and floor coordinator/circulating nurse, the anesthesiologist, and the perfusionist. Also essential are the professions of anesthesia assistants, nurse anesthetists, and operating room technicians (American Nurses Association 2015).

Utilizing their collective expertise, the surgical team works to achieve the best possible outcome while guaranteeing patient safety and improving clinical efficiencies. Given the nature of cardiac surgery and the potentially fatal consequences of miscommunication and failure to adhere to safety protocols, this highly coordinated cooperation is an essential aspect of cardiac operating room nursing and multidisciplinary practice.

2.6.1. Getting patients ready for open heart surgery

Prior to induction, nurses play a crucial role by meeting the patient in the operating room, establishing a trusting environment and assuring patient comfort to alleviate anxiety, as well as delivering targeted patient education. Importantly, the nurse verifies the patient's identity, evaluates their health on the day of surgery, and fills any gaps in their understanding regarding their procedure and care journey.

Before entering the operating room, the nurse ensures that the patient has emptied their bladder and is ready for their procedure. The patient is then positioned in a supine position on the operating table. The nurse adds expertise about the patient's comfort, the protection of bony prominences, and the implementation of protocols aimed to preserve skin integrity.

Depending on local practices, the activities that follow may be performed before or after the induction of anesthesia. Important processes that require specific nursing expertise and flawless asepsis include skin preparation and surgical drapery, insertion of a urinary catheter, and placement of a central venous catheter.

The anesthesia team, with the cooperation of the nursing team, directs the anaesthetic strategy, including the administration of to the patient in accordance with particular procedures and recommendations (Al-gersha, K., Haboubi, G., & Al-Asady, N. 2018).

2.6.3. The following intrusive equipment is commonly installed prior to surgery to facilitate the monitoring, operation, and patient safety:

1. Endotracheal tube: for artificial ventilation and airway protection; when a patient is undergoing surgery, they may require a pulmonary artery catheter, a type of central venous line that allows for invasive hemodynamic monitoring by inserting a catheter into the pulmonary artery.

2. Intravenous catheters placed in the periphery: A catheter inserted into a vein of the arm to provide fluids, drugs, or blood.

3. Arterial line: a catheter with a small enough bore to be inserted into the radial artery, allowing for continuous blood pressure monitoring through a transducer system and intermittent blood collection for monitoring oxygenation status and other laboratory data;

A tiny tube introduced into the bladder to drain and monitor urine volume before, during, and after surgery to assess fluid status and evaluate renal function; a standard set of five electrodes placed on the chest to track the

heart's rhythm and rate; a urinary catheter. A nasogastric tube is a tiny tube used to drain the stomach and intestines through the nose (note: certain cardiac programs have discontinued the use of this device).

A dynamic method has developed in recent years for caring for heart surgery patients after their procedures are complete. Postoperative care has been revolutionized by developments in technology, research, and minimally invasive treatments. The success of the treatment relies heavily on the postoperative team.

Care and attention are especially important in the first few hours after a valve procedure. Recent advancements in anesthetic techniques have allowed for the earlier transfer of ICU patients to the ward, which in turn has sped up their eventual discharge home. Recognizing and Addressing Adverse Events After Emotional Infections and Other Complications After Surgery

Even while there are risks with each operation, those related with heart surgery recovery can be more severe. Myocardial depression, renal failure, acute lung damage, and multiple organ dysfunction syndrome have all been linked to the systemic inflammatory response syndrome (SIRS) that develops in response to heart surgery .

Patient risk can be considerably enhanced by factors such as age, left ventricular function, nephrological comorbidities, the existence of paroxysmal atrial fibrillation, and the presence of other comorbid illnesses. Positive patient outcomes can only be achieved with the prompt diagnosis and treatment of problems (Ali, S., & Jacoub, S. 2018)

2.6.4. Pulmonary Difficulties

During cardiopulmonary bypass, only the bronchial system is perfused, as opposed to normal physiology in which the lungs get perfusion from the pulmonary and bronchial circulation. This modification raises the likelihood of various problems by causing several hours of relative ischaemia. pleural effusions, Atelectasis, pneumothorax, pneumonia, and ARDS are typical pulmonary consequences.

The postoperative hypoxia diagnosis needed examination of various etiologies, such as the worsening of preexisting pulmonary illness and rarer events, such as an abrupt postoperative pulmonary embolus. Respiratory difficulties may lengthen the duration of intubation and increase the patient's risk of aspiration and ventilator-acquired pneumonia. CXR and physical examination are the key diagnostic techniques for lung disease (Gizella I. Bardoczky 2018).

2.6.5. Cerebrovascular Incidents

Brain damage is a major potential consequence of cardiac surgery, particularly when a cardiopulmonary bypass machine is used. Due to the presence or persistent effects of analgesia and anesthesia, it might be challenging to do a thorough neurologic examination in the immediate postoperative period. Clinicians should do a thorough evaluation and think about a sedation holiday (or sedation interruption) if possible. Recovering from an embolic ischemic neurologic event is similar to recovering from cardiac arrest in that early management and reperfusion are vital. Cross-clamping of the aorta, debridement of the valve architecture, and separation of

particles from intraoperatively all contribute to the release of embolic material from atherosclerotic plaque by employed technical equipment.

2.6.6. Bleeding and Pericardial Effusion

Mechanical factors, intraoperative hypothermia-related coagulopathy, and underlying diseases are all potential contributors to postoperative bleeding. This condition of hypovolemia can progress to hypovolemic or hemorrhagic shock and end -organ malperfusion if it is not treated and managed.

A baseline for estimating hourly output can be established by monitoring the patient's chest tube drainage upon entrance to the recovery area and taking note of its amount and consistency. Therapies, such as the reversal of coagulopathies or the need for re-intervention, may be guided by plausible causes like coagulopathy or a mechanical source. To prevent dangerous buildup of blood in the pleural region, surgeons will often insert a chest tube during the procedure. Hemothorax, hypoxia, the physiology of tamponade, and tension hemothorax are all conditions that can arise from insufficient drainage (Amal F, et al.2017)

The immediate postoperative CXR is useful for verifying the placement of the endotracheal tube, central venous catheter, and chest tube, and for detecting the presence or onset of a hemothorax. Loss of more than 500 mL of blood in an hour is considered heavy bleeding.

When the heart is compressed, it prevents the ventricles from filling properly, leading to cardiac tamponade and a low cardiac output. A narrow pulse pressure, hypotension, tachycardia, CNS changes, acidosis, and decreased urine output are all things the medical team should look for.

Immediate echocardiography order recommended for diagnosis and pericardiocentesis planning. There are two types of postoperative bleeding: medical and surgical. Failures in the coagulation cascade, platelet function, and fibrinogen are the root causes of medical bleeding. Trauma to the operative site is usually the cause of bleeding during surgery. If there is bleeding during surgery, it may be necessary to go back in and do some more exploring and try to stop the bleeding. Bleeding disorders are a leading cause of morbidity and mortality, making timely diagnosis and treatment essential for best results (Ballan A & Lee G.2017)

Nurses must consider the following results in detail:

- Persistent bleeding absent a coagulation disorder.
- Sudden commencement of new, fast bleeding, particularly in the presence of increased blood pressure.
- Blood volume exceeding 200 mL/h for two hours.

Surgical heparin can leave behind a residual impact that can result in medical bleeding. Prior to CPB, patients are anticoagulated to maintain an active clotting time (ACT) of 300–400 seconds.

Protamine is utilized to reverse heparin at the conclusion of the case; additional heparin may be supplied if patients get autotransfusion blood products (pump blood). At the time of admission, the ACT should be administered with a target score between 100 and 120 seconds. Platelet function may be compromised by CPB, liver illness, or hemodilution, which may result in medical bleeding (Suzanne. C. et al.2018).

The management of medical bleeding differs from that of surgical bleeding. Included in these measures are the correction of hypothermia, the regulation of blood pressure, the administration of protamine if the ACT level is elevated, platelet transfusions, fresh frozen plasma infusion, the elevation of the head of the bed, and the intensification of mechanical ventilation. Positive end-expiratory pressure (PEEP) or infusions of packed red blood cells are viable treatments. Cryoprecipitate, desmopressin (DDAVP), and antifibrinolytic treatment are further alternatives.

2.6.7. Complications of Surgical Site

In between 0.4% and 8% of instances, sternal site problems are documented. Site infection, dehiscence, instability/nonunion, and mediastinitis are examples of complications.

Complications are related with longer hospital stays, greater morbidity and death, and higher healthcare expenses.

Historically, upper limb and trunk use restrictions were employed to prevent excessive sternal motion. However, this approach is no longer recommended because it can prolong recuperation, healing, and hospitalization. It is recommended that nurses and allied health professionals instruct upper limb and Exercises for the trunk that enhance return to function and speed recuperation. In addition, a surgical support bra can be used to decrease pulling at the surgical site(Smith A, et al 2013).

In populations with a low prevalence of methicillin-resistant *Staphylococcus aureus* (MRSA), a single antibiotic with a multidose regimen is indicated for conventional cardiac surgery prophylaxis. Vancomycin is

advised as the primary prophylactic antibiotic with supplementary gram-negative coverage for those who are allergic to beta-lactams or penicillin .

Unrecognized or untreated sternal wound infections that progress to mediastinitis may necessitate re-exploration, hardware removal, and pectoral flap. Assessment of the surgical wound for typical signs of infection is required, as is evaluation for nonunion: pressing gently on the sternum should not produce movement or clicking, and the wound should be free of drainage and foul odor; any of these findings may necessitate a CT scan to determine the status of the sternal bone(Winkelman C,Chiang L.2016).

2.6.8. Atrial fibrillation (AF)

Is the most frequent postoperative arrhythmia; its start is typically within the first week after surgery linked with longer hospital stays is an increased risk of cerebrovascular events a stated prevalence of 20% to 50% for impaired mental status/delirium peaking on postoperative day 2 and happening most commonly in the first five days following heart surgery. Within twenty-four hours, many individuals will spontaneously switch to sinus rhythm. This emphasizes the significance of not only being knowledgeable about drugs, but sustaining the interdisciplinary team's collaboration. Many of the same drugs that are used to treat atrial fibrillation can also be used to prevent the emergence of the condition. Beta-blockers and amiodarone considerably reduce the incidence of postoperative atrial fibrillation, although beta-blockers are the first-line treatment. Medication for the prevention of POAF, with amiodarone reserved for people with POAF. Someone shouldn't use a beta-blocker because of potential health risks. Reducing the risk of drug interactions and rebound bradycardia from

excessive nodal blocker or antiarrhythmic usage can be accomplished by waiting until the first medication's effects have worn off before starting the second (Alice Y.M.Jones,Elizabeth Dean. 2014).

2.6.9. Cardiac Arrest

The surgical floors are well-established and offer patients clear direction resuscitation in numerous clinical settings. There are various approaches to controlling deadly arrhythmias in patients undergoing cardiac surgery. The European Resuscitation Council (ERC) has produced guidelines regarding the Care of the patient who recently underwent a sternotomy and suffered a heart arrest. The majority of postoperative cardiac arrests happen within the first 24 hours of skin closure, with up to 50 percent occurring during the first three hours after surgery. Frequently, tamponade or bleeding causes pulseless electrical activity (Van Laar C, et al. 2017).

This pathology can only be treated with an emergency re-sternotomy. relax the heart and major blood vessels . This liberation permits the return of spontaneous circulation and problem solving . First heart rhythm irregularity to recovery of spontaneous circulation (ROSC) time (ROSC). It's a reliable indicator of how long someone will live. Early defibrillation, as outlined by the Advanced Cardiac Life Support (ACLS) guidelines, is used to treat ventricular fibrillation (VF) and ventricular tachycardia (VT). In surgical training, three stacked shocks and a bolus are administered within one minute. If the administration of 300 mg of Amiodarone fails, an emergency re-sternotomy is performed. These guidelines can aid in the quick resuscitation of postoperative patients if they are familiarized with them (Coylewright M, et al.2020).

2.6.10. Gastrointestinal Issues

The most severe gastrointestinal (GI) problems are caused by a decreased cardiac output, insufficient blood flow, vasoconstriction, hypoxia, and intestinal ischemia. Other concerns can include bleeding due to gastritis or peptic ulcer disease, for which proton pump inhibitors are effective.

A pump inhibitor and antacid may be prescribed to prevent the formation of gastrointestinal ulcers. Other GI disorders include pancreatitis, cholecystitis, hepatic failure, and paralytic ileus, problems that require patient monitoring. Patients at risk for gastrointestinal problems include patients with advanced age, a low ejection fraction, and a lengthy surgical time. A history of peripheral vascular disease and atrial fibrillation. The nursing evaluation consists of monitoring bowel sounds and assessing changes for GI disorders. Patient complains of stomach pain and abdominal distension; nausea is evaluated and throwing up commonly, vomiting and nausea occur quickly after surgery, mostly as a result pertaining to intraoperative medicines. Vomiting and nausea raise the risk of aspiration, can interfere with surgical procedures, increase the risk of bleeding, and affect electrolyte balance. The team can reduce the risk of nausea and vomiting by examining the patient for risk factors, such as age, gender, history of motion sickness, past N & V after surgery, and knowledge of drugs administered during the procedure, and by administering prophylactic antiemetics. For the treatment of nausea and vomiting, glucocorticoids, 5-HT₃ receptor antagonists, anticholinergics and antihistamines, hydration, and pain and comfort management are used (Al-Taweel A, Almahmoud MF, et al .2019).

2.6.11. Postoperative Disorders of the Central Nervous System

During the postoperative period, cognitive function might be inhibited by numerous reasons. Postoperative cognitive dysfunction is a mild disturbance of mental functions that occurs after surgery. may have an impact on language comprehension, executive function, and memory.

Delirium is a mental disorder characterized by disorganized thinking and impaired reasoning . The objective of the neurological evaluation is to differentiate and identify the existence of a focused deficit or a global deficit. While delirium or confusion may justify obtaining a CT scan immediately, specific deficits, such as speech impairment or unilateral weakness, alterations in mental status frequently cause disability.

Postoperative delirium may manifest as, disorientation , agitation, chronic drowsiness, confusion, hallucinations, or violence. There are numerous causes, including illness, medications, sensory changes, electrolyte imbalance, and sleep deprivation. There are drugs that can aid in the management of delirium symptoms, but time and environmental adjustments are also effective in alleviating symptoms. Some therapies include the removal of all medications that could alter a patient's mental status (e.g., benzodiazepines ,opioids) and the use of hearing aids and eyeglasses to reduce the risk of sensory disorientation. Additionally, it is essential to maintain a balanced sleep-wake cycle (Nakazato R, Park H-B, et al.2013)

2.7.Postoperative management

When it comes to managing patients and providing high-quality care following medical procedures, nurses play a pivotal role. They must demonstrate high levels of critical thinking, critical judgment, and clinical

inquiry competencies as part of a robust relational practice. Patients who have undergone cardiac surgery might greatly benefit from the care of nurses in terms of both survival and the quality of life they enjoy as a result of the procedure. Administration of Respiratory Condition and Safe Extubation Improvements in anesthetic procedures and delivery have reduced the number of patients requiring intubation times.

Before surgery, a thorough preoperative evaluation is undertaken to determine the patient's health for probable anesthetic problems and respiratory status control. Knowledge of concomitant illnesses, smoking, medications, and nutritional status can aid in guiding post-procedure care, personalizing the treatment plan, and achieving the goal of expedited extubation. Despite the fact that certain patients, particularly those who are off-pump, Although extubation may be performed in the operating room, the majority of valve surgery patients are admitted to the hospital. Patients who are intubated and require mechanical ventilation. Methodologies for weaning timing extubation vary by location and region; patients are often extubated four to twelve hours after surgery. 16-hour or longer intubation is connected with a bad prognosis. Readiness for extubation is assessed by spontaneous breathing trials (SBT) and patient condition (Nishimura RA, Otto CM, et al. 2017).

A comprehensive evaluation of the patient that establishes adequate pulmonary function, the gag reflex and existence of cough, hemodynamic stability and adequate muscle strength. A HR below 140 beats per minute and a spontaneous respiratory rate below 25 breaths per minute and normal body temperature. Utilization of opioids with caution with the administration of Extubation with sufficient pain control is advised since it can reduce complications. Reduce breathing effort and respiration rate and depth among

the complications associated with extubation are pulmonary edema and hypoventilation hypoxia, bronchospasm, laryngospasm, the requirement for re-intubation, and other complications interventions designed to provide ventilation and oxygenation (Baumgartner H, Falk V, et al .2017)

2.7.1. Pain Management

Pain is linked to prospective and actual tissue damage, tachyarrhythmias, shallow respiration, and poor recovery .A patient's respiration is shallow puts them at danger for atelectasis and development of pneumonia. Although patients' experiences differ, Considering pain thresholds, 75% of heart surgery patients report discomfort(Ziehm S, Rosendahl J, et al.2017)

2.6.2. Postoperative pain.

Pain's etiology is multifaceted. Incisions on the skin, sternal retraction, and tissue damage caused by the installation of drains, tubes, and wires releases pro-inflammatory .Mediators that activate afferent nociceptive fibers and induce nociceptive transmission pain. Musculoskeletal damage resulting from sternal retraction and possible rib fractures. Surgical procedures might result in musculoskeletal pain. Causes of pleuritic discomfort include the chest tubes or other drains may be used. It is essential to identify probable pain reasons to be able to effectively treat pain with multimodal analgesia to improve recovery through promoting early mobilization and decreasing opioid use.Opioids are an effective treatment for after cardiac surgery pain, and they are particularly useful for discomfort during rest. However, there is a restricted treatment window and growing worry.Numerous adverse effects, including vomiting, nausea, constipation, disorientation, urine retention,

postoperative ileus, and kidney failure, are reported, especially at higher doses. Opioids should be incorporated within a comprehensive treatment plan that also includes local anesthetics, non-opioid anti-inflammatories, and non-pharmacologic techniques. The delivery of the tailored pain strategy is guided by periodic pain evaluation (Baumgartner H, Falk V, Bax et al.2017).

The use of cardiopulmonary bypass (CPB) is typically accompanied by hypothermia, and patients must be warmed to at least 95 degrees Fahrenheit. 34°C. Patients are deemed hypothermic if their body temperature falls below 36 degrees Celsius.

Age, co-morbidities, and comorbidities are risk factors for prolonged hypothermia. Procedure length, exposed skin, and peripheral vascular disease.

Patients who are hypothermic are more likely to experience ventricular dysrhythmias and have a lower threshold for ventricular fibrillation. Anesthesia-related recovery delays can also be caused by peripheral vasoconstriction and increased systemic vascular resistance, elevated oxygen demand, reduced carbon dioxide production, and alterations in medication metabolism. Platelet function and the coagulation cascade are both altered by hypothermia-induced coagulopathy. Rewarming can be sped up with the help of forced air warming equipment, such as a blower that blasts warm air over the body's surface to warm by convection, as well as the more traditional methods of covering yourself with a hat, a blanket, and some socks. Regular temperature monitoring is necessary for optimal rewarming (Al-gersha, K., et al. 2018) .

2.7.3. Complication of surgical site infections

Associated with higher morbidity and mortality in post-valve surgery patients, with sternal and mediastinal infections having the highest rates of morbidity and mortality as many as 5% of patients. SSI are often avoidable and are associated with substantial morbidity and mortality poorer results and rising costs. There are preoperative, intraoperative, and postoperative risk factors. Among the preoperative conditions are obesity, Diabetes, smoking, renal insufficiency, poor nutrition, COPD, and big breasts are risk factors.

Intraoperative dangers include blood transfusions, prolonged operation time, and infection. Hypoxia, increased traffic in the operating room, and compromised asepsis were observed.

Transfusions, inadequate cardiac output, extended mechanical ventilation, and sternal instability are postoperative risk factors. SSIs within 30 days are classified as superficial, deep, or organ/space. pertaining to surgery. Superficial wounds involve only the skin or subcutaneous tissue around the wound site.

The evaluation of the wound may indicate purulent discharge, discomfort, inflammation, redness, and warmth. Mediastinitis is an example of a deep wound infection that may result in surgical site dehiscence and sternal instability. In severe situations, sternectomy and flap placement may be used as a therapy. Preoperative strategies to avoid wound infection commence with hair removal. Removing the surgical scrubs, administering antibiotics, and glycemic control to assist. Reduce mortality, duration of stay, and enhance the opportunity for healing. Postoperatively, the incisional dressing should be evaluated every 4 hours while the patient is in the operating room and

intensive care, with the initial dressing left in place for 24 to 48 hours (Brown JK, Singh K, et al 2018)

2.7.4. Activity

Reduces surgical complications and accelerates functional recovery rehabilitation, improves general health, shortens hospital stays, and decreases costs. morbidity and death occurred 22 times. Self-care should be encouraged in the patient and expand their activity to the greatest extent possible. For safe ambulation or activity, the nurse should check vital signs prior to and throughout the activity, keeping a close eye out for heart problems.

Rate rise of 20 beats per minute or systolic blood pressure fluctuation of 20 mmHg or more with dyspnea, tiredness, diaphoresis, chest pain, or chest discomfort that may indicate heart disease. complications. The patient should be urged to take unbroken rest periods. sleep and proper diet. In some cardiac surgery programs, mobility equipment is utilized. Teams that arrange possibilities for mobility have been beneficial .

Access to mobility aides, shower chairs, and sitting to complete self-care can reduce the amount of energy expended to maintain the equilibrium between oxygen supply and demand. physiotherapy and occupational therapy

Physiotherapy appointments are beneficial for addressing workouts in this patient population.improve strength and create goals for physical activity. Physiotherapy is a correlated with a reduction in respiratory problems and muscle wasting enhanced cognitive function, decreased mechanical ventilation duration, and lowered morbidity and mortality (Lu SY, Lai Y, et al.2020)

2.7.5. Nutrition

After valve surgery, nutritional support is a therapeutically relevant element of treatment. Appropriate diet aids recovery, boosts energy reserves, and can prevent disease .

Prior to surgery, a nutritional evaluation should be undertaken whenever possible to anticipate postoperative nutritional. Patients who are well-nourished before to surgery had better outcomes than those who are malnourished. are susceptible to additional difficulties. Prior to surgical procedures, patients are obliged to fast resulting in catabolic stress, insulin resistance, nutritional deficits, and unfavorable immune function.

In most cases, intravenous fluids are administered prior to surgery and are continued until oral intake is resumed. Delays in proper nutritional support and poor calorie intake might result in nutritional deficiencies. With adequate knowledge of nutritional status, the team can monitor daily dietary intake with the objective of tolerating at least 80% of the specified diet by the third postoperative day (Leon, A. S., Franklin, B. A., Costa, F., et al. 2018).

2.8. Discharge Plan

Patients' discharge planning, instruction, and mentoring are crucial components. Journey of care and transition home in safety. Included in discharge planning components are an tailored plan for returning home after heart surgery that addresses social support, activity (e.g., progressive exercise program, activities of daily living, driving), nutrition, and management of probable problems. The objective is to enable the safe return of patients to their homes so they can begin their rehabilitation and reduce the risk of

hospital readmission and other issues (Coleman SR, Chen M, Patel S, et al. 2019)

2.8.1. surgical site care

Teaching patients to monitor their surgical sites and spot signs of infection is a crucial function of nurses. The incision should be cleaned daily with gentle soap and warm water, although harsh scrubbing should be avoided. Patients should evaluate the affected area for increased pain, redness, edema, drainage, site separation, and fever, and report any concerns.

In the extremely unusual occasion that the sternum shifts or pops or cracks during movement, nurses must emphasize the need of getting medical attention.

During the first year after surgery, sun exposure should be managed with the understanding that lotions, creams, and oils applied to the surgical site may result in a darkening of the scar after sun exposure and should be avoided. For up to six months, the region around the incision may feel numb, tickle, or be itchy (Leon, A. S., Franklin, B. A., Costa, F., et al. 2018).

2.7.2. Diet-Related Factors

With a focus on small portions, a high-quality dietary intake can promote recovery. The consumption of regular meals and a healthy diet. This is especially pertinent given the frequent loss of appetite, altered sense of smell, and complaints of a metallic taste, as well as the presence of a metallic taste, all point to a possible cause. The delayed recovery of sensory function following cardiac surgery. A diet abundant in vegetables, fruits, grains, nuts, and seeds can promote general health. Patients should be counseled to reduce their consumption of sugary beverages and alcohol. If the patient is taking

warfarin, there may be additional food restrictions (Toppe C, Goetzenich A, et al. 2017).

2.8.3. Exercise and Personal Care

Return to initial physical strength can be time-consuming and unpredictable.

trajectories based on several patient-level variables. As a part of the release planning, nurses should assist patients in securing sufficient social support throughout the first two weeks following surgery. Individuals return to work at different times. factors and physical demands of the job; the majority of patients can return to work approximately 4–6 weeks after discharge.

Physical therapists, nurses, and Other allied health providers can provide valuable information and guidance to guide correct mobility and activity constraints, including lifting restrictions greater than 10 pounds (4.5 kilograms) or early morning pushing or dragging of big objects recuperation period

2.8.4. Psychological Well-Being

Due to cardiac surgery, quality of life (QOL) and mental health may be impaired hospital readmissions, greater symptom load, and other variables. a change in physical consciousness upon discharge .

Patients noted a deficiency improvement in health condition for three to six months following valve surgery. Depression is characterized by 15–60% of patients, and is associated with a higher risk of mortality and decrepitude. Psychiatric disorders are related to poor health. Quality of life and noncompliance with postoperative regimens. Women, single, older, and

unemployed patients and those with lengthy hospital stays are at greater risk for depression and other mental health problems. Sleep disorders, including insomnia and disrupted diurnal cycles, sleep disorders can be particularly difficult to manage. patients; patient education regarding sleep health, coffee avoidance, and other stimulants. Moreover, adopting appropriate sleep habits can improve patients' recuperation.

2.8.4. Pharmaceuticals

Individuals from the interdisciplinary group must instruct patients about medication use, drug interactions, and the value of self-management. It is recommended that patients with a mechanical valve, bioprosthesis, or mitral repair who also have atrial fibrillation, heart failure, or an ejection fraction (EF) of less than 30% take oral anticoagulants permanently. Patients who have had bioprosthetic or mitral valve replacement with a prosthetic annuloplasty ring are advised to take anticoagulant medication for the first three months after surgery.

The ideal INR for patients with mechanical valves is between 2.5 and 3.5; patients with thrombogenic risk factors commonly target an INR of 2.5, while those at higher risk for thrombosis need an INR closer to 3.5. Mitral, tricuspid, or pulmonary valve position, a previous thromboembolic event, atrial fibrillation, and a reduced ejection fraction of 35% are all patient-related risk factors for thrombosis (Bertrand PB, et al.2019).

When the INR is greater than 4.5, the risk of bleeding increases, and the risk multiplies exponentially when the INR is greater than or equal to 6.0.

Patients using anticoagulants should utilize a toothbrush with soft bristles, an electronic razor, and a careful touch while caring for surgical sites

or washing sensitive skin. Patients may endure postoperative pain, necessitating pain medication at discharge. Priority should be given to providing the essential knowledge regarding medicine use, purpose, and potential side effects.

The goal of administering pain medication is to reduce suffering. A side benefit of pain alleviation is a decreased likelihood of developing pneumonia. If pain is treated, patients are more likely to engage in exercises such as walking and deep breathing(Albert, N.M., 2018).

2.9. Care at home following bypass operation

Care following bypass surgery attempts to lower heart disease risk factors and includes initiatives to assist patients and family members quit smoking, regulate high blood pressure, improve cholesterol levels, begin regular exercise, if necessary, lose weight, and reduce stress. Some of these adjustments can be addressed by modifying dietary and physical activity patterns. Nevertheless, lifestyle changes alone may not be sufficient, and drugs are frequently required.

Discharge from the hospital patients with a straightforward CABG often leave the hospital after five days. In some instances, hospital stays are extended. In the event of difficulties, discharge is postponed until the patient's condition is stable (Flint N, Wunderlich et al 2020).

Prior to leaving the hospital, it is essential that the patient and family engage in and comprehend the discharge plan. Ensure that all questions are addressed and acquire written instructions on how to administer all medications (new and old). After bypass surgery, it is typical to begin new drugs and discontinue or alter the dosages of old ones.

Drugs – The majority of bypass surgery patients are sent home with prescriptions for many medications, the majority of which are taken daily. Some of these medications enhance survival, reduce the risk of complications, and prevent or cure recurrent chest discomfort.

Aspirin is an antiplatelet drug used to prevent the formation of blood clots that might obstruct coronary arteries or coronary bypass grafts. Typically, it is suggested indefinitely.

Beta blockers slow the heart rate, reduce blood pressure, and reduce the oxygen requirement of the heart. They are administered to certain individuals with high blood pressure, heart failure, certain rhythm alterations, or a heart attack, as well as certain patients in whom bypass surgery is not anticipated to alleviate all symptoms of angina. If a patient is unable to tolerate beta blockers, calcium channel blockers may be replaced.

Angiotensin converting enzyme (ACE) inhibitors are frequently employed to treat hypertension.

Captopril (trade name: Capoten), enalapril (trade name: Vasotec), lisinopril (example brand names: Zestril or Prinivil), and ramipril are ACE inhibitors (brand name: Altace).

An angiotensin II receptor blocker may be recommended to patients who cannot take an ACE inhibitor (typically due to a persistent cough) (ARB). These similar medications are adequate substitutes (Joseph J, Naqvi SY et al 2017).

Losartan (trade name: Cozaar), valsartan (trade name: Diovan), and irbesartan are examples of ARBs (brand name: Avapro).

Cholesterol-lowering therapy — After CABG, nearly all patients are given a drug to reduce their lipid levels. Reducing cholesterol can be advantageous both before and after CABG, as it can slow the progression of atherosclerosis in both native and transplant arteries.

Other drugs — Other medications may be administered on a short-term basis to avoid the onset of heart arrhythmia, to alleviate the pain associated with healing incisions, or to promote regular bowel movements (Alice Y.M. Jones 2014).

Even for those with readings within the normal range, lipid treatments are suggested. Less than 70 mg/dL (1.8 mmol/L) is considered optimal for bad cholesterol (LDL or low density lipoprotein).

Statins are the most prevalent drugs used to reduce cholesterol levels.

Wound care – Upon hospital discharge, patients are typically given instructions on how to care for chest and/or leg wounds. It is essential to carefully adhere to these directions and contact a healthcare provider promptly if any questions or concerns arise (Doherty, P. J., & Harrison, A. S. 2018).

Avoid heavy lifting and severe shoulder movement (e.g., tennis, baseball, and golf) for six to eight weeks after surgery to allow the breast bone to heal completely (sternum)

When to seek medical attention — If the patient develops any of the following signs or symptoms of a wound infection, he or she should call a healthcare practitioner immediately. The majority of wound infections arise within fourteen days of surgery.

Fever above 100.4o F (38o C).

Pain that is new or worsening in the chest or around the incision site

A quick heartbeat

Redness, bleeding, or pus-like drainage from an incision (Artinian NT, et al.2022).

2.10. Cardiac Rehabilitation Program

Participation in a systematic, all-inclusive cardiac rehabilitation program is beneficial for the majority of bypass surgery patients. Participants in cardiac rehabilitation typically have hospital or clinic appointments many times each week, allowing them to live and sleep at home. The potential benefits of rehabilitation include an increase in heart function, a decrease in heart rate at rest and during activity, and a decreased risk of death or the development of heart disease complications.

Among the components of cardiac rehabilitation include exercise, the reduction of risk factors, and the management of stress, anxiety, and depression. The benefits of cardiac rehabilitation are only seen when this multifactoral strategy is employed. In other words, a single component is insufficient (Ades PA, et al .2019)

Exercise — Several studies have demonstrated that exercise improves cardiovascular health. Importantly, the first step in beginning an exercise regimen is to assess the potential risk of heart and/or blood vessel issues. This is often accomplished through a supervised treadmill exercise test. Although nearly everyone may exercise safely after being released from the hospital, the intensity and duration of exercise should be modified based on the degree of a patient's cardiac disease.

Risk categories for exercise — Risk categories are a means to describe the risk of cardiovascular (heart-related) issues associated with physical activity. Each category has its own supervision and exercise limitation requirements. People in risk group A are generally healthy, do not need medical supervision while exercise, and have no restrictions on exercise time or intensity. People in exercise category D, on the other hand, have tight activity restrictions and should not exercise even under close medical supervision. The majority of bypass patients fall under categories B or C.

Class A: Individuals who appear to be in good health and for whom there is no indication that exercise increases their heart-related risk.

Class B - Individuals with established, stable coronary heart disease. These individuals have a reduced risk for cardiovascular problems when engaging in intensive exercise.

Class C: Individuals with a moderate to high risk of heart-related problems during physical activity. People in this category include those who have had several heart attacks and those who have chest pain at relatively low levels of exertion. Patients with certain positive exercise test results may also be included in this category.

Class D: Individuals having an illness that is unstable and who should not participate in an activity program (Lancellotti P, et al .2017)

During cardiac rehabilitation, a skilled clinician will collaborate with the patient and the patient's primary healthcare practitioner to establish a safe and beneficial exercise regimen. The program will take into account the patient's fitness level, heart health, physical constraints, the amount, intensity,

and duration of exercise required to promote heart health, as well as the requirement for supervision (Doherty, P. J., & Harrison, A. S. 2018).

Type of exercise - The exercise should involve big muscle groups and aerobic activity. Examples include walking, jogging, cycling, rowing, and stair climbing.

The suggested frequency of physical activity is three to five times a week.

It is essential that each session include a 5- to 10-minute warm-up, a conditioning phase of at least 20 minutes, and a 5- to 10-minute cool-down. Eliminating the cool-down period can increase the risk of cardiovascular problems.

Intensity - The intensity of exercise is one of the most significant components of the exercise prescription. This is determined by the heart rate or amount of effort of the patient. There are numerous formulas for calculating the optimal maximal heart rate for each subject.

- Exercise progression – Most individuals can progressively increase their exercise intensity over time. Incorporating beneficial exercise into the daily routine is also possible by taking a brisk walk or engaging in active play with children or grandchildren (Leon, A. S., Franklin, et al. 2018).

- Supervision – Class C patients should participate in a medically supervised exercise program in which their electrocardiogram (ECG) is monitored during activity. Advanced life support equipment (such as a defibrillator, drugs, and trained workers) should be readily available. This level of supervision should last at least eight to twelve weeks.

Class B patients benefit from an ECG-monitored, medically supervised program for the first 6 to 12 sessions. Consequently, a home-based fitness program is effective and safe (Ades PA, Maloney A, et al 2019)

2.11. Lower cardiovascular risk factors

Several variables raise the likelihood of getting heart disease or hasten its progression. Even if a person already has heart disease or a heart attack, reducing or eliminating these risk factors can be beneficial. The strategies for mitigating hazards are mentioned below (Ralapanawa, U., & Sivakanesan, R. (2021) .

Adhere to a heart-healthy diet — Dietary counseling is beneficial for individuals who need to lose weight or lower their cholesterol levels. A trained dietician is the best person to counsel with foods that are beneficial and those that are harmful, portion sizes, calorie recommendations, and realistic approaches to change unhealthy eating patterns. In general, a heart-healthy diet involves replacement fatty meats, cream, cheese, and high sugar or refined carbohydrate items with veal, lean meat, poultry, fish, whole grain pasta, lentils, corn, rice, beans, nuts, or vegetarian dishes. Sugar is a hidden element in many processed foods and is just as bad as those high in fat. It is normal for low fat foods to have a high sugar content and, hence, a comparable calorie count (Macchi, et al 2015).

The majority of cardiac rehabilitation clinics employ a nutritionist with education and experience in guiding those recuperating from a heart attack on their diet.

Smoking dramatically raises the risk of coronary heart disease and heart attack. Cessation of smoking can significantly minimize these hazards. The

chance of dying from coronary heart disease is approximately halved one year after quitting smoking, and the risk continues to fall over time. In other studies, quitting smoking reduced the risk of heart attack to that of nonsmokers within two years.(Lancellotti P, Ancion A, et al .2017)

Group programs, nicotine patches, gum, or nasal spray, or a prescription medicine may be recommended by cardiac rehabilitation programs to assist with quitting smoking. Treat high blood pressure and high cholesterol — Medications to treat high blood pressure and high cholesterol are typically prescribed following bypass surgery. It is essential to take these medications as prescribed.

Manage diabetes – Individuals with diabetes have a greater risk of experiencing problems following bypass surgery. Good glucose management can assist to lower the risk of these consequences as well as others. Losing weight, regulating the diet, exercising, routinely monitoring blood glucose levels, and taking oral hypoglycemic medicines (for persons with type 2 diabetes) or insulin helps achieve tight control (for people with type 1 and sometimes type 2 diabetes). Psychosocial treatment — After bypass surgery, despair, anxiety, and denial are prevalent, affecting up to 40 percent of patients. Depression can diminish a person's capacity to exercise, lower their energy levels, increase their weariness, and diminish their quality of life and sense of well-being. Women, and particularly younger women, are particularly susceptible to depression.

These signs can lead to difficulties within the family, marriage, and workplace. Individual or group psychotherapy, and occasionally antidepressant prescription treatment, might be beneficial. Numerous cardiac

rehabilitation programs employ professional personnel, such as psychologists, psychiatrists, and social workers, to assist with the management of these concerns. Depression and anxiety treatment can improve an individual's long-term attitude and overall sense of well-being. (Agvall B, Alehagen U, et al .2013)

Reduce stress — Chronic stress at home, at the workplace, or with finances can increase the risk of heart attack, stroke, and chest pain. In an effort to lessen these risks, many cardiac rehabilitation programs teach patients how to manage their stress levels (Bassak-Nejad, et al . 2013)

2.12. Nutritional education for patients

The food selections we make can have significant effects on our health. However, expert opinions regarding which and how much of these foods are best continue to shift.

This item discusses the associations between numerous foods or supplements and specific health issues and closes with basic dietary recommendations. Diets for weight loss are the subject of a separate topic overview (Azad, N., & Lemay, G. 2014).

2.12.1.Fruits and vegetables

Numerous studies have revealed the significant health advantages of fruit and vegetable consumption.

A higher consumption of fruits and vegetables is associated with a reduced risk of early death.

Fruits and vegetables reduce the risk of cardiovascular illnesses, such as coronary heart disease (CHD), stroke, and CHD-related mortality .

A high consumption of fruits and vegetables may minimize the incidence of cancer. Tomatoes and diets containing tomatoes may reduce the incidence of prostate cancer. At least five servings of fruits and/or vegetables are recommended daily (toppe C, Goetzenich A, et al. 2017)

2.12.2. Fiber

A high-fiber diet can reduce the incidence of coronary heart disease (CHD), colon cancer, and mortality. Consuming fiber also protects against type 2 diabetes, and consuming soluble fiber (such as that found in vegetables, fruits, and particularly legumes) may help diabetics control their blood sugar levels.

Women should consume 25 grams of dietary fiber per day, while males should consume 38 grams per day. Numerous breakfast cereals, fruits, and vegetables are high in dietary fiber. By reading the product information panel on the side of the package, the amount of grams of fiber per serving can be determined (Aggarwal, et al. 2013).

2.12.3. Grains and sugar

Choose whole grain foods (such as 100 percent whole wheat bread, steel cut oats, and wild/brown rice) over processed grain items (like white bread and white rice). Eating whole grains on a regular basis has been demonstrated to aid in weight loss and reduce the chance of developing

diabetes. Regular consumption of refined grains and added sugars has been linked to obesity and an increased risk of developing diabetes.

2.12.4. Fat

Consuming foods with a greater proportion of good fats and fewer bad fats may minimize the risk of coronary heart disease (CHD).

It indicates that the type of fat consumed is more relevant than the total amount of fat consumed. Avoid trans fats in favor of polyunsaturated fats, especially the polyunsaturated fats found in fish (omega 3). Other potentially beneficial sources of polyunsaturated fats include some oils, nuts, and seeds (like corn oil, flax seeds, and walnuts).

Trans fats are solid at room temperature and are labeled as partially hydrogenated oils on food labels. They are found in numerous margarines, commercial baked goods, and oils maintained at high temperatures for an extended period of time, such as the frying vats in fast food restaurants .Newer evidence suggests that saturated and monounsaturated fats do not significantly increase or decrease the risk of coronary heart disease (CHD), while saturated fats do increase cholesterol levels(Coylewright M, et al 2020)..

It is essential, while reducing specific fats, not to substitute them with processed carbs (eg, white bread, white rice, most sweets). Increased consumption of refined carbohydrates may reduce levels of high-density lipoprotein (HDL) cholesterol (good cholesterol), hence increasing the risk of coronary heart disease .

2.12.5. Red meat

It is now well-established that consuming red meat frequently, especially processed meats (such as salami, pepperoni, and ham), is unhealthy. Numerous ailments, including cancer, cardiovascular disease, and diabetes, become more likely.

2.12.6. Folate

Folate is a type of B vitamin that is essential for red blood cell formation. Low folate levels in pregnant women have been associated to neural tube defects, a category of birth disorders that includes spina bifida and anencephaly. Folate-containing vitamins and folate-fortified breakfast cereal are advised as the best ways to guarantee optimal folate intake (Bonilla-Palomas, J. et al. 2013).

2.12.7. Antioxidants

The antioxidant vitamins consist of vitamins A, C, and E, as well as beta-carotene. In addition to containing these vitamins, numerous foods, notably fruits and vegetables, also possess additional antioxidant qualities. Studies have not conclusively demonstrated that antioxidant vitamins protect disease, particularly cancer, and other studies indicate that they may possibly be harmful. Except for those with specific vitamin deficits, there is little evidence to encourage the consumption of antioxidant vitamin supplements.

2.12.8. Calcium and vitamin D

In order to lower the risk of osteoporosis, adequate calcium and vitamin D intake is essential, especially for women. Depending on a patient's calcium

and vitamin D intake, a health care professional can help determine whether or not supplements are necessary.

Experts recommend that premenopausal women and men consume at least 1000 mg of calcium per day, whereas postmenopausal women consume 1200 mg. The optimal dose has not been found. No more than 2,000 milligrams of calcium per day should be eaten.

Adults over seventy years of age and postmenopausal women are advised to take 800 international units (20 micrograms) of vitamin D per day. Other adults do not have a clearly established optimum intake, however it is typically suggested that they consume 600 international units (15 micrograms) each day (Roth GA, Mensah GA, Johnson CO, et al. 2019).

2.13. General recommendations for a healthy diet

Consume an abundance of veggies, fruits, and whole grains while limiting your intake of red meat. At least five servings of fruits and vegetables should be consumed daily. Included among the suggestions for reaching this objective is: Include fruits and vegetables in every meal. Consume an assortment of fruits and vegetables. When fresh is inconvenient, frozen or canned produce may be utilized (Dreymueller, D et al. 2016).

- Eat vegetables as snacks.

Always have a bowl of fruit available for children to use as a snack.

Fruit should be added to cereal.

Replace refined grains with at least 50 percent whole grains (such as 100 percent whole wheat bread, brown rice, and whole grain cereal) (like

white bread, white rice, refined or sweetened cereals). Select smaller servings and consume them more slowly.

Reduce intake of unhealthy fats (trans fats and saturated fats) and increase your intake of healthy fats (polyunsaturated and monounsaturated fat). Choose chicken, fish, and beans instead of red meat and cheese to reach this objective. Use oils containing polyunsaturated and monounsaturated fats, such as maize, olive, and peanut oil, for cooking (Stoppe, C., et al. 2016).

Select margarines made without partly hydrogenated oils. Stick margarine has more trans fatty acids than soft margarine, namely squeeze margarine. Eat less store-bought baked items containing partly hydrogenated oil (like many types of crackers, cookies, and cupcakes). When eating at fast food places, choose nutritious options such as grilled chicken and salad .

Choose prepared or processed foods labeled(zero trans fat) when possible. They may still have some trans fat but likely less than equivalent products not branded zero

Avoid sugary drinks and excessive alcohol use. Tips for accomplishing this objective include: At meals and celebrations, choose non-sweetened and non-alcoholic beverages, such as water.

Avoid events that revolve around alcohol.

Avoid incorporating sugary drinks and alcohol into family gatherings (toppe C, Goetzenich A, et al 2017).

2.14 What to Anticipate at Home

It takes four to six weeks to recover from surgery and begin to feel better.

Normal symptoms include:

- pain around the incision on chest
- loss of appetite for two to four weeks
- mood swings and depression
- swelling in the leg from which the vein graft was taken
- itching, numbness, or tingling around the incisions on your chest and leg for 6 months or more
- trouble sleeping at night
- constipation from pain medications
- difficulty remembering things or feeling confused (or fuzzy-headed)
- fatigue or lack of energy If you already have lung problems, they could get worse. Upon returning home, some people may need to utilize oxygen.

For the first 30 days, you may feel arm weakness.

Self-care requires someone to remain at home for at least the first one to two weeks following surgery (Al-gersha, K., Haboubi, G., & Al-Asady, N. 2018).

Learn how to monitor your pulse and do so daily.

Every day, take a shower and carefully wash the incision with soap and water. Before your incision has completely healed, do not swim, use a hot tub, or take baths. Follow a diet that is heart-healthy.

If depressed, communicate with family and friends. Inquire with the health care practitioner about receiving counseling services.

Continue taking all of your medications for heart, diabetes, hypertension, and other diseases.

- Do not discontinue taking any medication without first consulting a physician.
- Provider may recommend antiplatelet (blood-thinning) medications such as aspirin, clopidogrel (Plavix), prasugrel (Effient), or ticagrelor (Brilinta) to maintain graft patency.
- If taking a blood thinner such as warfarin (Coumadin), further blood tests may be required to ensure the correct dosage.

Activity

Remain active during rehabilitation, but begin gradually.

- Do not remain standing or seated in one place for too long. Change your position a little bit.

After surgery, walking is beneficial for the lungs and heart. Do not worry about your walking speed. Take at time.

- Climbing stairs is acceptable, but use caution. Balance could be an issue. If necessary, stop halfway up the stairs to catch breath (Grimm, et al . 2015).

- Light housework such as setting the table, folding clothing, strolling, and ascending stairs should be acceptable.
- Gradually increase your activity level and intensity over the first three months.
- Do not exercise outdoors in extreme temperatures.
- Stop if feel short of breath, dizzy, or any pain in chest. Do not perform any activity or exercise that produces chest pulling or pain, such as rowing or lifting weights.
- Keep incision sites out of the sun to prevent sunburn.

Do not drive for four to six weeks following surgery. The twisting motion needed in rotating the steering wheel may cause incisions to tear. Ask your doctor when you may return to work, and plan to be out of work for six to eight weeks.

Do not travel for a minimum of two to four weeks. Ask provider if travel is permitted. Also, consult provider prior to engaging in sexual activity again. In the vast majority of cases, things will be fine after four weeks (Lu SY, Lai Y, Dalia AA 2020).

You might be referred to a structured cardiac rehabilitation program. Will receive information and guidance about activity, diet, and exercise under supervision.

Wound care

For the first six weeks after surgery, care must be taken when moving the arms and upper torso.

- Do not reach behind you.
- Do not allow anyone to tug on your arms for any reason, including when helping you move or get out of bed.
- Do not lift objects weighing more than 5 to 7 pounds (2 to 3 kilograms).
- Do not perform even mild chores for two to three weeks.

Before increasing arm and shoulder use, it is recommended to consult with a medical professional.

It is acceptable to brush your teeth, but you should not engage in any other activity that requires you to hold your arms over your shoulders for an extended amount of time. When utilizing your arms to get out of bed or a chair, keep them close to your sides.

The provider will explain how to treat a chest wound. You will likely be instructed to clean your surgery wound daily with soap and water, then pat it dry (Winkelman C, Chiang L. 2017)

2.15 When to Contact a Physician

- Experience chest pain or shortness of breath that persists even resting;
- Pulse seems erratic — it is either very sluggish (less than 60 beats per minute) or very fast (more than 100 beats per minute) (over 100 to 120 beats a minute).
- Experience vertigo, fainting, or extreme fatigue.
- Have a severe and persistent headache.

- Are experiencing a persistent cough • are coughing up blood or yellow or green mucus
 - Having trouble taking any of your heart medications.
 - Weight increases by more than 2 pounds (1 kilogram) per day for two consecutive days.
- wound alterations It is red or bloated, it has opened, or it is producing more discharge.
- Have chills or a temperature above 101 degrees Fahrenheit (38.3 degrees Celsius) (Tam, D. et al.2018)

2.16 Previous study

First study

(Ghisi GLM, Rouleau F,etal 2020) Effectiveness of an Education Intervention Among Cardiac Rehabilitation Patients in Canada: A Multi-Site Study

Although patient education is considered a core component of cardiac rehabilitation (CR) programs, to our knowledge, no educational program designed for CR has been standardized in Canada. This absence of standardization may be due to a lack of reliable resources to educate these patients. The objective of this study was to assess the effectiveness of an education intervention in improving knowledge and health behaviours among CR patients in 3 sites in Canada.

methods CR patients were exposed to an evidence- and theoretically based comprehensive education intervention. Patients completed surveys assessing

knowledge, physical activity, food intake, self-efficacy, and health literacy. All outcomes were assessed pre- and post-CR. Paired t tests were used to investigate variable changes between pre- and post-CR, Pearson correlation coefficients were used to determine the association between knowledge and behaviours, and linear regression models were computed to investigate differences in overall post-CR knowledge based on participant characteristics.

Results a total of 252 patients consented to participate, of whom 158 (63.0%) completed post-CR assessments. There was a significant improvement in patients' overall knowledge pre- to post-CR, as well as in exercise, food intake, and self-efficacy ($P < 0.05$). Results showed a significant positive correlation between post-CR knowledge and food intake ($r = 0.203$; $P = 0.01$), self-efficacy ($r = 0.201$; $P = 0.01$), and health literacy ($r = 0.241$; $P = 0.002$). Education level (unstandardized beta = -2.511 ; $P = 0.04$) and pre-CR knowledge (unstandardized beta = 0.433 ; $P < 0.001$) were influential in changing post-CR knowledge.

Conclusion In this first-ever multi-site study focusing on patient education for CR patients in Canada, the benefits of an education intervention have been supported.

Second study

Hanaa H. Ahmed*, Yousseya M. Ibrahimet et al 2018 . The Effect Of Early Activity On Patients Outcome After Open Heart Surgery.

The postoperative phase is the most critical period for open heart surgery during which many serious and fatal complications can occur. Early physical activity can prevent such complications. The role of the critical care nurse is crucial in this concern. The Objectives present study aimed to examine the

effect of early activity on patient's outcome after open heart surgery. Design A comparative experimental design was applied.

Setting This study was conducted in the Intensive Care Unit (ICU) of Open Heart Surgery at Mansoura Main University Hospital.

Sample Forty adults patients of both sexes undergoing open heart surgery using cardiopulmonary bypass and showing hemodynamic stability.

Method An activity regime was applied to 20 patients who underwent such surgery. The results were compared to a matching control group. Early activity included positioning (supine, left and right sides), early ambulation (dangling, standing near the bed, chair sitting and walking) and chest physiotherapy procedures (coughing, breathing exercises, percussion, vibration and

incentive spirometry). Results Comparing the obtained data revealed a better outcome among the early activity group.

Conclusion Combination of early activity and chest physiotherapy ameliorates the outcome of patients after open heart surgery. Performing early activity to such patients is recommended.

Third study

(Nirmal Kaur, Prem Verma, Rana, Sandip Singh 2017) Effectiveness of planned preoperative teaching on self-care activities for patients undergoing cardiac surgery

The objective of the study was to assess the effect of planned preoperative teaching on self-care activities for patients undergoing cardiac surgery.

A quasi-experimental design was used based on convenient sampling technique. Total 40 subjects 20 each in the experimental (Group I) and control

group (Group II). In each group an equal number of subjects 10 each were included undergoing two types of cardiac surgery i.e. open (Group A) & closed (group B) heart A checklist with 40 items was framed to assess the level of performance during preoperative period, before the implementation of teaching on self-care activities and as well as on the 4th and 7th postoperative day. The control group did not receive any preoperative teaching. Data analysis showed that statistically there was no significant ($P>0.05$) difference of pretest performance scores was found between the two groups. A comparison of posttest performance scores between both groups shows that experimental group had strongly statistically significant ($P<0.001$) increase in performance of total scores as well as each variable of self-care activities. The findings of the study reflect that the preoperative teaching is an extremely effective media to increase the level of performance and enhance the early recovery of the subjects.

Forth study

Sundus H. Ali ,Shirroq M. Jacoub 2016) .Effectiveness of Preoperative Psycho-educational Program on Stress of Cardiac Surgery Patients

The study aimed to determine the effectiveness of preoperative psycho - educational program on cardiac surgery patients information and their level of stress. And find out the differences in the Psycho educational program with regard to patients demographic characteristics such as age and gender.

Methodology Aquazi-experimental study was carried out to determine the effectiveness of preoperative education program on stress for cardiac surgery patients in Baghdad city from the 28th of March, 2010 , to 19th of September ,2011.

The preoperative psycho - educational program, as well as the questionnaire was constructed as a tool of data collection for the purpose of the study. Purposive (non probability) samples of 40 patients who have undergone cardiac surgery (CABG & VR) are selected from Ibn AL-Bitar Specialized Center for cardiac surgery. The researcher divided the samples into two equal groups (the study and control groups) .

Data was analysis through the use of the suitable statistical methods.

Results the results of the study indicates that there are significant differences in the patients knowledge towards cardiac surgery in the study & control groups through pre-test, post-test.

Recommendations: The study recommended that such program should be implemented in the form of session for the patients before undergone cardiac surgery to prepare them to cope with the stress and improve their knowledge.

Fifth study

(Lisa O'Brien PhD, et al 2013) Pre-surgery education for elective cardiac surgery patients: A survey from the patient's perspective

Multidisciplinary pre-admission patient education is commonly recommended for elective surgery patients, and may involve the provision of written information and presentations from the health team. However, the occupational therapy role with elective sternotomy patients in our setting is confined to the post-operative period. We aimed to evaluate cardiac surgery patients' perception of the effectiveness and timing of pre-admission multidisciplinary written information and post-operative verbal education provided by occupational therapy.

Methods this cross-sectional study involved a written survey, which was posted to 375 people who had undergone cardiac surgery in 2009–2010. Questions were designed to elicit patient perceptions of both pre-operative written information and post-operative education relating to post-operative precautions and return to activity received from occupational therapy.

Results there were 118 surveys returned equalling a 31.4% response rate. Eighty-nine per cent of respondents recalled receiving and reading the pre-surgery information booklet, and this was significantly correlated with feeling prepared for the post-operative experience and adherence with precautions ($P < 0.0001$). Exactly 30.4% of respondents stated that they experienced stress and anxiety in relation to post-operative expectations, and 47.3% felt the information provided in the occupational therapy education sessions would have been more beneficial for their understanding and coping if provided prior to surgery.

Conclusions multidisciplinary written pre-surgery education appears to be providing patients with a good understanding of what to expect following surgery. The results suggest that pre-operative verbal education from occupational therapy would assist in reducing anxiety in a subgroup of patients.

Ministry of Higher Education
and Scientific Research
University of Babylon
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***Effectiveness of Self-care Educational Program
on the Knowledge of Patients Undergoing Open
Heart Surgeries in the Middle Euphrates
Governorate***

A Dissertation Submitted

By

Ameer Hassan Kadhem AL-Khafaji

To

College of Nursing / University of Babylon

In

*Partial of Fulfillments of the Requirements for the Degree of
Doctorate of Philosophy in Nursing*

Academics Supervisor

Asst.Prof. Dr. Hussam Abbas Dawood, (PhD)

2022 AD

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

﴿ إِنَّمَا الْمُؤْمِنُونَ الَّذِينَ إِذَا ذُكِرَ اللَّهُ وَجِلَتْ قُلُوبُهُمْ وَإِذَا تُلِيَتْ عَلَيْهِمْ
آيَاتُهُ زَادَتْهُمْ إِيمَانًا وَعَلَىٰ رَبِّهِمْ يَتَوَكَّلُونَ ﴾

صَدَقَ اللَّهُ الْعَلِيِّ الْعَظِيمِ

سورة الانفال الآية (2)

Dedication

All love and great respect I dedicate this work to:

- Heroes who protect Iraq and Iraqis...
- Dear parents
- Wife and my two flowers(my daughters)
- Dear brothers and sisters ...
- Friends

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Great thanks are due almighty ALLAH the most merciful the most compassionate.

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Abstract

Background: Self-care is described as a method for coping with life events and difficulties generated by an increase in the aging process and reliance, Self-care entails taking particular actions to alleviate symptoms, maintain and improve health. Self-care is one of the common consequently essential aspects of the cardiac surgery patients treatment

Objectives: Evaluating the effectiveness of the self-care educational program on the patients knowledge who undergoing open heart surgeries

Methodology : To meet the objectives of this study, a quantitative study quasi-experimental design with pre- and post-testing was carried out , in two cardiac center (Shaheed almehrab and Al-najaf Center for cardiovascular Surgery and cardiac catheterization) from the period between 20th August 2021 to 10th September 2022. Non-probability purposive sample selected from the target population who are met the specific criteria during specific time interval. The study sample consists of (60) patients undergoing open heart surgery having the same inclusion criteria. Those patients are divided into two groups: (28) patients act as study group and the other (32) patients act as a control group. The patients were visit these centers for follow up and consultation. A questionnaire was developed to assess the knowledge toward self-care ; it consisted of three parts, validity was obtained by (18) experts, and reliability calculated as (0.79) which is statistically acceptable.

Results: Most of participants in both groups 14 (43.8) were between 50-59 age group male, married related to educational status 7 (25.0%) were intermediate school in study group, , while 11 (34.4%) were secondary

school in the control group. The findings differences between pre-test and post-test of the intervention group members who attend the educational program, while no significant differences recorded among control group members.

Conclusion: The finding shows that self care educational program act effectively up on the patients knowledge .

Recommendation: Implementation of the educational program for patients undergoing cardiac surgery performed by nurses before surgery, as well as explanations of the risks associated with cardiac surgery throughout hospitalization and at home and opening of rehabilitation unit for heart diseases, which may caring out the responsibilities to educate patients and train them related to maintain their self care ,important their quality of life.

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List of Abbreviations and symbols

Abbreviations	Meaning
ACE2	Angiotensin converting enzyme 2
ACS	Acute coronary syndrome
ADH	antidiuretic hormone
AF	atrial fibrillation
ALI	acute lung injury
NSTEMI	non–ST segment elevation myocardial infarction
ANOVA	Analysis of Variance
ANS	autonomic nervous system
STEMI	ST segment elevation myocardial infarction
BMI	body mass index
C.PAP	continuous positive airway pressure
ECM	extracellular matrix
VIC	valve interstitial cells
CAD	Coronary Artery Disease
COVID-19	Coronavirus disease-2019
CT	computerized tomography
DABK	des-Arg 9-Bradykinin
df	degree of freedom
ECG	Electrocardiogram
ASD	atrial septal defect
CABG	Coronary artery bypass grafting
DALY	disability adjusted life years
H. S	Highly Significant
DM	Diabetes mellitus
QOL	quality of life
RA	Right atrium
ICU	Intensive Care Unit
RV	Right ventricle

LAD	Left anterior descending
LCX	Left circumflex
AV	Atrioventricular
CA	coronary artery
M	mean
RCA	Right coronary artery
n	numbers of Samples
N. S	Non-Significant
CRP	C-reactive protein
No	number of study sample
TIA	transient ischemic attack
VHD	Valvular heart disease
P- value	Probability value
VTE	venous thromboembolism
RHD	Rheumatic heart diseases
RF	Rheumatic fever
PICS	post intensive care syndromes
SSI	Surgical site infections
EF	ejection fraction
ACE	Angiotensin converting enzyme
sig	Significant
SPSS	statistics package program for social sciences
Std	stander deviation

Chapter One

Introduction

1.1. Introduction

Cardiovascular diseases (CVD) is the leading causes of a major health problem, highly prevalent, and the leading cause of death in the world .The diseases may cause physical disability and put a huge financial burden on the affected patients and the national healthcare system. According to the World Health Organization, coronary artery disease was responsible for 15,3 million deaths (30% of all deaths)and 10.3% of the total disability adjusted life years (DALY) . The World Health Organization calculated that cardiovascular diseases were responsible for 28.5% of all fatalities in developing nations (WHO, 2018).

According to the latest World Health Organization (WHO) data published in 2018 Coronary Heart Disease Deaths in Iraq reached 32,463 or 18.92% of total deaths. According to the Global Burden of Disease Study, 55% rise would occur in CVD between 2010 and 2030 (WHO 2019).

Quality of life has emerged as an important concept and outcome in health and health care . In public health and in medicine, the concept of health related quality of life refers to a person or groups perceived physical and mental health over time (Amsterdam et al., 2014).

The purpose of coronary artery bypass graft (CABG) to improve circulation to the heart. As a result, the patient experiences less chest pain and ischemia, has a higher quality of life, and may even live longer. It is intended that the patient will be able to lead a more normal life after the treatment, and that the risk of a heart attack would be diminished. (Benjamin et al., 2017).

The annual number of CABG procedures performed in the United States increased by 425% between 1979 and 1990, from roughly 150000 to 5980000. (Mozaffarian .et al 2013).

During the last years, there has been a dramatic increase in the number of cardiac surgical procedures involving; the surgical treatment for valvular disease and coronary artery bypass graft. In Iraq, 50% of total open-heart surgery was CABG . The success of cardiac surgery is measured by low mortality, relief of symptoms and improvement in the quality of life .Increasing attention has been given to monitoring health-related quality of life variables in relation to the outcome of surgery. (Kouchoukos. et al., 2013).

Patients' habits and awareness are linked to the majority of cardiovascular risk factors. Self-care habits are therefore one of the most critical therapy interventions for these people. (Cucato, G.,et al.2022).

Cardiac surgery as CABG is the most costly and invasive of the recommended treatments for people with CAD, but it is the only option many patients with cardiac disease . The primary benefits of this operation over alternative therapeutic techniques include reduced pain and disability, as well as improved quality of life (QoL) through relieving symptoms of angina and extending life. However, CABG surgery creates both mental and physical complications (lung, heart, and neurological difficulties; inflammation and infection; renal impairment and hemorrhage) (depression, anxiety, etc.). Self-care plays a significant part in the healing of individuals with CVDs who have undergone open-heart surgeries. Health education of the cardiac surgery patient plays a vital role in the patient's post-operative care and the recovery process (National Audit of Cardiac Rehabilitation 2018).

Investing time in pre-operative preparation for heart surgery patients helps eliminate gaps of information and avoids post-operative problems. However, pre-operative health education in cardiac surgery is a complex aspect. (Shuldham, Fleming & Goodman 2015).

According to Orem self-care is a regulatory function into human beings primarily based on the individual's ability according to function self-care practices on themselves. (Luttik M et al.2005).

Self-care is described as a method for coping with life events and difficulties generated by an increase in the aging process and reliance, Self-care entails taking particular actions to alleviate symptoms, maintain and improve health. Self-care is one of the common consequently essential aspects of the cardiac surgery patients treatment (McAlister FA and Stewart S. 2013).

Self-care comprises of weight daily assessment; physician contacting when witnessing the ankle, legs, foot, or abdomen swelling; checking the urine amount of produced daily; eating fluids as prescribed by a physician; and avoiding excessive fluid intake .There are numerous factors that influence the overall self-care performance among open heart surgery patients, including education level, hospitalization variety , awareness and perceived social support (Sayers SL and Barbara Riagel DNSC.2018).

Social assist is one regarding the almost significant elements influencing mental situation and remedy follow-up among patients with cardiac diseases (Ghaem-magham Farahani Z,et al. 2013).

Due in accordance with the debilitating nature on that disease, the plan for the care regarding these patients must take among calculation whole factors of life, including social support (Christensen,et al. 2014).

Recovery period, encourages self-care reduces the danger regarding relapse among patients. Life motivation and self-care highly correlated and may contribute to the control of symptom development, reduction among the recovery period, and prevention regarding the recurrence of the sickness in heart surgery patients (Graven, et al. 2014).

Most care activities related together with cardiac surgery are performed among the home by patients and their families or other informal caregivers. Thus, such is fundamental to that amount heart surgery patients put in among self-care, yet nearly clinicians function no longer have the coaching to prepare there sufferers according to engage among high quality self-care (National Health Service 2019).

1.2. The importance of the study

Cardiovascular disorders are the top global cause of mortality many nations' high rates of morbidity and mortality can be ascribed to cardiovascular diseases as one of the primary reasons for hospitalization (WHO, 2018).

By 2030, it is expected that the prevalence of coronary artery disease (CAD) in the United States would rise to 18%. Reportedly, over 397 thousand coronary artery bypass graft (CABG) surgeries are performed annually in the United States. In Iran, where over 50,000 cardiac surgeries are performed annually and CVDs account for 33–38% of fatalities and 23% of disability. The prevalence of VHD is rising. In the United States, approximately 2.5% of adults are deaf. (American heart association 2019).

The global prevalence of valvular heart diseases is much higher, largely owing to the burden of rheumatic heart disease in developing countries although its rate is decreasing overall (Timmis A, Townsend N et al. 2018).

The VHD prevalence increases to about 1 in 10 people over the age of 65 as a result of the degenerative changes in valve structure that occur with age (Bucholz EM .2018).

A growing elderly population, from an estimated 962.3 million in 2017 to 2080. five million in 2050, makes VHD a major public health issue. All healthcare providers, regardless of their field, may treat a patient with VHD at some point . The care of individuals with a (VHD) involves skills, knowledge, and practice standards based on a comprehensive grasp of normal anatomy, physiology, and pathophysiology. In heart surgery, the post-operative phase is regarded embarrassing for the patient and his family, as the patient may experience several physical and psychological difficulties that limit his activity and diminish his quality of life. Multiple studies have demonstrated that heart surgery patients require a great deal of information regarding their recovery at home. In clinical practice, it is generally understood that patients require information before and after heart surgery, whereas a lack of information during hospitalization and after discharge may hinder healing during these periods (Mohseni, et al. 2013).

Heart disease is currently one of the leading public health problems in the world, and its intricate or slow nature frequently results in reverse actions, such as a high rate of rehospitalization and mortality, as well as the need for improved condition and self-care (Moser, et al.2015).

Heart disease is a growing concern for American healthcare since it affects more than 5 million Americans, half of whom may die within the next five years (Phelps, 2016).

Diabetes mellitus, valvular disease, hypertension, myocardial infarction, and obesity are the leading risk factors for the cardiac diseases , which mostly affects adults over 65. (Connelly, et al.2013)

This may also be examined in accordance with the aging of the U.S. population and the prevalence of a lifestyle characterized by insufficient physical activity and poor dietary choices, which leads to the emergence of risk factors. Heart failure has numerous triggering factors that may also cause the initial heart injury, but it completely halts myocardial remodeling (Motiwala, et al, 2016.).

Life expectancy is shortened and mortality is increased in those with heart disease. It also causes 12-15 million annual visits to doctors' offices and 6.5 million annual hospitalizations (Velagaleti, et al2007).

There is currently no known cure for heart disease; however, it has been shown that familiarity with the disease and the guidelines put forth by the AHA and the Heart Disease Society of America can help reduce mortality, increase quality of life, and lessen the need for hospitalization (Mahmood, A.S., 2015).

In 2006, around 7 million individuals underwent cardiovascular surgery in the United States (Viars, 2009).

These patients experience high levels of anxiety and tension since they are unsure about the outcome of the procedure. Inadequate preoperative

education and preparation leads to unwarranted anticipations, anxieties, and problems. Delays in ambulation contribute to the risk of deep vein thrombosis, and ineffective use of incentive spirometry can lead to pneumonia, both of which can lengthen hospital stays. The lack of knowledge regarding normal discharge planning on day 5 following coronary artery bypass surgery and on days 5–7 after valve surgery can also result in patients being unprepared for the post-hospitalization period, therefore delaying their discharge. In Iraq, little is known about the self-care education component of the health education process (Ley SJ. 2009).

This study will therefore provide time to evaluate the results and provide information regarding the self-care educational program on the knowledge of patients following open-heart surgery.

1.3. Statement of the study

Effectiveness of Self-care Educational Program on the Knowledge of Patients Undergoing Open Heart Surgeries in the Middle Euphrates Governorate

1.4. Hypothesis

- H0: there is no significant relationship between the educational program and Patients Self-care knowledge.
- H1: there is significant relationship between the educational program and Patients Self-care knowledge.

1.5. Objectives of the study

1. To assess patient knowledge toward self-care management before and after conducting special educational program

2. To evaluate the effectiveness of the self-care management educational program on the patients knowledge who undergoing open heart surgeries
3. To identify the demographical characteristics of the study sample
4. To find out the relation between the self-care educational program effectiveness and demographical characteristics of the study sample such as (age ,gender , educational level

1.6. Definition of Terms

Theoretical definition of Effectiveness:

Is the ability to generate the required results or to supply the needed output. To be considered successful, an endeavor must produce the desired outcome or leave a significant effect on its audience. (Dominguez-Mayo et al., 2015).

Operational definition of Effectiveness:

The capability to provide a precise outcome or to apply a specific quantifiable effect concerning self care .

Theoretical definition of education program:

Systematic plans for development of special or general abilities (Miller and Keane, 2007).

Operational definition of education program:

Refer to systematically organized teaching plan to provide information for patients concerning self care .

Theoretical Definition of open heart surgeries

operations on the heart or the arteries that supply it with blood. Patients frequently have these operations to treat congenital heart defects,

valvular heart disease, and problems related to ischemic heart disease (such as with coronary artery bypass grafting). (Knatterud, Mary 2015)

Operational definition of open heart surgeries:

This entails the opening of the thoracic cavity (thoracotomy) by cardiothoracic personnel in order to repair or replace valve abnormalities and/or execute coronary artery bypass grafting.

Self-care Theoretical Definition:

Self-care is a naturalistic decision making process of maintaining health through positive health practices (self-care maintenance) and managing illness and disease (self-care management).

(Shuldham , et al 2017).

Self-care Operational definition :

All strategies that may used by the patient depending up on his strength , knowledge and tolerance which help him to decrease or relief the symptoms of heart failure in order to enhance the quality of life .

Theoretical Definition of knowledge :

Acquired through education or experience, knowledge is the theoretical or practical comprehension of a subject. (Graham ID, et al 2016) .

Operational definition of knowledge:

It is what an individual obtains of experiences and skills, which are mostly founded on experience and learning in the first place, and it is reflected by the individual's theoretical and practical comprehension of any concept or subject.

Chapter Two

Review of Literature

2.1. Historical Overview

Historical background of artery bypass graft and valve replacement. Cardiac operation started in 1950, when the heart/lung machine was perfected and became more reliable (Thomason, 1982). Advancement in technology related to diagnosis, anesthesia, and surgical management continued after the development of cardiopulmonary bypass (Semitzer and Bare, 1996).

Cardiac surgery is considered a new technology. Since the first exploratory operation of heart valve in 1940, advances in valvular surgery continued rapidly. In 1978, thirty three thousand valve surgeries were doing in the United States. With the reduction of incidence rheumatic heart disease, the number of valvular surgeries decreased in the United States and the ratio of valve to CABG surgery was 1:6. (Zyzanski et al., 1981; Semltzer and Bare, 1996;).

In Britain, the first successful CABG was performed in 1964. The number of patient underwent this procedure increased each year when, 1500 procedures were done in 1975. Over 30000 operations were performed between 1967 to 1977 (Macintosh and Garcia, 1978).

The first successful coronary artery bypass graft was performed in 1967, in the United States and the patients number who have undergoing this procedures each years is multiplied. In 1970, CABG procedures were performed for 14,000 patients (Lily, 1985).

The figure number rise to 95,000 in 1978 (Brunner and Suddrath, 1984). The number jumped to over 159,000 in 1989. More than 250,000 open heart surgery were performed and high percentage of them were CABG in 1996. In Iraq, the first successful operation of open heart surgery atrial septal defect

(ASD) was performed in 1964 by Iraqi surgeon Professor Yousif Al-Numan. The first real coronary artery bypass surgery started in 1989 at Al-Rashed Military Hospital by Dr. Najh Al-Asady (patal communication with Dr. Hamed Al-Ane, Dr. Najih Al-Asady and Dr. Sadick Al-Khashab). Between 1993 to 1997, more than 300 CABG surgery and about 900 operation of valve replacement were performed (Al-gersha, K., Haboubi, G., & Al-Asady, N. 2018).

In the central Euphrates governorates, heart surgery operations began at the Najaf Al-Ashraf Center for Catheterization and Cardiac Surgery and the Shaheed Al-Mihrab Center for Cardiac Diseases and Surgery in the year 2016 and witnessed a remarkable development in terms of the number and quality of operations performed in these centers after continuous training and the recruitment of a number of foreign medical delegations

2.2. Theoretical framework

According to Orem's self-care deficit nursing theory (Orem, 1995), the clinical guidance of ADA (2012) suggests attending to health deviation self-care requisites. So the person with heart diseases needs to re-regulate medical nutrition treatment and physical activity, if necessary, using drug and blood-pressure monitoring to evaluate the outcome of self-care activities. The person with heart diseases must learn how to evaluate themselves, decide what actions need to be taken to attend to their needs, and perform those actions.

According to Orem, self-care is an acquired skill that comes easily to mature people. The theory's central tenet is that encouraging people to take care of themselves helps them maintain their own health and improves the

quality of their own medical care (Orem 1983; 1985; 1991; 2001; 2003). According to Orem, there is a set of universal human characteristics that support normalcy (the encouragement of human functioning and development within social groupings in accordance with human potential, known constraints, and the intrinsic desire to be normal). Individuals' self-care routines are influenced by both basic conditioning characteristics (such as age and gender) and universal requites (such as the need for air, drink, food, activity&rest, solitude, and social connections).

The key idea behind Orem's thesis is that individuals have the competence, duty, and right to look after themselves. To Orem, a comprehensive model or theory developed for an applied science like nursing includes not only the what and why of the field, but also its who and how (Orem 2006). With this action theory, both the nurse's and the patient's duties are clearly defined. Six central ideas and one auxiliary idea form the backbone of these theories. Orem's individual research and the Nursing Development Conference Group's talks gave rise to a number of the concepts, such as the cornerstone to learning any theory is study of fundamental assumptions. Orem's conceptions were governed by five overarching assumptions or beliefs concerning humanity. On page 123 of Parker (2010)

Her ideas about human behavior and social interaction were shaped by her reading of Aristotle, Thomas Aquinas, Talcott Parsons, Pitirim Sorokin, and others (Orem, 2003). Orem divided people into two categories when considering them theoretically: those in need of nursing care, and those who provide it. According to (Parker, 2010, p. 123),

Orem has been working on her idea of Self-care deficit since the beginning of her career and has continued to improve it up until her retirement. Orem recognized a need to improve the quality of nursing at this state's general hospital throughout her time while working for the Division of hospital and Institutional Services. As a result, she has come up with her own concept of nursing practice. In 1956, she formed her initial concepts.

The nursing practice, in Dorthea Orem's view, should be directed on fostering patients' innate capacity for self-care (Orem, 1995)

Each and every theory has its roots in the real, material worlds of people and events, in the world of ideas, and in the theorist's own life and experiences. An overview of the origins, evolution, and generalization of the self-care deficit hypothesis of nursing is provided. Orem (1991), page 59

2.2. 1. Orem's Theory concept

Life, human functioning, and well-being all depend on the trained and deliberate performance of self-care, whether for one's care self or for a dependent care (that is, care provided by another, such as a family member). There are contextual factors, such as cultural norms and expectations, that influence the degree to which people take care of themselves. When caring for oneself or another, it is necessary to make educated guesses or conduct thorough research on what options are available and optimal. This is a multistep process involving knowledge and research into specific forms of treatment. Next in the self-care process is determining what needs to be done, followed by actually doing it (Orem 2001, pp.143-145). The concept of purposeful action, a voluntary conduct to attain a goal, is central to both self-care and dependent care.

Related to Orem self care agency can be explain as a human's capacity for engaging in self-care is influenced by their age, stage of development, life experience, sociocultural orientation, health, and access to resources. The capacity to recognize and address the self-care needs of a socially dependent individual; the ability to do so is known as dependent care agency (Taylor, 2001). Core Abilities

The most fundamental level. These skills apply to any kind of intentional behavior, not simply self-care. Perception, memory, and navigation skills are all part of this.

Ten qualities or strengths are necessary for self-care. Knowing how to take care of oneself, being motivated to do so, and really being able to do so are all crucial factors. Furthermore, our higher-order cognitive and motor skills (including the capacity to pay attention, reason, make decisions, and carry them out) are impaired.

The granularity of self-care agency lies in the specifics of the various parts that make up the whole of self-care need or demand. Estimative operation skills include the ability to investigate and estimate what needs to be done in order to determine what Self-care activity is required in a given nursing environment at a given time. Learning ability in health and wellness contexts is included. These types of talents demonstrate the richness of human capability, and the action sequence is crucial to the self-care notion. Self-care agency also varies in terms of its level of development and operability at the level of concrete practice.

Theoretically, therapeutic self-care demand (TSCD) is an intricate notion that encompasses every single thing a person needs to do for their own life, health, and happiness over time. It was originally called activity demand or self-care demand (Orem 2001). Building or calculating a TSCD calls for in-

depth evidence-based practice, communication, and interpersonal nursing expertise. To do this, values are conditioned and then adjusted.

Self-Care Requisites

A set of self-care requisites (or criteria for action) covering universal, developmental, and health issues was created to serve as a basis for establishing the TSCD. These are the reasons or ends for which people do action in order to sustain their own existence and that of their loved ones.

Essentials for everyone's own health and well-being

Air, food, activity, rest, solitude, and social interaction are just some of the eight USCRs that everyone, regardless of age or circumstance, needs to thrive. Preventing harm to human life, human functioning, and human well-being (the objective) requires actions to be taken throughout time, and they will look different for an infant (e.g., keeping crib rails up) than they will for an adult (e.g., ambulation safety).

The importance of self-care at every stage of development

Orem (2001) classified self-care needs into three categories: (DSCRs). The first set of terms refer to activities essential to the broad range of human development. Dependent care agents frequently fulfill these requirements when caring for newborns and children, and when caring for adults in the aftermath of natural disasters or with severe physical or mental disease.

Third, it is necessary for you to take responsibility for your own health care in the event of a

Variations in health When a person is ill, injured, or otherwise in need of medical attention, they may have special needs or objectives related to self-care. Basic conditioning factors (BCFs) like age, health status, and

sociocultural orientation are taken into account and used to tailor each TSCD's three varieties of Self-care necessities to the specific needs of the individual.

2.2.1. The self-care deficit theory

is an integration of information regarding nursing agency, self-care deficiency, dependent care, self-care agency, therapeutic self-care demand, and theoretical self-care. Limitations in one's ability to acquire knowledge, make decisions, and generate care for oneself or a dependant are central to the philosophy, required for nursing. This notion of self-care (dependent care) and what rem calls the idea of social dependency are articulated by two sets of assumptions. A person's ability to learn (know), make decisions, and control one's own life is crucial for self-care (Orem, 1991, p. 67) The Self-Care Deficit Theory of Nursing, which Orem developed, is made up of three connected theories:

- (1) the theory of self-care
- (2) the theory of self-care deficits
- (3) the theory of nursing systems. Source: (Theoretical Foundations of Nursing.1991).

The core idea of the self-care deficit theory is grounded in two sets of assumptions: the theory of self-care and the concept of social dependency.

The quality and completeness of self-care and dependent-care in families and communities rests on culture, including the scientific knowledge of social groups and the educatability of group members.

- Societies accommodate the human condition of social dependence by creating systems that provide assistance to individuals based on the specifics of their situation.

Socially dependent people can be helped by direct aid from their communities even after they are institutionalized.

Health care is one example of a direct helping service established in a social group to aid people of all ages. Direct helping operations carried out by members of social groups can be divided into two categories: those related to the age-related dependency state and those unrelated to the state (Orem, 1991, P. 70)

The following hypotheses should be used as foundational principles and exploratory guidelines for expanding the theory of self-care deficiency.

The ability of an individual to engage in self-care or dependent care are influenced by factors such as their age, stage of development, life experience, sociocultural orientation, health, and financial means.

Nursing is a valid service when

(1) care abilities are less than those required for meeting a known self-care need (deficit relationship)

(2) self-care or dependent care abilities exceed or are equal to those required to meet the self-care demand. (Orem, 1991, p. 71)

2.2.3. Metaparadigm Concepts of Nursing

Kuhn (1977) coined the term metaparadigm to describe the highest level of abstraction and generality in the nursing knowledge structure (Mcewen & Willis, 2011). A metaparadigm is the overarching a field's perspective that determines the central phenomena of study and describes the distinctive ways in which researchers in that field approach those phenomena (Mcewen & Willis, 2011). The role of the metaparadigm is to define the scope of study and provide a summary of the intellectual and social goals of the field (Mcewen & Willis, 2011).

Wagner (1986) conducted an in-depth analysis of the nursing metaparadigm (Mcewen & Willis, 2011). She concluded that the results showed that there was agreement among nurses that these occurrences

predominated in the field of nursing science. Similar to Wagner's original dissertation, Dorothea Orem defined the nursing metaparadigm notions.

2.2.3.a. Person

Wagner argues that a person is more than the sum of his parts since he has physical, intellectual, physiological, and psychosocial requirements. A person is an invisible force, a holistic being in the globe, an open system, an integrated whole, an adaptable system, and much more. (Wagner, 1986).

Self-care is the practice of actions that persons start and undertake on their own behalf in maintaining life and well-being,' according to the Orem - Person worldview (Hanucharunkul, 1989). Orem's (1985) perspective on man, however, is inconsistent when she portrays people in terms of several stages of growth (Hanucharunkul, 1989). Adults are the only demographic group portrayed positively; the elderly, the young, and the young at heart are all portrayed negatively as helpless dependents (Hanucharunkul, 1989). A human is an accessible system in Orem's view (Hanucharunkul, 1989). Orem argues that in order to meet the need for self-care, an individual must expend energy by performing some kind of intentional action in the external environment (Hanucharunkul, 1989). Humans, in Orem's opinion, are more than the sum of their parts; rather, they are a biopsychosocial whole (Hanucharunkul, 1989). A person is someone who can reflect on their own actions and make conscious decisions (Hanucharunkul, 1989).

2.2.3.b. Health

Wagner - Health is freedom from disease and incapacity; resilience in the face of adversity; realizing one's potential; and a state of complete mental, physical, and spiritual harmony (Wagner, 1986). 18

The Book of Mormon (Orem) describes health as the condition of being complete or undamaged . When a person's physical and mental systems are both in good working order, we say that they are healthy. When someone is said to be sound, it suggests they are physically and mentally unimpaired. To be whole implies that there are no missing or diminished parts . When applied to a person's health, these concepts mean that they are whole and complete in every way, both physically and mentally; that they have no genetic flaws; and that they are developing into a more whole and complete person over time (Hanucharankul, 1989).

Orem discusses the inseparability of one's physical, mental, interpersonal, and societal wellbeing (Orem, 1985). People's health depends on their ability to provide self-care that is both therapeutic and ongoing (Orem, 1985). Orem discusses the collective obligation of communities to prioritize the health of its citizens (Hanucharankul, 1989). Protection against certain diseases and injuries fall under the purview of nursing (Bassak-Nejad, et al 2014).

2.2.3.c. Environment

"Wagner - Environment often refers to the external conditions that influence the organism, the significant persons with whom the person interacts, and an open system with boundaries that allows the flow of matter, energy, and information with humans (Wagner, 1986).

Orem- Defined environment as consisting of components such as entronement factors and elements, condition and development environment (Nursing 19

Insights, 2011). Both the individual's capacity for self-care and the nurse's capacity for nursing agency are influenced by both the physical,

chemical, biologic, and social and the socio-economic, cultural aspects of the environment, which Orem further classified into two divisions (Banfield, 2011, p. 98). The environmental sphere of influence for Orem is vast and intricate."

2.2.3.d.Nursing

Human service defined as that which is necessary for the continual upkeep of one's own care is nursing. Caregiving is a profession that calls both specialized skill and the use of scientific understanding (McEwen & Wills, 2011, p.41). According to Orem (1988, 2001), nursing is a practical science, which means that nursing knowledge is formulated and organized for the benefit of actual practice (Banfield, 2011, p. 98).

The nursing profession in Orem places an emphasis on both self-care and service to others. Orem regarded nursing as an artistic pursuit. In a chat with Taylor (2011, p. 5), Orem (1956) stated that the art of nursing in hospital nursing service is offering the services essential to meet daily needs of self-care. During the 1960s, 1970s, and 1980s—a time marked by rising consumer awareness and a focus on the individual—nurses like Orem promoted the concept that their primary role was to help patients become more independent in their care. Pearson (2008, p. 1).

Initially dismissed as oversimplified, the self-care deficit theory has since evolved into a multifaceted framework with far-reaching ethical, moral, and policy implications. The SCDNT model was a significant departure from the conventional nursing practice of the time, in which nurses were expected to care for their patients and patients rarely participated in healthcare decision-making. According to Pearson (2008, p. 202) added in their writing. Orem used the work of Levin, Katz, and Holst (1976), among others, to define the

notion and build a self-care model of nursing in her important work *Nursing: Concepts of Practice*, published by Pearson (2008, p. 1)

2.3. Coronary Artery Disease

In the wall of one or more coronary arteries, plaque composed of fatty material and inflammatory cells accumulates to cause coronary artery disease (CAD). As the advances disease and these larger plaques grow, they damage begin to the artery's wall and spread into the lumen. Calcium may be deposited in large plaques, hardening them; these plaques frequently grow large enough to impede blood flow. The majority of persons with CAD are unaware of their condition until they develop symptoms. (Kaneko, H., Itoh, et al 2020.)

The symptoms of coronary artery disease are Angina or angina symptoms are due to a lack of blood flow to the heart muscle (ischemia) and are known as angina or angina symptoms. Historically, chest pain and pressure were considered the most prominent anginal symptoms, frequently accompanied by jaw or arm pain, nausea, diaphoresis, or shortness of breath. It is now understood that many individuals, particularly women, diabetics, and the elderly, may exhibit odd symptoms.

These symptoms may include sudden weakness or tiredness, nausea, indigestion, dizziness, or back pain and frequently occur in the absence of chest pain or pressure (Jacobson, Marzlin, & Webner, 2015).

Stable angina is characterized by symptoms that appear in response to physical exercise or with rest. These persistent symptoms are typically caused by the continuous deposition of atherosclerotic plaque in the coronary artery walls. As the arteries constrict, they are unable to supply enough blood to satisfy the increased demand during exercise or other pressures that raise the

heart rate. Once the heart rate lowers (often during rest), the demand for oxygen diminishes and the symptoms subside. Symptoms that persist even resting may be an indication of ACS, a deadly form of CAD (van der Wal ,et al 2016)

2.3.1. Acute coronary syndrome

CAD typically begins years prior to the onset of ACS. Plaque is deposited in the coronary arteries due to an inflammatory process. Plaque deposition is more likely in individuals with certain risk factors, especially if their underlying disease is severe or if more than one risk factor is present. As the process of accumulation progresses, the plaque may become unstable and susceptible to rupture. If a coronary artery plaque ruptures, the inflammatory cells in the plaque activate platelets, initiating the clotting cascade and resulting in the production of an arterial clot. (brunner& Suddarth 2008)

The extent of the clot determines the severity of the incident and the extent of cardiac muscle damage."ACS includes unstable angina (USA), non-ST segment elevation myocardial infarction (NSTEMI), and ST segment elevation myocardial infarction (STEMI) (STEMI). USA is induced by a thrombus in the coronary artery that is resolved by the body's thrombolytic system. USA progresses to either NSTEMI or STEMI if a blood clot forms and the body is unable to dissolve it (Sanchis-Gomar, F., et al 2016)

2.3.2. Unstable Angina

Unstable Angina develops when a clot completely or partially occludes a coronary artery and the fibrinolytic enzymes broken down, restoring blood flow. symptoms of angina arise and then diminish. Symptoms may manifest at rest or with minimal exercise and often last longer than twenty minutes. These

symptoms of angina frequently reoccur, frequently with increasing frequency and intensity".

2.3.3. Segment Elevation Other Than ST Myocardial Ischemia

In NSTEMI, a coronary artery is partially occluded by a clot, resulting in symptoms of angina. the myocardium receiving some continues blood, but its insufficient supply of oxygen and nutrients to the cells . The ischemia, and can identified by 12-lead EKG changes such as ST segment depression or T-wave inversion, an increase in cardiac enzymes, or both. (Ralapanawa, U., & Sivakanesan, R. 2021).

2.3.4. The ST Elevation Segment Myocardial Infarction

STEMI occurs when the clot totally limits blood flow to the myocardium. The obstruction of blood flow produces initially ischemia and eventually necrosis (death of myocardial cells). As cardiac muscle cells perish, they lose the ability to conduct electrical current, resulting in an increase of ST segments on a 12-lead ECG. The death of cardiac cells also results in the release of enzymes ordinarily located within these muscle cells into the bloodstream. This increases the amount of cardiac enzymes in the bloodstream (Ralapanawa, U., & Sivakanesan, R. 2021).

2.3.5. Surgical intervention

Angioplasty and stenting are typically used to treat patients with a small number of localized coronary artery lesions and those that are easily accessible via percutaneous coronary intervention. The catheter is put through an artery (often the femoral or radial artery) and progressed until it reaches the

affected coronary artery. A balloon at the end of the catheter is inflated at the site of the coronary artery plaque, thereby slamming the plaque against the artery's walls to enlarge the lumen. This catheter is withdrawn, and another catheter is advanced to the same location. This catheter terminates in a little metal tube called a stent.

As the balloon at the end of the catheter is inflated, the stent grows to the size of the artery and maintains its openness. The catheter is removed, and the stent stays in place (Global, regional, and national incidence, prevalence 2016)

Numerous patients with multiple lesions or widespread disease (significant coronary artery constriction) require coronary artery bypass grafting for surgical treatment (CABG). In addition, patients with valve disease or other structural heart disease requiring surgical repair often receive CABG at the time of valve repair as opposed to percutaneous coronary intervention for CAD. Interventional cardiologist and a cardiac surgeon should assess the imaging findings and clinical presentation of patients with difficult illness or anatomy to decide the optimal revascularization method (Hillis et al., 2015).

The nurses play a crucial role in justifying PCI as opposed to cardiac surgery. Understanding the rationale for each helps nurses educate and prepare patients for surgery and other treatments.

2.3.6. Factors associated with coronary artery disease

- Age and gender: the flexibility of arteries decreases with age
- Heredity: coronary artery disease in the family

- Diabetes: intimal damage and insulin-modified lipid metabolism
- Hypertension: decreased vascular elasticity, ripping effect on arteries, and increased resistance to ventricular volume ejection.
- Tobacco usage (nicotine): To reduce the displacement of oxygen from hemoglobin by high-density lipoproteins Increase the catecholamine response to nicotine, heart rate, and blood pressure.

enhancing platelet adhesion

- A sedentary lifestyle causes alterations in lipid metabolism and insulin sensitivity

-Antiplatelets, such as aspirin or aspirin combined with clopidogrel, are used to reduce the risk of angina by preventing the formation of platelet thrombi.

-Nitrates They are vasodilators (dilates veins and arterioles) and promote collateral circulation to the heart, thereby enhancing myocardial oxygenation.

Betablockers lower heart rate and blood pressure . (Mokbel, Naiera Abd El Samad Ibrahim, et al 2020)

2.4 .Atherosclerosis

Is a proliferative and inflammatory illness of the artery wall that affects the entire body. It can affect almost the whole arterial tree in humans in mature stages, with particularly obvious symptoms in the medium and large arteries. It is a condition that primarily affects the arterial wall's endothelium and vascular smooth muscle (VSM). Its immediate clinical presentation can be caused by the rupture of a single plaque, which can result in arterial thrombosis and an abrupt myocardial infarction or stroke. This has a long

asymptomatic stage of development. Although early vascular alterations are minimal, atherosclerosis can worsen with time and is often shown in the first decade of life(Areias M, et al, 2021)

The specific factors that induce plaque generation are still being debated. However, our knowledge has developed over the last three decades, from early concepts based on lipid accumulation inside the arterial wall to a more complicated interplay between common risk factors (obesity, smoking, family history, hypertension), inflammation, and vascular malfunction. These panvascular mechanisms have established atherosclerosis as an inflammatory lipid disease, with an emphasis on immunological involvement (Stromberg H. Dewitt's Medical-Surgical Nursing 2021).

Although stenosis can produce clinical complications, plaque rupture, which exposes the thrombotic plaque contents to the circulation and can lead to rapid thrombotic occlusion, is the most serious clinical manifestation of atherosclerosis. Severe and usually fatal clinical complications, such as myocardial infarction (MI) and stroke, might occur based on the arterial location of the blockage

2.4.1 Causes

Atherosclerosis is a slow-moving, potentially childhood-onset disease. Although the precise cause of atherosclerosis is unknown, the inner layer of an artery is believed to be its origin. The following elements may contribute to disease:

- Cigarette use and other tobacco products
- Blood pressure elevated

- Cholesterol elevated

Triglycerides are a kind of fat (lipid) found in the blood.

- Inflammation due to an unidentified cause or conditions such as arthritis, lupus, psoriasis, or inflammatory bowel illness .When the inner lining of an artery is damaged, blood cells and other substances congregate near the injury site and accumulate in the inner lining. Over time, at the site of injury, cholesterol and other cellular products collect to form fatty deposits (plaque), which restrict the arteries. Organs and tissues associated with obstructed arteries receive insufficient blood for optimal operation. Eventually, particles of the fatty deposits may break off and enter the bloodstream. In addition, the smooth lining of the plaque may burst, releasing cholesterol and other substances into the bloodstream ((Stromberg H. Dewitt's Medical-Surgical Nursing 2021)

2.4.2. Risk factor

Risk of atherosclerosis may raise related to :

Elevated blood pressure, elevated cholesterol ,elevated C-reactive protein (CRP) levels, an indicator of inflammation, obesity, diabetes ,smoking and other uses of tobacco, sleep apnea ,a cardiovascular illness in familial history,an poor diet and lack of activity

2.4.3. Adverse Events

- Coronary atherosclerosis When atherosclerosis narrows the arteries close to the heart, coronary artery disease may occur, which can result in chest pain (angina), a heart attack, or heart failure.

- Carotid atherosclerosis When atherosclerosis narrows the arteries near the brain, carotid artery disease may occur, which can lead to a transient ischemic attack (TIA) or stroke.
- Disease of the peripheral arteries. When atherosclerosis narrows the arteries in the arms or legs, peripheral artery disease can cause circulation issues in the arms and legs. Consequently, inadequate circulation in the arms or legs might result in tissue death (gangrene).
- Aneurysms. Aneurysms, which can form anywhere in the body, are a dangerous complication that can be caused by atherosclerosis. An aneurysm is a protrusion in the arterial wall (Smith, S. C., Allen, et al. 2013)

Chronic renal failure. Atherosclerosis can constrict the kidney-supplying arteries, preventing oxygenated blood from reaching the kidneys. This can impair kidney function over time, preventing waste from leaving the body" (Roth GA, Mensah GA, Johnson CO, et al. 2020).

2.4.4. Prophylaxis

The same healthy lifestyle adjustments advocated for atherosclerosis treatment also aid in its prevention. These consist of:

- Quitting smoking
- Consuming wholesome meals
- Exercising consistently
- Keeping a healthy body weight
- Monitoring and sustaining a normal blood pressure

- Monitoring and maintaining appropriate levels of cholesterol and glucose

2.5. Valvular heart disease (VHD)

A pathological condition that affects one of the four heart valves and interrupts the unidirectional flow of blood. Multiple illness conditions cause pathoanatomical modifications and pathophysiological dysfunction in these essential structures. During the cardiac cycle, these alterations disrupt the unidirectional blood flow.

In valve stenosis, the valve's leaflets do not open correctly, reducing forward blood flow. In valve insufficiency or regurgitation, the leaflets of the valve do not close normally, enabling blood to flow in the opposite way (Avierinos JF, et al.2018)

It is possible to develop mixed valvular heart disease, characterized by both stenosis and insufficiency of the heart valve. Multiple heart valve malfunction constitutes concomitant valvular heart disease (VHD). As VHD advances, patho anatomical abnormalities of the afflicted valve(s) and other cardiac structures produce aberrant valve hemodynamics, cardiovascular hemodynamics, clinical symptoms, and physical examination findings. In cases of severe VHD, there are hemodynamic consequences that result in symptoms. The prevalence of VHD is rising. Mental illness affects approximately 2.5% of the adult population in the United States (Hinton RB, Yutzey KE 2011).

Globally, the prevalence of VHD is significantly higher, due in part to the prevalence of rheumatic heart disease in developing countries, despite the fact that its incidence is reducing overall. Due to age-related degenerative

changes in valve anatomy, the prevalence of valvular heart disease (VHD) increases to around 1 in 10 adults over 65. (Avierinos JF, et al. 2008)

Vulvar heart disease is a public health concern due to the rapid growth of an aging population, which is anticipated to increase from 962.3 million in 2017 to 2080.5 million in 2050. Most, if not all, healthcare practitioners across all settings and specialties may encounter a patient with VHD. Care for patients with venous thromboembolism (VTE) requires a full understanding of normal anatomy, physiology, and pathophysiology (Baumgartner H, et al. 2017).

2.5.1 Pathogenesis and Etiologies of Acquired VHD

Vulvar heart disease can be characterized as congenital or acquired. Congenital VHD is present from birth, but acquired VHD develops later in life. Acquired The VHD is then either rheumatic or non-rheumatic.

2.5.1.1 Rheumatic VHD

Streptococcal infection may result in rheumatic fever and consequent inflammatory changes and scarring of heart tissue.

2.5.1.2.Non-Rheumatic VHD

Include functional (endocarditis) and degenerative (myxomatous and calcific) etiologies and pathogenesis. Also included in the acquired nrvhD category are patients who have underwent open heart surgery , which accounts for approximately one-third of all vhd referrals(Passos LSA, Nunes MCP,et al.2021)

2.5.1.2 Rheumatic heart diseases

RHD now affects over forty million people and causes annually nearly 300,000 deaths. In developed nations with high incomes, the incidence of rheumatic fever is declining. Has dropped to less than 1 in 100,000 but still exceeds 100,000. Developed nations with low and medium incomes

Between 1990 and 2017, the global incidence of rheumatic heart disease (RHD) decreased by 8.67%. Antibiotics for the treatment and prevention of streptococcal infection, reduced congestion, improved housing and sanitation, and access to healthcare are among the strategies to minimize RHD, particularly in LMICs and LMICs. The RHD death rate has fallen by 54%, while the global death rate has decreased by 53%. Disability-adjusted life years rate (total number of years lost to premature mortality) and years lived with a disability. Despite these advances, RHD continues to be the primary cause of cardiovascular death among children and adolescents globally. RHD is a pervasive, continuous global health problem for which there is neither a cure nor a vaccination (Yadgir S, Johnson CO, et al.2020)

2.5.1.3. Pathogenesis

Rheumatic heart disease results from rheumatic fever, an autoimmune condition caused by untreated or inadequately treated of infection with Group A -hemolytic streptococcal. it is believed that:

- Tonsil lymphatic channels transport group A Streptococci to the heart.
- RF produces skin , tissues, and heart valves inflammation, the latter of which can lead to heart failure.

- Acute rheumatic fever is characterized by diffuse proliferative and exudative responses in the joints. These tissues, specifically, present with HF and necessitate surgery may active AHD, with the possibility of recurrence of rheumatic fever.
- erythema marginatum , Carditis, polyarthritis , and subcutaneous nodules, are major diagnostic criteria (Baumgartner H, Falk V, et al.2017)

2.5.1.4 Clinical manifestation

In almost all cases of RVHD, the mitral valve is damaged, however the aortic valve may also be affected. likewise be involved. Early on, regurgitation is observed, whereas stenosis is shown later on. The primary stages of RVHD, echocardiography has revealed the presence of tiny. These nodulous lesions do not result in pathoanatomic alterations on their own. Eventually, chronic inflammation can result from isolated or recurrent bouts of RF.

causing valve malfunction in people predisposed genetically. Typically, leaflets are distributed. However, three-quarters of people under 30 years old have low fibrosis and pliability. After age 40, two-thirds of patients have scars and . Variations in presentation are possible as a result of morphologic changes. In contrast to the 3% of individuals who have pure mitral regurgitation, 90% of those with mitral stenosis show obvious chordal shortening (Avierinos JF, et al.2018)

Annular dilatation was seen in 90% of those with rheumatic mitral regurgitation compared to 30% of people with just mitral stenosis.

Late in development, commissural development occurs alongside fusion and chordal shortening. breakdown of the endothelium's surface due to fusion. Fibrous tissue and inflammatory tissue are However, in those who have a

genetic predisposition to calcification, lipids may cause the process to accelerate.

Inadequate aortic and mitral murmurs are common markers of RVHD on physical examination. A high-pitched, blowing pansystolic murmur can be heard while the heart is in the pansystolic phase. Problems with the mitral valve. A systolic murmur is a transient, low-pitched sound heard in the middle of a heartbeat.

At the pinnacle, a Carey Coombs hum could be heard. When the mitral valve leaflets become stiff and swollen, the gradient across the valve increases, and the LV's compliance decreases, a Carey Coombs murmur may develop.

2.5.2. Non-rheumatic Valve Pathology

2.5.2 .1. Contagious Endocarditis

2.5.2 .2. Epidemiology

Since 1990, the incidence of endocarditis has climbed to an estimated 1.09 million cases. 66,300 cases, 1.72 million disability-adjusted life years, and 1.72 million deaths were recorded in 2019. The incidence rate is 13.8 per 100,000 people while the death rate is 0.9 per 100,000 people. The increase in deaths is attributed to infections that are more virulent and pervasive.

In critically ill individuals, Staphylococci and complex infections are prevalent. related dangers with heart surgery. The causal agent is determined by the patient's medical history, valve structure, and point of entry (Gupta A, Mendez M. Endocarditis.2021)

2.5.2 .3. Pathogenesis

Infectious endocarditis is caused by three distinct pathways. Initially, the heart .The valve must be conditioned for bacterial adhesion. Bacteria that circulate do not readily the ability to attach to normal endothelial surfaces. Changes in endothelial surfaces caused by trauma, inflammation, disturbance of the extracellular matrix (ECM), platelet deposition, and fibrin deposition may make the valve more vulnerable to infection. Other risk or priming variables include diabetes, steroid or immunosuppressant use, advanced age, and pacemaker implantation in addition to trauma. Second, circulating bacteria cling to the fibrin-platelet matrix, particularly the strains identified (Hulin A, Deroanne C, Lambert C, et al.2014).

Thirdly, antibodies may inhibit bacterial adhesion, yet bacteria may be resistant to complement cascade and leukocyte phagocytosis. Certain streptococci, for instance, induce valve cells to produce thromboplastin, which induces the deposition and development of a fibrin-platelet clot over bacterial colonies or vegetations (Bermejo J, et al.2020)

2.5.2 .4. Disease process

In the beginning stages of the illness, symptoms may be mild or absent. A lengthy, A prolonged fever that lasts for months is sometimes the only symptom. Additionally, the onset might be rapid, severe, and accompanied by a high temperature. Headache, nausea, vomiting, chills, weariness, myalgia, and arthralgia are all examples of nonspecific symptoms that have been recorded. There may be heart failure if you've just noticed a new or different heart murmur. Emboli can occur from thrombus formation, and stenosis and/or insufficiency of heart valves, especially the mitral valve, can be caused

by vegetation and fibrotic alterations. The development of abscesses increases the risk of additional injury to the myocardium and the heart's valves. Impaired cognition and localized neurological symptoms are developed in reaction to embolic strokes, cerebral abscesses, bleeding, and elevated intracranial pressure, all of which are related with Staphylococcal illness (Chen J, Li W, Xiang M 2020).

Heart block, caused by disruption of the cardiac conduction system, or purulent pericarditis, caused by abscess rupture into the pericardium, are both possible symptoms of a myocardial abscess. Roth spots (bleeding at the back of the eye), Janeway lesions (small, painless patches on the palms and soles), Osler nodes (nodules of discomfort in the fingers), splinter hemorrhages, and petechiae may be observed toward the end of the illness.

The presence of antigen-antibody complexes in the circulation is diagnostic of vasculitis, which causes these lesions. In 1955, the AHA advised penicillin prophylaxis for individuals with congenital heart disease and rheumatic heart disease who were scheduled to undergo dental treatments. Antibiotic prophylaxis was outlawed in the US and EU in 2009 because there was little data to justify it and it contributed to the rise of antibiotic resistance (Evangelista A, Tornos P, Bonow RO 2020).

2.5.3. Valvular Degeneration Disease

Historically, both aortic and mitral valve disease were included in degenerative valve disease. The pathophysiological distinction between degenerative mitral valve disease and calcific aortic valve disease has been demonstrated. Degenerative mitral valve disease affected approximately 2% of the world's population in 2017, resulting in 35,700 deaths worldwide.

Mitral valve prolapse is the most common form of mitral valve degeneration. Overall, a disproportionate number of women are affected. Disability-adjusted life years are greater for women than for men across all age groups; women also have higher mortality rates and lower surgery rates (Rajamannan N, Evans FJ, Aikawa E, et al.2016)

2.5.3.1.Pathogenesis

Myxomatous or fibrotic change are the two most common histopathological processes associated with degenerative valve disease. Proteoglycan accumulation, collagen degradation, and elastin fragmentation are defining features of myxomatous degeneration. These pathoanatomic alterations cause prolapse and regurgitation as a result of a floppy valve. Collagen accumulation, proteoglycan degradation, and elastin fragmentation are defining features of fibrotic degeneration. These pathoanatomic changes result in restricted leaflet motion and stenosis of the valve, or a stiff valve.

Early stages may exhibit sclerosis or hardening; valve calcification is a late indication of increasing fibrosis and severe illness. At the cellular level, there is valvular intracellular (VIC) activation and extracellular matrix (ECM) remodeling, and the stratified leaflet structure is disturbed. Mitral valve degeneration leads to atrial fibrillation and cardiac failure if left untreated. In subsequent sections, the hemodynamic, echocardiographic, and physical manifestations of degenerative valve disease are elaborated on.

2.5.3.2.Disease of Calcific Valves

In the early stages of a disease, symptoms may be minimal or nonexistent. A prolonged, persistent fever lasting several months could be the only symptom. Moreover, the onset can be sudden, severe, and accompanied

by a high fever. In addition, headache, nausea, vomiting, chills, exhaustion, myalgia, and arthralgia have been recorded as nonspecific symptoms. A new or fluctuating heart murmur could indicate heart failure. Vegetation and fibrotic alterations can produce mitral valve stenosis and/or insufficiency, and thrombus development can lead to emboli. Abscesses may form, causing additional damage to the inner lining and cardiac valves of the heart. Neurologic symptoms of Staphylococcal illness include reduced cognition and localized neurological symptoms caused by embolic strokes, cerebral abscesses, bleeding, and elevated intracranial pressure. Myocardial abscesses may manifest as heart block or purulent pericarditis due to abscess rupture into the pericardium. Roth spots (bleeding at the back of the eye), Janeway lesions (little painless patches on the palms and soles), Osler nodes (pain nodules on the fingertips), splinter hemorrhages, and petechiae may be observed at the end of the illness. These lesions are symptomatic of vasculitis because antigen-antibody complexes are present in the circulation (Yadgir S, Johnson CO, Aboyans V, et al. 2020).

In 1955, the AHA suggested penicillin prophylaxis prior to dental treatments for patients with congenital heart disease and rheumatic heart disease. The United States and Europe banned the use of antibiotic prophylaxis in 2009 due to a lack of scientific evidence supporting this practice and the development of antibiotic resistance.

2.5.3.1 Pathogenesis

The calcific aortic valve disease, which spans from sclerosis to stenosis, is not only a degenerative condition. Histopathological and clinical evidence suggests that calcific valve disease is comparable to atherosclerosis, which is

characterized by the accumulation of lipoproteins, chronic inflammation, and active calcification simulating bone formation in the presence of an osteoblast phenotype.

On surgically removed calcified aortic valves, osseous metaplasia was detected. Patients with calcified valves have a significantly higher incidence of atherosclerotic vascular diseases, such as coronary artery disease, peripheral arterial disease, hypercholesterolemia, and hypertension, than those without calcified valves. In later parts, calcific aortic valve disease and its hemodynamic, echocardiographic, and physical manifestations are discussed in greater detail.

2.6. Before Valvular Surgeries

The majority of preparations and evaluations for patients referred for open-heart surgery take place in outpatient day clinics or hospital wards. Therefore, when the patient arrives in the operating room (OR), the nursing team provides care based on clinical assessments and information obtained during their assessment process and pre-surgical consultations, such as surgical risk estimates.

This continuity of information is required to ensure individualized care and a patient-centric approach to perioperative nursing. Prior to the admission of elective patients, the multiple components of the consent process, such as treatment recommendation, collaborative decision-making, and risk discussion, are frequently carried out. Best practices dictate that this consent be repeated upon admission. The function of nurses within the open heart surgery perioperative team

surgical nurses' duties and responsibilities during the initial pre-operative phase differ significantly between cardiac programs. Surgical teams in the operating room consist of a lead and assistant surgeons, surgical nurses with a range of responsibilities, such as scrub nurse and floor coordinator/circulating nurse, the anesthesiologist, and the perfusionist. Also essential are the professions of anesthesia assistants, nurse anesthetists, and operating room technicians (American Nurses Association 2015).

Utilizing their collective expertise, the surgical team works to achieve the best possible outcome while guaranteeing patient safety and improving clinical efficiencies. Given the nature of cardiac surgery and the potentially fatal consequences of miscommunication and failure to adhere to safety protocols, this highly coordinated cooperation is an essential aspect of cardiac operating room nursing and multidisciplinary practice.

2.6.1. Getting patients ready for open heart surgery

Prior to induction, nurses play a crucial role by meeting the patient in the operating room, establishing a trusting environment and assuring patient comfort to alleviate anxiety, as well as delivering targeted patient education. Importantly, the nurse verifies the patient's identity, evaluates their health on the day of surgery, and fills any gaps in their understanding regarding their procedure and care journey.

Before entering the operating room, the nurse ensures that the patient has emptied their bladder and is ready for their procedure. The patient is then positioned in a supine position on the operating table. The nurse adds expertise about the patient's comfort, the protection of bony prominences, and the implementation of protocols aimed to preserve skin integrity.

Depending on local practices, the activities that follow may be performed before or after the induction of anesthesia. Important processes that require specific nursing expertise and flawless asepsis include skin preparation and surgical drapery, insertion of a urinary catheter, and placement of a central venous catheter.

The anesthesia team, with the cooperation of the nursing team, directs the anaesthetic strategy, including the administration of to the patient in accordance with particular procedures and recommendations (Al-gersha, K., Haboubi, G., & Al-Asady, N. 2018).

2.6.3. The following intrusive equipment is commonly installed prior to surgery to facilitate the monitoring, operation, and patient safety:

1. Endotracheal tube: for artificial ventilation and airway protection; when a patient is undergoing surgery, they may require a pulmonary artery catheter, a type of central venous line that allows for invasive hemodynamic monitoring by inserting a catheter into the pulmonary artery.

2. Intravenous catheters placed in the periphery: A catheter inserted into a vein of the arm to provide fluids, drugs, or blood.

3. Arterial line: a catheter with a small enough bore to be inserted into the radial artery, allowing for continuous blood pressure monitoring through a transducer system and intermittent blood collection for monitoring oxygenation status and other laboratory data;

A tiny tube introduced into the bladder to drain and monitor urine volume before, during, and after surgery to assess fluid status and evaluate renal function; a standard set of five electrodes placed on the chest to track the

heart's rhythm and rate; a urinary catheter. A nasogastric tube is a tiny tube used to drain the stomach and intestines through the nose (note: certain cardiac programs have discontinued the use of this device).

A dynamic method has developed in recent years for caring for heart surgery patients after their procedures are complete. Postoperative care has been revolutionized by developments in technology, research, and minimally invasive treatments. The success of the treatment relies heavily on the postoperative team.

Care and attention are especially important in the first few hours after a valve procedure. Recent advancements in anesthetic techniques have allowed for the earlier transfer of ICU patients to the ward, which in turn has sped up their eventual discharge home. Recognizing and Addressing Adverse Events After Emotional Infections and Other Complications After Surgery

Even while there are risks with each operation, those related with heart surgery recovery can be more severe. Myocardial depression, renal failure, acute lung damage, and multiple organ dysfunction syndrome have all been linked to the systemic inflammatory response syndrome (SIRS) that develops in response to heart surgery .

Patient risk can be considerably enhanced by factors such as age, left ventricular function, nephrological comorbidities, the existence of paroxysmal atrial fibrillation, and the presence of other comorbid illnesses. Positive patient outcomes can only be achieved with the prompt diagnosis and treatment of problems (Ali, S., & Jacoub, S. 2018)

2.6.4. Pulmonary Difficulties

During cardiopulmonary bypass, only the bronchial system is perfused, as opposed to normal physiology in which the lungs get perfusion from the pulmonary and bronchial circulation. This modification raises the likelihood of various problems by causing several hours of relative ischaemia. pleural effusions, Atelectasis, pneumothorax, pneumonia, and ARDS are typical pulmonary consequences.

The postoperative hypoxia diagnosis needed examination of various etiologies, such as the worsening of preexisting pulmonary illness and rarer events, such as an abrupt postoperative pulmonary embolus. Respiratory difficulties may lengthen the duration of intubation and increase the patient's risk of aspiration and ventilator-acquired pneumonia. CXR and physical examination are the key diagnostic techniques for lung disease (Gizella I. Bardoczky 2018).

2.6.5. Cerebrovascular Incidents

Brain damage is a major potential consequence of cardiac surgery, particularly when a cardiopulmonary bypass machine is used. Due to the presence or persistent effects of analgesia and anesthesia, it might be challenging to do a thorough neurologic examination in the immediate postoperative period. Clinicians should do a thorough evaluation and think about a sedation holiday (or sedation interruption) if possible. Recovering from an embolic ischemic neurologic event is similar to recovering from cardiac arrest in that early management and reperfusion are vital. Cross-clamping of the aorta, debridement of the valve architecture, and separation of

particles from intraoperatively all contribute to the release of embolic material from atherosclerotic plaque by employed technical equipment.

2.6.6. Bleeding and Pericardial Effusion

Mechanical factors, intraoperative hypothermia-related coagulopathy, and underlying diseases are all potential contributors to postoperative bleeding. This condition of hypovolemia can progress to hypovolemic or hemorrhagic shock and end -organ malperfusion if it is not treated and managed.

A baseline for estimating hourly output can be established by monitoring the patient's chest tube drainage upon entrance to the recovery area and taking note of its amount and consistency. Therapies, such as the reversal of coagulopathies or the need for re-intervention, may be guided by plausible causes like coagulopathy or a mechanical source. To prevent dangerous buildup of blood in the pleural region, surgeons will often insert a chest tube during the procedure. Hemothorax, hypoxia, the physiology of tamponade, and tension hemothorax are all conditions that can arise from insufficient drainage (Amal F, et al.2017)

The immediate postoperative CXR is useful for verifying the placement of the endotracheal tube, central venous catheter, and chest tube, and for detecting the presence or onset of a hemothorax. Loss of more than 500 mL of blood in an hour is considered heavy bleeding.

When the heart is compressed, it prevents the ventricles from filling properly, leading to cardiac tamponade and a low cardiac output. A narrow pulse pressure, hypotension, tachycardia, CNS changes, acidosis, and decreased urine output are all things the medical team should look for.

Immediate echocardiography order recommended for diagnosis and pericardiocentesis planning. There are two types of postoperative bleeding: medical and surgical. Failures in the coagulation cascade, platelet function, and fibrinogen are the root causes of medical bleeding. Trauma to the operative site is usually the cause of bleeding during surgery. If there is bleeding during surgery, it may be necessary to go back in and do some more exploring and try to stop the bleeding. Bleeding disorders are a leading cause of morbidity and mortality, making timely diagnosis and treatment essential for best results (Ballan A & Lee G.2017)

Nurses must consider the following results in detail:

- Persistent bleeding absent a coagulation disorder.
- Sudden commencement of new, fast bleeding, particularly in the presence of increased blood pressure.
- Blood volume exceeding 200 mL/h for two hours.

Surgical heparin can leave behind a residual impact that can result in medical bleeding. Prior to CPB, patients are anticoagulated to maintain an active clotting time (ACT) of 300–400 seconds.

Protamine is utilized to reverse heparin at the conclusion of the case; additional heparin may be supplied if patients get autotransfusion blood products (pump blood). At the time of admission, the ACT should be administered with a target score between 100 and 120 seconds. Platelet function may be compromised by CPB, liver illness, or hemodilution, which may result in medical bleeding (Suzanne. C. et al.2018).

The management of medical bleeding differs from that of surgical bleeding. Included in these measures are the correction of hypothermia, the regulation of blood pressure, the administration of protamine if the ACT level is elevated, platelet transfusions, fresh frozen plasma infusion, the elevation of the head of the bed, and the intensification of mechanical ventilation. Positive end-expiratory pressure (PEEP) or infusions of packed red blood cells are viable treatments. Cryoprecipitate, desmopressin (DDAVP), and antifibrinolytic treatment are further alternatives.

2.6.7. Complications of Surgical Site

In between 0.4% and 8% of instances, sternal site problems are documented. Site infection, dehiscence, instability/nonunion, and mediastinitis are examples of complications.

Complications are related with longer hospital stays, greater morbidity and death, and higher healthcare expenses.

Historically, upper limb and trunk use restrictions were employed to prevent excessive sternal motion. However, this approach is no longer recommended because it can prolong recuperation, healing, and hospitalization. It is recommended that nurses and allied health professionals instruct upper limb and Exercises for the trunk that enhance return to function and speed recuperation. In addition, a surgical support bra can be used to decrease pulling at the surgical site(Smith A, et al 2013).

In populations with a low prevalence of methicillin-resistant *Staphylococcus aureus* (MRSA), a single antibiotic with a multidose regimen is indicated for conventional cardiac surgery prophylaxis. Vancomycin is

advised as the primary prophylactic antibiotic with supplementary gram-negative coverage for those who are allergic to beta-lactams or penicillin .

Unrecognized or untreated sternal wound infections that progress to mediastinitis may necessitate re-exploration, hardware removal, and pectoral flap. Assessment of the surgical wound for typical signs of infection is required, as is evaluation for nonunion: pressing gently on the sternum should not produce movement or clicking, and the wound should be free of drainage and foul odor; any of these findings may necessitate a CT scan to determine the status of the sternal bone(Winkelman C,Chiang L.2016).

2.6.8. Atrial fibrillation (AF)

Is the most frequent postoperative arrhythmia; its start is typically within the first week after surgery linked with longer hospital stays is an increased risk of cerebrovascular events a stated prevalence of 20% to 50% for impaired mental status/delirium peaking on postoperative day 2 and happening most commonly in the first five days following heart surgery. Within twenty-four hours, many individuals will spontaneously switch to sinus rhythm. This emphasizes the significance of not only being knowledgeable about drugs, but sustaining the interdisciplinary team's collaboration. Many of the same drugs that are used to treat atrial fibrillation can also be used to prevent the emergence of the condition. Beta-blockers and amiodarone considerably reduce the incidence of postoperative atrial fibrillation, although beta-blockers are the first-line treatment. Medication for the prevention of POAF, with amiodarone reserved for people with POAF. Someone shouldn't use a beta-blocker because of potential health risks. Reducing the risk of drug interactions and rebound bradycardia from

excessive nodal blocker or antiarrhythmic usage can be accomplished by waiting until the first medication's effects have worn off before starting the second (Alice Y.M.Jones,Elizabeth Dean. 2014).

2.6.9. Cardiac Arrest

The surgical floors are well-established and offer patients clear direction resuscitation in numerous clinical settings. There are various approaches to controlling deadly arrhythmias in patients undergoing cardiac surgery. The European Resuscitation Council (ERC) has produced guidelines regarding the Care of the patient who recently underwent a sternotomy and suffered a heart arrest. The majority of postoperative cardiac arrests happen within the first 24 hours of skin closure, with up to 50 percent occurring during the first three hours after surgery. Frequently, tamponade or bleeding causes pulseless electrical activity (Van Laar C, et al. 2017).

This pathology can only be treated with an emergency re-sternotomy. relax the heart and major blood vessels . This liberation permits the return of spontaneous circulation and problem solving . First heart rhythm irregularity to recovery of spontaneous circulation (ROSC) time (ROSC). It's a reliable indicator of how long someone will live. Early defibrillation, as outlined by the Advanced Cardiac Life Support (ACLS) guidelines, is used to treat ventricular fibrillation (VF) and ventricular tachycardia (VT). In surgical training, three stacked shocks and a bolus are administered within one minute. If the administration of 300 mg of Amiodarone fails, an emergency re-sternotomy is performed. These guidelines can aid in the quick resuscitation of postoperative patients if they are familiarized with them (Coylewright M, et al.2020).

2.6.10. Gastrointestinal Issues

The most severe gastrointestinal (GI) problems are caused by a decreased cardiac output, insufficient blood flow, vasoconstriction, hypoxia, and intestinal ischemia. Other concerns can include bleeding due to gastritis or peptic ulcer disease, for which proton pump inhibitors are effective.

A pump inhibitor and antacid may be prescribed to prevent the formation of gastrointestinal ulcers. Other GI disorders include pancreatitis, cholecystitis, hepatic failure, and paralytic ileus, problems that require patient monitoring. Patients at risk for gastrointestinal problems include patients with advanced age, a low ejection fraction, and a lengthy surgical time. A history of peripheral vascular disease and atrial fibrillation. The nursing evaluation consists of monitoring bowel sounds and assessing changes for GI disorders. Patient complains of stomach pain and abdominal distension; nausea is evaluated and throwing up commonly, vomiting and nausea occur quickly after surgery, mostly as a result pertaining to intraoperative medicines. Vomiting and nausea raise the risk of aspiration, can interfere with surgical procedures, increase the risk of bleeding, and affect electrolyte balance. The team can reduce the risk of nausea and vomiting by examining the patient for risk factors, such as age, gender, history of motion sickness, past N & V after surgery, and knowledge of drugs administered during the procedure, and by administering prophylactic antiemetics. For the treatment of nausea and vomiting, glucocorticoids, 5-HT₃ receptor antagonists, anticholinergics and antihistamines, hydration, and pain and comfort management are used (Al-Taweel A, Almahmoud MF, et al .2019).

2.6.11. Postoperative Disorders of the Central Nervous System

During the postoperative period, cognitive function might be inhibited by numerous reasons. Postoperative cognitive dysfunction is a mild disturbance of mental functions that occurs after surgery. may have an impact on language comprehension, executive function, and memory.

Delirium is a mental disorder characterized by disorganized thinking and impaired reasoning . The objective of the neurological evaluation is to differentiate and identify the existence of a focused deficit or a global deficit. While delirium or confusion may justify obtaining a CT scan immediately, specific deficits, such as speech impairment or unilateral weakness, alterations in mental status frequently cause disability.

Postoperative delirium may manifest as, disorientation , agitation, chronic drowsiness, confusion, hallucinations, or violence. There are numerous causes, including illness, medications, sensory changes, electrolyte imbalance, and sleep deprivation. There are drugs that can aid in the management of delirium symptoms, but time and environmental adjustments are also effective in alleviating symptoms. Some therapies include the removal of all medications that could alter a patient's mental status (e.g., benzodiazepines ,opioids) and the use of hearing aids and eyeglasses to reduce the risk of sensory disorientation. Additionally, it is essential to maintain a balanced sleep-wake cycle (Nakazato R, Park H-B, et al.2013)

2.7.Postoperative management

When it comes to managing patients and providing high-quality care following medical procedures, nurses play a pivotal role. They must demonstrate high levels of critical thinking, critical judgment, and clinical

inquiry competencies as part of a robust relational practice. Patients who have undergone cardiac surgery might greatly benefit from the care of nurses in terms of both survival and the quality of life they enjoy as a result of the procedure. Administration of Respiratory Condition and Safe Extubation Improvements in anesthetic procedures and delivery have reduced the number of patients requiring intubation times.

Before surgery, a thorough preoperative evaluation is undertaken to determine the patient's health for probable anesthetic problems and respiratory status control. Knowledge of concomitant illnesses, smoking, medications, and nutritional status can aid in guiding post-procedure care, personalizing the treatment plan, and achieving the goal of expedited extubation. Despite the fact that certain patients, particularly those who are off-pump, Although extubation may be performed in the operating room, the majority of valve surgery patients are admitted to the hospital. Patients who are intubated and require mechanical ventilation. Methodologies for weaning timing extubation vary by location and region; patients are often extubated four to twelve hours after surgery. 16-hour or longer intubation is connected with a bad prognosis. Readiness for extubation is assessed by spontaneous breathing trials (SBT) and patient condition (Nishimura RA, Otto CM, et al. 2017).

A comprehensive evaluation of the patient that establishes adequate pulmonary function, the gag reflex and existence of cough, hemodynamic stability and adequate muscle strength. A HR below 140 beats per minute and a spontaneous respiratory rate below 25 breaths per minute and normal body temperature. Utilization of opioids with caution with the administration of Extubation with sufficient pain control is advised since it can reduce complications. Reduce breathing effort and respiration rate and depth among

the complications associated with extubation are pulmonary edema and hypoventilation hypoxia, bronchospasm, laryngospasm, the requirement for re-intubation, and other complications interventions designed to provide ventilation and oxygenation (Baumgartner H, Falk V, et al .2017)

2.7.1. Pain Management

Pain is linked to prospective and actual tissue damage, tachyarrhythmias, shallow respiration, and poor recovery .A patient's respiration is shallow puts them at danger for atelectasis and development of pneumonia. Although patients' experiences differ, Considering pain thresholds, 75% of heart surgery patients report discomfort(Ziehm S, Rosendahl J, et al.2017)

2.6.2. Postoperative pain.

Pain's etiology is multifaceted. Incisions on the skin, sternal retraction, and tissue damage caused by the installation of drains, tubes, and wires releases pro-inflammatory .Mediators that activate afferent nociceptive fibers and induce nociceptive transmission pain. Musculoskeletal damage resulting from sternal retraction and possible rib fractures. Surgical procedures might result in musculoskeletal pain. Causes of pleuritic discomfort include the chest tubes or other drains may be used. It is essential to identify probable pain reasons to be able to effectively treat pain with multimodal analgesia to improve recovery through promoting early mobilization and decreasing opioid use.Opioids are an effective treatment for after cardiac surgery pain, and they are particularly useful for discomfort during rest. However, there is a restricted treatment window and growing worry.Numerous adverse effects, including vomiting, nausea, constipation, disorientation, urine retention,

postoperative ileus, and kidney failure, are reported, especially at higher doses. Opioids should be incorporated within a comprehensive treatment plan that also includes local anesthetics, non-opioid anti-inflammatories, and non-pharmacologic techniques. The delivery of the tailored pain strategy is guided by periodic pain evaluation (Baumgartner H, Falk V, Bax et al.2017).

The use of cardiopulmonary bypass (CPB) is typically accompanied by hypothermia, and patients must be warmed to at least 95 degrees Fahrenheit. 34°C. Patients are deemed hypothermic if their body temperature falls below 36 degrees Celsius.

Age, co-morbidities, and comorbidities are risk factors for prolonged hypothermia. Procedure length, exposed skin, and peripheral vascular disease.

Patients who are hypothermic are more likely to experience ventricular dysrhythmias and have a lower threshold for ventricular fibrillation. Anesthesia-related recovery delays can also be caused by peripheral vasoconstriction and increased systemic vascular resistance, elevated oxygen demand, reduced carbon dioxide production, and alterations in medication metabolism. Platelet function and the coagulation cascade are both altered by hypothermia-induced coagulopathy. Rewarming can be sped up with the help of forced air warming equipment, such as a blower that blasts warm air over the body's surface to warm by convection, as well as the more traditional methods of covering yourself with a hat, a blanket, and some socks. Regular temperature monitoring is necessary for optimal rewarming (Al-gersha, K., et al. 2018) .

2.7.3. Complication of surgical site infections

Associated with higher morbidity and mortality in post-valve surgery patients, with sternal and mediastinal infections having the highest rates of morbidity and mortality as many as 5% of patients. SSI are often avoidable and are associated with substantial morbidity and mortality poorer results and rising costs. There are preoperative, intraoperative, and postoperative risk factors. Among the preoperative conditions are obesity, Diabetes, smoking, renal insufficiency, poor nutrition, COPD, and big breasts are risk factors.

Intraoperative dangers include blood transfusions, prolonged operation time, and infection. Hypoxia, increased traffic in the operating room, and compromised asepsis were observed.

Transfusions, inadequate cardiac output, extended mechanical ventilation, and sternal instability are postoperative risk factors. SSIs within 30 days are classified as superficial, deep, or organ/space. pertaining to surgery. Superficial wounds involve only the skin or subcutaneous tissue around the wound site.

The evaluation of the wound may indicate purulent discharge, discomfort, inflammation, redness, and warmth. Mediastinitis is an example of a deep wound infection that may result in surgical site dehiscence and sternal instability. In severe situations, sternectomy and flap placement may be used as a therapy. Preoperative strategies to avoid wound infection commence with hair removal. Removing the surgical scrubs, administering antibiotics, and glycemic control to assist. Reduce mortality, duration of stay, and enhance the opportunity for healing. Postoperatively, the incisional dressing should be evaluated every 4 hours while the patient is in the operating room and

intensive care, with the initial dressing left in place for 24 to 48 hours (Brown JK, Singh K, et al 2018)

2.7.4. Activity

Reduces surgical complications and accelerates functional recovery rehabilitation, improves general health, shortens hospital stays, and decreases costs. morbidity and death occurred 22 times. Self-care should be encouraged in the patient and expand their activity to the greatest extent possible. For safe ambulation or activity, the nurse should check vital signs prior to and throughout the activity, keeping a close eye out for heart problems.

Rate rise of 20 beats per minute or systolic blood pressure fluctuation of 20 mmHg or more with dyspnea, tiredness, diaphoresis, chest pain, or chest discomfort that may indicate heart disease. complications. The patient should be urged to take unbroken rest periods. sleep and proper diet. In some cardiac surgery programs, mobility equipment is utilized. Teams that arrange possibilities for mobility have been beneficial .

Access to mobility aides, shower chairs, and sitting to complete self-care can reduce the amount of energy expended to maintain the equilibrium between oxygen supply and demand. physiotherapy and occupational therapy

Physiotherapy appointments are beneficial for addressing workouts in this patient population.improve strength and create goals for physical activity. Physiotherapy is a correlated with a reduction in respiratory problems and muscle wasting enhanced cognitive function, decreased mechanical ventilation duration, and lowered morbidity and mortality (Lu SY, Lai Y, et al.2020)

2.7.5. Nutrition

After valve surgery, nutritional support is a therapeutically relevant element of treatment. Appropriate diet aids recovery, boosts energy reserves, and can prevent disease .

Prior to surgery, a nutritional evaluation should be undertaken whenever possible to anticipate postoperative nutritional. Patients who are well-nourished before to surgery had better outcomes than those who are malnourished. are susceptible to additional difficulties. Prior to surgical procedures, patients are obliged to fast resulting in catabolic stress, insulin resistance, nutritional deficits, and unfavorable immune function.

In most cases, intravenous fluids are administered prior to surgery and are continued until oral intake is resumed. Delays in proper nutritional support and poor calorie intake might result in nutritional deficiencies. With adequate knowledge of nutritional status, the team can monitor daily dietary intake with the objective of tolerating at least 80% of the specified diet by the third postoperative day (Leon, A. S., Franklin, B. A., Costa, F., et al. 2018).

2.8. Discharge Plan

Patients' discharge planning, instruction, and mentoring are crucial components. Journey of care and transition home in safety. Included in discharge planning components are an tailored plan for returning home after heart surgery that addresses social support, activity (e.g., progressive exercise program, activities of daily living, driving), nutrition, and management of probable problems. The objective is to enable the safe return of patients to their homes so they can begin their rehabilitation and reduce the risk of

hospital readmission and other issues (Coleman SR, Chen M, Patel S, et al. 2019)

2.8.1. surgical site care

Teaching patients to monitor their surgical sites and spot signs of infection is a crucial function of nurses. The incision should be cleaned daily with gentle soap and warm water, although harsh scrubbing should be avoided. Patients should evaluate the affected area for increased pain, redness, edema, drainage, site separation, and fever, and report any concerns.

In the extremely unusual occasion that the sternum shifts or pops or cracks during movement, nurses must emphasize the need of getting medical attention.

During the first year after surgery, sun exposure should be managed with the understanding that lotions, creams, and oils applied to the surgical site may result in a darkening of the scar after sun exposure and should be avoided. For up to six months, the region around the incision may feel numb, tickle, or be itchy (Leon, A. S., Franklin, B. A., Costa, F., et al. 2018).

2.7.2. Diet-Related Factors

With a focus on small portions, a high-quality dietary intake can promote recovery. The consumption of regular meals and a healthy diet. This is especially pertinent given the frequent loss of appetite, altered sense of smell, and complaints of a metallic taste, as well as the presence of a metallic taste, all point to a possible cause. The delayed recovery of sensory function following cardiac surgery. A diet abundant in vegetables, fruits, grains, nuts, and seeds can promote general health. Patients should be counseled to reduce their consumption of sugary beverages and alcohol. If the patient is taking

warfarin, there may be additional food restrictions (Toppe C, Goetzenich A, et al. 2017).

2.8.3. Exercise and Personal Care

Return to initial physical strength can be time-consuming and unpredictable.

Trajectories based on several patient-level variables. As a part of the release planning, nurses should assist patients in securing sufficient social support throughout the first two weeks following surgery. Individuals return to work at different times. Factors and physical demands of the job; the majority of patients can return to work approximately 4–6 weeks after discharge.

Physical therapists, nurses, and other allied health providers can provide valuable information and guidance to guide correct mobility and activity constraints, including lifting restrictions greater than 10 pounds (4.5 kilograms) or early morning pushing or dragging of big objects recuperation period

2.8.4. Psychological Well-Being

Due to cardiac surgery, quality of life (QOL) and mental health may be impaired hospital readmissions, greater symptom load, and other variables. A change in physical consciousness upon discharge.

Patients noted a deficiency improvement in health condition for three to six months following valve surgery. Depression is characterized by 15–60% of patients, and is associated with a higher risk of mortality and decrepitude. Psychiatric disorders are related to poor health. Quality of life and noncompliance with postoperative regimens. Women, single, older, and

unemployed patients and those with lengthy hospital stays are at greater risk for depression and other mental health problems. Sleep disorders, including insomnia and disrupted diurnal cycles, sleep disorders can be particularly difficult to manage. patients; patient education regarding sleep health, coffee avoidance, and other stimulants. Moreover, adopting appropriate sleep habits can improve patients' recuperation.

2.8.4. Pharmaceuticals

Individuals from the interdisciplinary group must instruct patients about medication use, drug interactions, and the value of self-management. It is recommended that patients with a mechanical valve, bioprosthesis, or mitral repair who also have atrial fibrillation, heart failure, or an ejection fraction (EF) of less than 30% take oral anticoagulants permanently. Patients who have had bioprosthetic or mitral valve replacement with a prosthetic annuloplasty ring are advised to take anticoagulant medication for the first three months after surgery.

The ideal INR for patients with mechanical valves is between 2.5 and 3.5; patients with thrombogenic risk factors commonly target an INR of 2.5, while those at higher risk for thrombosis need an INR closer to 3.5. Mitral, tricuspid, or pulmonary valve position, a previous thromboembolic event, atrial fibrillation, and a reduced ejection fraction of 35% are all patient-related risk factors for thrombosis (Bertrand PB, et al.2019).

When the INR is greater than 4.5, the risk of bleeding increases, and the risk multiplies exponentially when the INR is greater than or equal to 6.0.

Patients using anticoagulants should utilize a toothbrush with soft bristles, an electronic razor, and a careful touch while caring for surgical sites

or washing sensitive skin. Patients may endure postoperative pain, necessitating pain medication at discharge. Priority should be given to providing the essential knowledge regarding medicine use, purpose, and potential side effects.

The goal of administering pain medication is to reduce suffering. A side benefit of pain alleviation is a decreased likelihood of developing pneumonia. If pain is treated, patients are more likely to engage in exercises such as walking and deep breathing(Albert, N.M., 2018).

2.9. Care at home following bypass operation

Care following bypass surgery attempts to lower heart disease risk factors and includes initiatives to assist patients and family members quit smoking, regulate high blood pressure, improve cholesterol levels, begin regular exercise, if necessary, lose weight, and reduce stress. Some of these adjustments can be addressed by modifying dietary and physical activity patterns. Nevertheless, lifestyle changes alone may not be sufficient, and drugs are frequently required.

Discharge from the hospital patients with a straightforward CABG often leave the hospital after five days. In some instances, hospital stays are extended. In the event of difficulties, discharge is postponed until the patient's condition is stable (Flint N, Wunderlich et al 2020).

Prior to leaving the hospital, it is essential that the patient and family engage in and comprehend the discharge plan. Ensure that all questions are addressed and acquire written instructions on how to administer all medications (new and old). After bypass surgery, it is typical to begin new drugs and discontinue or alter the dosages of old ones.

Drugs – The majority of bypass surgery patients are sent home with prescriptions for many medications, the majority of which are taken daily. Some of these medications enhance survival, reduce the risk of complications, and prevent or cure recurrent chest discomfort.

Aspirin is an antiplatelet drug used to prevent the formation of blood clots that might obstruct coronary arteries or coronary bypass grafts. Typically, it is suggested indefinitely.

Beta blockers slow the heart rate, reduce blood pressure, and reduce the oxygen requirement of the heart. They are administered to certain individuals with high blood pressure, heart failure, certain rhythm alterations, or a heart attack, as well as certain patients in whom bypass surgery is not anticipated to alleviate all symptoms of angina. If a patient is unable to tolerate beta blockers, calcium channel blockers may be replaced.

Angiotensin converting enzyme (ACE) inhibitors are frequently employed to treat hypertension.

Captopril (trade name: Capoten), enalapril (trade name: Vasotec), lisinopril (example brand names: Zestril or Prinivil), and ramipril are ACE inhibitors (brand name: Altace).

An angiotensin II receptor blocker may be recommended to patients who cannot take an ACE inhibitor (typically due to a persistent cough) (ARB). These similar medications are adequate substitutes (Joseph J, Naqvi SY et al 2017).

Losartan (trade name: Cozaar), valsartan (trade name: Diovan), and irbesartan are examples of ARBs (brand name: Avapro).

Cholesterol-lowering therapy — After CABG, nearly all patients are given a drug to reduce their lipid levels. Reducing cholesterol can be advantageous both before and after CABG, as it can slow the progression of atherosclerosis in both native and transplant arteries.

Other drugs — Other medications may be administered on a short-term basis to avoid the onset of heart arrhythmia, to alleviate the pain associated with healing incisions, or to promote regular bowel movements (Alice Y.M. Jones 2014).

Even for those with readings within the normal range, lipid treatments are suggested. Less than 70 mg/dL (1.8 mmol/L) is considered optimal for bad cholesterol (LDL or low density lipoprotein).

Statins are the most prevalent drugs used to reduce cholesterol levels.

Wound care – Upon hospital discharge, patients are typically given instructions on how to care for chest and/or leg wounds. It is essential to carefully adhere to these directions and contact a healthcare provider promptly if any questions or concerns arise (Doherty, P. J., & Harrison, A. S. 2018).

Avoid heavy lifting and severe shoulder movement (e.g., tennis, baseball, and golf) for six to eight weeks after surgery to allow the breast bone to heal completely (sternum)

When to seek medical attention — If the patient develops any of the following signs or symptoms of a wound infection, he or she should call a healthcare practitioner immediately. The majority of wound infections arise within fourteen days of surgery.

Fever above 100.4o F (38o C).

Pain that is new or worsening in the chest or around the incision site

A quick heartbeat

Redness, bleeding, or pus-like drainage from an incision (Artinian NT, et al.2022).

2.10. Cardiac Rehabilitation Program

Participation in a systematic, all-inclusive cardiac rehabilitation program is beneficial for the majority of bypass surgery patients. Participants in cardiac rehabilitation typically have hospital or clinic appointments many times each week, allowing them to live and sleep at home. The potential benefits of rehabilitation include an increase in heart function, a decrease in heart rate at rest and during activity, and a decreased risk of death or the development of heart disease complications.

Among the components of cardiac rehabilitation include exercise, the reduction of risk factors, and the management of stress, anxiety, and depression. The benefits of cardiac rehabilitation are only seen when this multifactoral strategy is employed. In other words, a single component is insufficient (Ades PA, et al .2019)

Exercise — Several studies have demonstrated that exercise improves cardiovascular health. Importantly, the first step in beginning an exercise regimen is to assess the potential risk of heart and/or blood vessel issues. This is often accomplished through a supervised treadmill exercise test. Although nearly everyone may exercise safely after being released from the hospital, the intensity and duration of exercise should be modified based on the degree of a patient's cardiac disease.

Risk categories for exercise — Risk categories are a means to describe the risk of cardiovascular (heart-related) issues associated with physical activity. Each category has its own supervision and exercise limitation requirements. People in risk group A are generally healthy, do not need medical supervision while exercise, and have no restrictions on exercise time or intensity. People in exercise category D, on the other hand, have tight activity restrictions and should not exercise even under close medical supervision. The majority of bypass patients fall under categories B or C.

Class A: Individuals who appear to be in good health and for whom there is no indication that exercise increases their heart-related risk.

Class B - Individuals with established, stable coronary heart disease. These individuals have a reduced risk for cardiovascular problems when engaging in intensive exercise.

Class C: Individuals with a moderate to high risk of heart-related problems during physical activity. People in this category include those who have had several heart attacks and those who have chest pain at relatively low levels of exertion. Patients with certain positive exercise test results may also be included in this category.

Class D: Individuals having an illness that is unstable and who should not participate in an activity program (Lancellotti P, et al .2017)

During cardiac rehabilitation, a skilled clinician will collaborate with the patient and the patient's primary healthcare practitioner to establish a safe and beneficial exercise regimen. The program will take into account the patient's fitness level, heart health, physical constraints, the amount, intensity,

and duration of exercise required to promote heart health, as well as the requirement for supervision (Doherty, P. J., & Harrison, A. S. 2018).

Type of exercise - The exercise should involve big muscle groups and aerobic activity. Examples include walking, jogging, cycling, rowing, and stair climbing.

The suggested frequency of physical activity is three to five times a week.

It is essential that each session include a 5- to 10-minute warm-up, a conditioning phase of at least 20 minutes, and a 5- to 10-minute cool-down. Eliminating the cool-down period can increase the risk of cardiovascular problems.

Intensity - The intensity of exercise is one of the most significant components of the exercise prescription. This is determined by the heart rate or amount of effort of the patient. There are numerous formulas for calculating the optimal maximal heart rate for each subject.

- Exercise progression – Most individuals can progressively increase their exercise intensity over time. Incorporating beneficial exercise into the daily routine is also possible by taking a brisk walk or engaging in active play with children or grandchildren (Leon, A. S., Franklin, et al. 2018).

- Supervision – Class C patients should participate in a medically supervised exercise program in which their electrocardiogram (ECG) is monitored during activity. Advanced life support equipment (such as a defibrillator, drugs, and trained workers) should be readily available. This level of supervision should last at least eight to twelve weeks.

Class B patients benefit from an ECG-monitored, medically supervised program for the first 6 to 12 sessions. Consequently, a home-based fitness program is effective and safe (Ades PA, Maloney A, et al 2019)

2.11. Lower cardiovascular risk factors

Several variables raise the likelihood of getting heart disease or hasten its progression. Even if a person already has heart disease or a heart attack, reducing or eliminating these risk factors can be beneficial. The strategies for mitigating hazards are mentioned below (Ralapanawa, U., & Sivakanesan, R. (2021) .

Adhere to a heart-healthy diet — Dietary counseling is beneficial for individuals who need to lose weight or lower their cholesterol levels. A trained dietician is the best person to counsel with foods that are beneficial and those that are harmful, portion sizes, calorie recommendations, and realistic approaches to change unhealthy eating patterns. In general, a heart-healthy diet involves replacement fatty meats, cream, cheese, and high sugar or refined carbohydrate items with veal, lean meat, poultry, fish, whole grain pasta, lentils, corn, rice, beans, nuts, or vegetarian dishes. Sugar is a hidden element in many processed foods and is just as bad as those high in fat. It is normal for low fat foods to have a high sugar content and, hence, a comparable calorie count (Macchi, et al 2015).

The majority of cardiac rehabilitation clinics employ a nutritionist with education and experience in guiding those recuperating from a heart attack on their diet.

Smoking dramatically raises the risk of coronary heart disease and heart attack. Cessation of smoking can significantly minimize these hazards. The

chance of dying from coronary heart disease is approximately halved one year after quitting smoking, and the risk continues to fall over time. In other studies, quitting smoking reduced the risk of heart attack to that of nonsmokers within two years.(Lancellotti P, Ancion A, et al .2017)

Group programs, nicotine patches, gum, or nasal spray, or a prescription medicine may be recommended by cardiac rehabilitation programs to assist with quitting smoking. Treat high blood pressure and high cholesterol — Medications to treat high blood pressure and high cholesterol are typically prescribed following bypass surgery. It is essential to take these medications as prescribed.

Manage diabetes – Individuals with diabetes have a greater risk of experiencing problems following bypass surgery. Good glucose management can assist to lower the risk of these consequences as well as others. Losing weight, regulating the diet, exercising, routinely monitoring blood glucose levels, and taking oral hypoglycemic medicines (for persons with type 2 diabetes) or insulin helps achieve tight control (for people with type 1 and sometimes type 2 diabetes). Psychosocial treatment — After bypass surgery, despair, anxiety, and denial are prevalent, affecting up to 40 percent of patients. Depression can diminish a person's capacity to exercise, lower their energy levels, increase their weariness, and diminish their quality of life and sense of well-being. Women, and particularly younger women, are particularly susceptible to depression.

These signs can lead to difficulties within the family, marriage, and workplace. Individual or group psychotherapy, and occasionally antidepressant prescription treatment, might be beneficial. Numerous cardiac

rehabilitation programs employ professional personnel, such as psychologists, psychiatrists, and social workers, to assist with the management of these concerns. Depression and anxiety treatment can improve an individual's long-term attitude and overall sense of well-being. (Agvall B, Alehagen U, et al .2013)

Reduce stress — Chronic stress at home, at the workplace, or with finances can increase the risk of heart attack, stroke, and chest pain. In an effort to lessen these risks, many cardiac rehabilitation programs teach patients how to manage their stress levels (Bassak-Nejad, et al . 2013)

2.12. Nutritional education for patients

The food selections we make can have significant effects on our health. However, expert opinions regarding which and how much of these foods are best continue to shift.

This item discusses the associations between numerous foods or supplements and specific health issues and closes with basic dietary recommendations. Diets for weight loss are the subject of a separate topic overview (Azad, N., & Lemay, G. 2014).

2.12.1.Fruits and vegetables

Numerous studies have revealed the significant health advantages of fruit and vegetable consumption.

A higher consumption of fruits and vegetables is associated with a reduced risk of early death.

Fruits and vegetables reduce the risk of cardiovascular illnesses, such as coronary heart disease (CHD), stroke, and CHD-related mortality .

A high consumption of fruits and vegetables may minimize the incidence of cancer. Tomatoes and diets containing tomatoes may reduce the incidence of prostate cancer. At least five servings of fruits and/or vegetables are recommended daily (toppe C, Goetzenich A,et al.2017)

2.12.2. Fiber

A high-fiber diet can reduce the incidence of coronary heart disease (CHD), colon cancer, and mortality. Consuming fiber also protects against type 2 diabetes, and consuming soluble fiber (such as that found in vegetables, fruits, and particularly legumes) may help diabetics control their blood sugar levels.

Women should consume 25 grams of dietary fiber per day, while males should consume 38 grams per day. Numerous breakfast cereals, fruits, and vegetables are high in dietary fiber. By reading the product information panel on the side of the package, the amount of grams of fiber per serving can be determined (Aggarwal, et al. 2013).

2.12.3. Grains and sugar

Choose whole grain foods (such as 100 percent whole wheat bread, steel cut oats, and wild/brown rice) over processed grain items (like white bread and white rice). Eating whole grains on a regular basis has been demonstrated to aid in weight loss and reduce the chance of developing

diabetes. Regular consumption of refined grains and added sugars has been linked to obesity and an increased risk of developing diabetes.

2.12.4. Fat

Consuming foods with a greater proportion of good fats and fewer bad fats may minimize the risk of coronary heart disease (CHD).

It indicates that the type of fat consumed is more relevant than the total amount of fat consumed. Avoid trans fats in favor of polyunsaturated fats, especially the polyunsaturated fats found in fish (omega 3). Other potentially beneficial sources of polyunsaturated fats include some oils, nuts, and seeds (like corn oil, flax seeds, and walnuts).

Trans fats are solid at room temperature and are labeled as partially hydrogenated oils on food labels. They are found in numerous margarines, commercial baked goods, and oils maintained at high temperatures for an extended period of time, such as the frying vats in fast food restaurants. Newer evidence suggests that saturated and monounsaturated fats do not significantly increase or decrease the risk of coronary heart disease (CHD), while saturated fats do increase cholesterol levels (Coylewright M, et al 2020)..

It is essential, while reducing specific fats, not to substitute them with processed carbs (eg, white bread, white rice, most sweets). Increased consumption of refined carbohydrates may reduce levels of high-density lipoprotein (HDL) cholesterol (good cholesterol), hence increasing the risk of coronary heart disease .

2.12.5. Red meat

It is now well-established that consuming red meat frequently, especially processed meats (such as salami, pepperoni, and ham), is unhealthy. Numerous ailments, including cancer, cardiovascular disease, and diabetes, become more likely.

2.12.6. Folate

Folate is a type of B vitamin that is essential for red blood cell formation. Low folate levels in pregnant women have been associated to neural tube defects, a category of birth disorders that includes spina bifida and anencephaly. Folate-containing vitamins and folate-fortified breakfast cereal are advised as the best ways to guarantee optimal folate intake (Bonilla-Palomas, J. et al. 2013).

2.12.7. Antioxidants

The antioxidant vitamins consist of vitamins A, C, and E, as well as beta-carotene. In addition to containing these vitamins, numerous foods, notably fruits and vegetables, also possess additional antioxidant qualities. Studies have not conclusively demonstrated that antioxidant vitamins protect disease, particularly cancer, and other studies indicate that they may possibly be harmful. Except for those with specific vitamin deficits, there is little evidence to encourage the consumption of antioxidant vitamin supplements.

2.12.8. Calcium and vitamin D

In order to lower the risk of osteoporosis, adequate calcium and vitamin D intake is essential, especially for women. Depending on a patient's calcium

and vitamin D intake, a health care professional can help determine whether or not supplements are necessary.

Experts recommend that premenopausal women and men consume at least 1000 mg of calcium per day, whereas postmenopausal women consume 1200 mg. The optimal dose has not been found. No more than 2,000 milligrams of calcium per day should be eaten.

Adults over seventy years of age and postmenopausal women are advised to take 800 international units (20 micrograms) of vitamin D per day. Other adults do not have a clearly established optimum intake, however it is typically suggested that they consume 600 international units (15 micrograms) each day (Roth GA, Mensah GA, Johnson CO, et al. 2019).

2.13. General recommendations for a healthy diet

Consume an abundance of veggies, fruits, and whole grains while limiting your intake of red meat. At least five servings of fruits and vegetables should be consumed daily. Included among the suggestions for reaching this objective is: Include fruits and vegetables in every meal. Consume an assortment of fruits and vegetables. When fresh is inconvenient, frozen or canned produce may be utilized (Dreymueller, D et al. 2016).

- Eat vegetables as snacks.

Always have a bowl of fruit available for children to use as a snack.

Fruit should be added to cereal.

Replace refined grains with at least 50 percent whole grains (such as 100 percent whole wheat bread, brown rice, and whole grain cereal) (like

white bread, white rice, refined or sweetened cereals). Select smaller servings and consume them more slowly.

Reduce intake of unhealthy fats (trans fats and saturated fats) and increase your intake of healthy fats (polyunsaturated and monounsaturated fat). Choose chicken, fish, and beans instead of red meat and cheese to reach this objective. Use oils containing polyunsaturated and monounsaturated fats, such as maize, olive, and peanut oil, for cooking (Stoppe, C., et al. 2016).

Select margarines made without partly hydrogenated oils. Stick margarine has more trans fatty acids than soft margarine, namely squeeze margarine. Eat less store-bought baked items containing partly hydrogenated oil (like many types of crackers, cookies, and cupcakes). When eating at fast food places, choose nutritious options such as grilled chicken and salad .

Choose prepared or processed foods labeled(zero trans fat) when possible. They may still have some trans fat but likely less than equivalent products not branded zero

Avoid sugary drinks and excessive alcohol use. Tips for accomplishing this objective include: At meals and celebrations, choose non-sweetened and non-alcoholic beverages, such as water.

Avoid events that revolve around alcohol.

Avoid incorporating sugary drinks and alcohol into family gatherings (toppe C, Goetzenich A, et al 2017).

2.14 What to Anticipate at Home

It takes four to six weeks to recover from surgery and begin to feel better.

Normal symptoms include:

- pain around the incision on chest
- loss of appetite for two to four weeks
- mood swings and depression
- swelling in the leg from which the vein graft was taken
- itching, numbness, or tingling around the incisions on your chest and leg for 6 months or more
- trouble sleeping at night
- constipation from pain medications
- difficulty remembering things or feeling confused (or fuzzy-headed)
- fatigue or lack of energy If you already have lung problems, they could get worse. Upon returning home, some people may need to utilize oxygen.

For the first 30 days, you may feel arm weakness.

Self-care requires someone to remain at home for at least the first one to two weeks following surgery (Al-gersha, K., Haboubi, G., & Al-Asady, N. 2018).

Learn how to monitor your pulse and do so daily.

Every day, take a shower and carefully wash the incision with soap and water. Before your incision has completely healed, do not swim, use a hot tub, or take baths. Follow a diet that is heart-healthy.

If depressed, communicate with family and friends. Inquire with the health care practitioner about receiving counseling services.

Continue taking all of your medications for heart, diabetes, hypertension, and other diseases.

- Do not discontinue taking any medication without first consulting a physician.
- Provider may recommend antiplatelet (blood-thinning) medications such as aspirin, clopidogrel (Plavix), prasugrel (Effient), or ticagrelor (Brilinta) to maintain graft patency.
- If taking a blood thinner such as warfarin (Coumadin), further blood tests may be required to ensure the correct dosage.

Activity

Remain active during rehabilitation, but begin gradually.

- Do not remain standing or seated in one place for too long. Change your position a little bit.

After surgery, walking is beneficial for the lungs and heart. Do not worry about your walking speed. Take at time.

- Climbing stairs is acceptable, but use caution. Balance could be an issue. If necessary, stop halfway up the stairs to catch breath (Grimm, et al . 2015).

- Light housework such as setting the table, folding clothing, strolling, and ascending stairs should be acceptable.
- Gradually increase your activity level and intensity over the first three months.
- Do not exercise outdoors in extreme temperatures.
- Stop if feel short of breath, dizzy, or any pain in chest. Do not perform any activity or exercise that produces chest pulling or pain, such as rowing or lifting weights.
- Keep incision sites out of the sun to prevent sunburn.

Do not drive for four to six weeks following surgery. The twisting motion needed in rotating the steering wheel may cause incisions to tear. Ask your doctor when you may return to work, and plan to be out of work for six to eight weeks.

Do not travel for a minimum of two to four weeks. Ask provider if travel is permitted. Also, consult provider prior to engaging in sexual activity again. In the vast majority of cases, things will be fine after four weeks(Lu SY, Lai Y, Dalia AA 2020).

You might be referred to a structured cardiac rehabilitation program. Will receive information and guidance about activity, diet, and exercise under supervision.

Wound care

For the first six weeks after surgery, care must be taken when moving the arms and upper torso.

- Do not reach behind you.
- Do not allow anyone to tug on your arms for any reason, including when helping you move or get out of bed.
- Do not lift objects weighing more than 5 to 7 pounds (2 to 3 kilograms).
- Do not perform even mild chores for two to three weeks.

Before increasing arm and shoulder use, it is recommended to consult with a medical professional.

It is acceptable to brush your teeth, but you should not engage in any other activity that requires you to hold your arms over your shoulders for an extended amount of time. When utilizing your arms to get out of bed or a chair, keep them close to your sides.

The provider will explain how to treat a chest wound. You will likely be instructed to clean your surgery wound daily with soap and water, then pat it dry (Winkelman C, Chiang L. 2017)

2.15 When to Contact a Physician

- Experience chest pain or shortness of breath that persists even resting;
- Pulse seems erratic — it is either very sluggish (less than 60 beats per minute) or very fast (more than 100 beats per minute) (over 100 to 120 beats a minute).
- Experience vertigo, fainting, or extreme fatigue.
- Have a severe and persistent headache.

- Are experiencing a persistent cough • are coughing up blood or yellow or green mucus
 - Having trouble taking any of your heart medications.
 - Weight increases by more than 2 pounds (1 kilogram) per day for two consecutive days.
- wound alterations It is red or bloated, it has opened, or it is producing more discharge.
- Have chills or a temperature above 101 degrees Fahrenheit (38.3 degrees Celsius) (Tam, D. et al.2018)

2.16 Previous study

First study

(Ghisi GLM, Rouleau F,etal 2020) Effectiveness of an Education Intervention Among Cardiac Rehabilitation Patients in Canada: A Multi-Site Study

Although patient education is considered a core component of cardiac rehabilitation (CR) programs, to our knowledge, no educational program designed for CR has been standardized in Canada. This absence of standardization may be due to a lack of reliable resources to educate these patients. The objective of this study was to assess the effectiveness of an education intervention in improving knowledge and health behaviours among CR patients in 3 sites in Canada.

methods CR patients were exposed to an evidence- and theoretically based comprehensive education intervention. Patients completed surveys assessing

knowledge, physical activity, food intake, self-efficacy, and health literacy. All outcomes were assessed pre- and post-CR. Paired t tests were used to investigate variable changes between pre- and post-CR, Pearson correlation coefficients were used to determine the association between knowledge and behaviours, and linear regression models were computed to investigate differences in overall post-CR knowledge based on participant characteristics.

Results a total of 252 patients consented to participate, of whom 158 (63.0%) completed post-CR assessments. There was a significant improvement in patients' overall knowledge pre- to post-CR, as well as in exercise, food intake, and self-efficacy ($P < 0.05$). Results showed a significant positive correlation between post-CR knowledge and food intake ($r = 0.203$; $P = 0.01$), self-efficacy ($r = 0.201$; $P = 0.01$), and health literacy ($r = 0.241$; $P = 0.002$). Education level (unstandardized beta = -2.511 ; $P = 0.04$) and pre-CR knowledge (unstandardized beta = 0.433 ; $P < 0.001$) were influential in changing post-CR knowledge.

Conclusion In this first-ever multi-site study focusing on patient education for CR patients in Canada, the benefits of an education intervention have been supported.

Second study

Hanaa H. Ahmed*, Yousseya M. Ibrahimet et al 2018 . The Effect Of Early Activity On Patients Outcome After Open Heart Surgery.

The postoperative phase is the most critical period for open heart surgery during which many serious and fatal complications can occur. Early physical activity can prevent such complications. The role of the critical care nurse is crucial in this concern. The Objectives present study aimed to examine the

effect of early activity on patient's outcome after open heart surgery. Design A comparative experimental design was applied.

Setting This study was conducted in the Intensive Care Unit (ICU) of Open Heart Surgery at Mansoura Main University Hospital.

Sample Forty adults patients of both sexes undergoing open heart surgery using cardiopulmonary bypass and showing hemodynamic stability.

Method An activity regime was applied to 20 patients who underwent such surgery. The results were compared to a matching control group. Early activity included positioning (supine, left and right sides), early ambulation (dangling, standing near the bed, chair sitting and walking) and chest physiotherapy procedures (coughing, breathing exercises, percussion, vibration and

incentive spirometry). Results Comparing the obtained data revealed a better outcome among the early activity group.

Conclusion Combination of early activity and chest physiotherapy ameliorates the outcome of patients after open heart surgery. Performing early activity to such patients is recommended.

Third study

(Nirmal Kaur, Prem Verma, Rana, Sandip Singh 2017) Effectiveness of planned preoperative teaching on self-care activities for patients undergoing cardiac surgery

The objective of the study was to assess the effect of planned preoperative teaching on self-care activities for patients undergoing cardiac surgery.

A quasi-experimental design was used based on convenient sampling technique. Total 40 subjects 20 each in the experimental (Group I) and control

group (Group II). In each group an equal number of subjects 10 each were included undergoing two types of cardiac surgery i.e. open (Group A) & closed (group B) heart A checklist with 40 items was framed to assess the level of performance during preoperative period, before the implementation of teaching on self-care activities and as well as on the 4th and 7th postoperative day. The control group did not receive any preoperative teaching. Data analysis showed that statistically there was no significant ($P>0.05$) difference of pretest performance scores was found between the two groups. A comparison of posttest performance scores between both groups shows that experimental group had strongly statistically significant ($P<0.001$) increase in performance of total scores as well as each variable of self-care activities. The findings of the study reflect that the preoperative teaching is an extremely effective media to increase the level of performance and enhance the early recovery of the subjects.

Forth study

Sundus H. Ali ,Shirroq M. Jacoub 2016) .Effectiveness of Preoperative Psycho-educational Program on Stress of Cardiac Surgery Patients

The study aimed to determine the effectiveness of preoperative psycho - educational program on cardiac surgery patients information and their level of stress. And find out the differences in the Psycho educational program with regard to patients demographic characteristics such as age and gender.

Methodology Aquazi-experimental study was carried out to determine the effectiveness of preoperative education program on stress for cardiac surgery patients in Baghdad city from the 28th of March, 2010 , to 19th of September ,2011.

The preoperative psycho - educational program, as well as the questionnaire was constructed as a tool of data collection for the purpose of the study. Purposive (non probability) samples of 40 patients who have undergone cardiac surgery (CABG & VR) are selected from Ibn AL-Bitar Specialized Center for cardiac surgery. The researcher divided the samples into two equal groups (the study and control groups) .

Data was analysis through the use of the suitable statistical methods.

Results the results of the study indicates that there are significant differences in the patients knowledge towards cardiac surgery in the study & control groups through pre-test, post-test.

Recommendations: The study recommended that such program should be implemented in the form of session for the patients before undergone cardiac surgery to prepare them to cope with the stress and improve their knowledge.

Fifth study

(Lisa O'Brien PhD, et al 2013) Pre-surgery education for elective cardiac surgery patients: A survey from the patient's perspective

Multidisciplinary pre-admission patient education is commonly recommended for elective surgery patients, and may involve the provision of written information and presentations from the health team. However, the occupational therapy role with elective sternotomy patients in our setting is confined to the post-operative period. We aimed to evaluate cardiac surgery patients' perception of the effectiveness and timing of pre-admission multidisciplinary written information and post-operative verbal education provided by occupational therapy.

Methods this cross-sectional study involved a written survey, which was posted to 375 people who had undergone cardiac surgery in 2009–2010. Questions were designed to elicit patient perceptions of both pre-operative written information and post-operative education relating to post-operative precautions and return to activity received from occupational therapy.

Results there were 118 surveys returned equalling a 31.4% response rate. Eighty-nine per cent of respondents recalled receiving and reading the pre-surgery information booklet, and this was significantly correlated with feeling prepared for the post-operative experience and adherence with precautions ($P < 0.0001$). Exactly 30.4% of respondents stated that they experienced stress and anxiety in relation to post-operative expectations, and 47.3% felt the information provided in the occupational therapy education sessions would have been more beneficial for their understanding and coping if provided prior to surgery.

Conclusions multidisciplinary written pre-surgery education appears to be providing patients with a good understanding of what to expect following surgery. The results suggest that pre-operative verbal education from occupational therapy would assist in reducing anxiety in a subgroup of patients.

Chapter Three

Methodology

3.1.Methodology:

This chapter will review the design of the study and all the steps and preparations performed to achieve it, starting with the design of study, administration of permission, choose of study setting, sampling, validity, pilot study, data collection methods, and statistical analysis of data .

3.2. Design of the Study :

To achieve the objectives of this study, a quasi-experimental design with pre- and post-testing for both the studied and control groups was employed. started from 20th August 2021 to 10th September 2022.

3.3. Administrative Agreements:

Before gathering the information written authorized permissions are obtained to conduct the study as shown by appendix (B).

1. The researcher obtains an agreement from the Nursing Science Department in College of Nursing / University of Babylon.
- 2.The premier consent was acquired from the development and training center in the MOH.
- 3.An formal consent was acquired from the Babylon health administration and AL-Najaf Alashraf from shaheed almehrab for cardiac disease and surgery and Al-najaf Center for cardiovascular Surgery and cardiac catheterization

3.4. Setting of the Study:

This study conducted in Shaheed Almehrab for cardiac disease and surgery and Al-najaf Center for cardiovascular Surgery and cardiac were

the designated sites for data collection. These centers were selected for the following reasons:

1. There are only two cardiac surgery center in middle Euphrates .
2. These centers received all adult patients with cardiac diseases who attend the clinics for treatment and follow up.
3. These centers have medical departments and cardiac care unit and outpatient department .
4. A large number of patients refer to the centers for treatment and consultation , allowing for data collection completion within a limited time period.
5. Cooperative staff for educational Program implementation .
6. Availability of physical requirements such as classrooms, chairs, tables, computers, data show, and lights during the implementation of the program.

3.5. The Study Samples :

Non-probability purposive sample selected from the target population who are met the specific criteria during specific time interval. A total sample of (84) patients who refer to the centers for treatment and consultation during the study period, participants must have met the study's requirements and consent to participation .10 patients for pilot study were excluded from the study .Ten patients for assessment need .32patients the study group selected from Shaheed Almehrhab for cardiac disease and surgery and thirty two were assigned to the control group selected from Al-najaf Center for cardiovascular Surgery and cardiac catheterization .four patients for the study group were

dropped out of the study for the following reasons : two patients who going to the ibn albitar hospital for doing surgery in this center ; two patients not complete the session of education program .Now a total are (60) patients in the study having the same inclusion criteria. Those patients are divided into two groups: (28) patients act as study group and the other (32) patients act as a control group the patients were frequent visits to these centers for follow up and consultation.

3.5.1. Inclusion Criteria

The criteria for the selection of the study sample were:

3.4.1. 1. Patients undergoing open heart surgery

3.4.1. 2. Patients who agreed to participate in the study.

3.4.1. 3. Patients more than 20 years old

3.4.1. 4. Arab nationality.

3.4.1.5. Oriented patients who did not experience any alteration in their degree of consciousness.

3.5.2. Exclusion Criteria

3.5.2. 1. patients who scored higher than 60% on the pre- test .

3.5.2.2. patients with previous cardiac surgery

2.6. Steps of the Study

The present study was conducted at the following step:

2.6 .1. Assessment of patients' need for an Educational program for self-care of cardiac surgery patients

To accomplish this phase of the study, we used a multiple choice questionnaire format used .

The objectives of this assessment was to assess the knowledge of the patients about self-care . Test applied to a sample consisted of (10) patients undergoing to open heart surgeries during the period from 12th November 2021 to 20th November 2021 in the outpatients department of cardiac surgery and cardiac care units.

The questionnaire which is related to assessing the patients need for educational program is composed of (10) questions for knowledge. Under the strict supervision of the investigator, each patient was given a time period between (10-15) minutes to answer the questions. The results of the assessment revealed that the majority of the patients (70%) have knowledge deficit in self care according to assessment result the patients' needs to construct an educational program for these patients in order to improve their knowledge toward self-care .

3.6.2. Construction of the Educational Program

The educational program was constructed based on the results of patients' needs assessment and on information gained from reviewing the relative scientific literature, previous studies.

3.6.3. Process of the program

The educational program consists of three key sections, and it was produced with respect to essential knowledge about Self-Care for patient undergoing open heart surgery .

The presentation of the educational program started from the period (from 25th January 2022 to 20th March 2022) between the sessions distributed according to the patients according dealing with them, each session take about (30-40minites), sample group session dependent related to the social with consider as protective measure related to covid 19 face mask provided the patient during their attendance to the session which used to presented in the center hall.

3.7.3. The study Instrument:

To evaluate the effectiveness of the educational program on the patients' was developed to assess the knowledge toward self-care ; it consisted of three parts:

3.7.4.Part: I: The Socio- demographic Characteristics of the patients :

This part is concerned with the collection of demographic data obtained from the patient by interview questionnaire sheet such as[age, gender, marital status, level of educations, address , occupation . The six questions offered response options of a fill in type (Appendix C).

3.7.5.Part II: Clinical Information :

This part was constructed to collect clinical information .It consisted of 5 questions :

1-Chronic disease(s)

2-Smoking

3- Previous hospitalization related cardiac disease

4- would you receive self-care education

5-Types of surgery

3.7.6.Part III. The questionnaire knowledge related to self care management of patient undergoing open heart surgeries

A questionnaire knowledge check list was constructed by the researcher to evaluate the patients knowledge .

The questionnaire checklist for patients was composed of 6 items related to self care management of patient undergoing open heart surgeries.

These items were rated according to correct and incorrect answer

the questionnaire consist of :

1. Related cardiac composed of 4 items

2. Preparation for surgery composed of 6 items

3. Patient Activity composed of 25 items

4. Problems it takes 4 to 6 weeks composed of 7 items

5. Nutrition and Medication composed of 9 items

3.7.7.Rating scoring

mean scores (1.5) due to((yes)) and ((no)) scales through two levels of assessment, under cut off point (1-1.5), and above cut off point (more than 1.5); and items based assessment based on the mean of scores (1.5) by two levels of assessment, poor (1-1.5), good (more than 1.5) for knowledge.

3.8. Group Assignment

3.8.1 Control Group

patients in the control group were participant in study without intervention

3.8.2. Study Group :

The study group received the same questioner as the control group; plus an educational program to increase the patients knowledge about self-care .

The program consisted of four session and was implemented for two weeks period in lecture room.

Each session was designed and scheduled for approximately (30-40) minutes a time for one day per week.

The study group during the giving educational program divided to small group for more than reasons, for maintaing patients safety

Teaching aids which were used during these sessions included (class-rooms, computer, data-show and discussions). All lectures of education program were taught in Education Classroom in Diabetic Center in Merjan Medical City .

First session:

This session contains an introduction to the program and it's important for the patients, general information about the self-care . this session deals the follows :

- 1- describe the program, its importance, and its goals.
- 2-Introduction of topic and explanation of the objectives of the study.
- 3-General over review of the heart .
- 4-function of the heart .
- 4-Anatomy and physiology of the heart
- 5- Heart pulse

Place and time of lecture

Education Classroom in Diabetic Center in Merjan Medical City and persist for 30 minutes at least .

Learning devices

that are used in all sessions are:

- Lecture with discussion
- Poster with pictures
- Data show slides

Second session:

The following topics were performed:

- 1- Brief about open heart surgeries and its types

Place and Time of lecture

Education Classroom in Diabetic Center in Merjan Medical City and persist for 30 minutes at least .

Learning devices

that are used in all sessions are:

- Lecture with discussion
- Poster with pictures
- Data show slides

Third session:

The following topics were performed:

Activities and safety rules for exercising after open heart surgery

Place and Time of lecture

Education Classroom in Diabetic Center in Merjan Medical City and persist for 30 minutes at least.

Learning devices that are used in all sessions are:

- Lecture with discussion
- Poster with pictures
- Data show slides

Fourth session:

The following topics were preformed:

Nutrition and medication for heart patients

Place and Time of lecture

Education Classroom in Diabetic Center in Merjan Medical City and persist for 30 minutes at least.

Learning devices that are used in all sessions are:

- Lecture with discussion
- Poster with pictures
- Data show slides

3.9. Validity of the Questionnaire and the Program :

"The content validity of the program and the study instruments knowledge test and practices were determined by the panel of 18 experts, who had more than five years' experience in their field to investigate the content of the educational program and questionnaire of self-care (Appendix A). Also, experts distributed for (7) experts from the college of Nursing / University of Baghdad ,(4) experts from the college of Nursing / University of Babylon ,(2) experts from the University of Kufa , (2) expert from the college of Nursing / University of Karbala, (2) expert from the Alzahrawi university college and last one expert from Ministry of Health. Moreover, the mean of experience years for expert panel is 25 years. Those experts were asked to review the instruments; the program for content, clarity, relevancy, and adequacy; some items were excluded and others were added after a face-to-face discussion with each expert and after the instrument was considered valid after taking all

the comments and recommendations in consideration. 100% of experts agreed upon the final draft.

3.10. Pilot Study :

In order to determine the reliability of the education program and study instruments, A pilot study was carried out on (10) patients who were randomly selected from shaheed almehrhab during the period from 10th December 2021 to 10th January 2022. The participants were selected according to special inclusion criteria for test collected after obtaining the participant agreement it takes about 8 days. 10 days later retest was performed up on the same participants.

3.10.1. The Purpose of Pilot Study :

1. To find out whether the contents of the program were clear and understandable by the participants of the study.
2. To estimate the time required for answering each question.
3. To determine the reliability of the questionnaires.

3.11. Reliability:

Dependability, consistency of the variables which included in the study questionnaire was measured by using correlation coefficients, it's an important indicator of an instrument's quality. The pilot study performed as a small and primary study before starting the study procedures in order to assess the stability of the instrument which is prepared to collect the data. The results of the pilot study were statistically managed and the results revealed that the reliability which estimated as (0.794) which is statistically acceptable.

3.12 Implementation of the Program :

The Implementation was carried out in two cardiac centers in Al-najaf Center for cardiovascular Surgery and cardiac catheterization in al najaf governorate and shaheed al mehirab cardiac center in babile governorate started from 25th January 2022 to 20th March 2022.

The implementation of the program which was started after complete all an formal consent was acquired from the Babylon health administration and AL-Najaf Alashraf from shaheed almehrab for cardiac disease and surgery and Al-najaf Center for cardiovascular Surgery and cardiac catheterization for Cardiac .

The study group during the giving educational program divided to four small group for more than reasons, for safety patients from corona virus, than need to personal distance and more infection control.

First group

First session is presented at 6th February 2022 for patients coming to out patients department in the shaheed almehrab for cardiac disease and surgery . This group consists of 8 patients . The lecture started at 9:30 am and take about (35) minutes. Break time was given. Second session started after break takes about (40) minutes. Third session is presented in the next week at 13th February 2022 the session started at 9:40 am and take about (35) minutes. Break time was given. The fourth session started after break and take about (45) minutes . post-test collected after the end of the fourth session .

Second group

First session is presented at 17th February 2022 for patients coming to out patients department in the shaheed almehrab for cardiac disease and surgery . This group consists of 8 patients . The lecture started at 9:30 am and take about (40) minutes. Break time was given. Second session started after break takes about (35) minutes. Third session is presented in the next week at 24th February 2022 the session started at 9:40 am and take about (35) minutes. Break time was given. The fourth session started after break and take about (40) minutes . post-test collected after the end of the fourth session .

Third group

First session is presented at 27th January 2022 for patients coming to out patients department in the shaheed almehrab for cardiac disease and surgery . This group consists of 6 patients . The lecture started at 9:30 am and take about (40) minutes. Break time was given. Second session started after break takes about (35) minutes. Third session is presented in the next week the session started at 9:30 am and take about (43) minutes. Break time was given. The fourth session started after break and take about (35) minutes . post-test collected after the end of the fourth session .

Fourth group

First session is presented at 13th march 2022 for patients coming to out patients department in the shaheed almehrab for cardiac disease and surgery . This group consists of 6 patients . The lecture started at 9:40 am and take about (40) minutes. Break time was given. Second session started after break takes about (35) minutes. Third session is presented in the next week 20th march 2022 the session started at 9:00 am and take about (45) minutes. Break

time was given. The fourth session started after break and take about (35) minutes . post-test collected after the end of the fourth session .

3.13 Statistical Analysis:

The SPSS (Statistical Package for the Social Sciences) version 26.0 application Statistical analysis system and Excel program are used to analyze the data. The following statistical data analysis techniques were utilized to investigate and evaluate the study's findings:

3.14. I. Descriptive statistic includes the following methods:

- a- Percentages and frequencies
- b- Tables and figures (Charts and Bar).
- c- Mean score and standard deviation.

3.14. II. Inferential data analysis:

These were used to accept or reject the statistical hypotheses, which included the following:

Chi-Square test: It examines the deviation between observed and expected values. It is determined by calculating the difference between the frequencies actually seen in a sample data set and the probabilistically expected frequencies. Reliability of the questionnaire estimated by .

- a- Testing the independency and measuring the association between the variables.
- b- Analysis of variance (ANOVA).
- c- P- value.

$$\text{Chi-square Test: } \chi^2 = \sum_{i=1}^k \left[\frac{(o_i - e_i)^2}{e_i} \right]$$

Independent samples t-test: comparing the means of two samples drawn at random from distinct populations. It determines the probability of obtaining these population means under the null hypothesis that population means are equal. It utilized to find out the association between patients knowledge and self-care with (gender and other variable). (gender and other variable).

T-test (paired sample t-test) : to quantify the mean difference in patient responses between two measurement levels (pre-test and post-test).

Chapter Four

Results

Study Results

In order to evaluate the effectiveness of structured educational program upon self-care educational program on the knowledge of patients undergoing open heart surgeries in the middle Euphrates governorate, data were collected from those patients by using specific instrument prepared for the mentioned purpose. Many statistical methods were used to find out the outcome and detect if these are significant differences between symptoms severity variables after applying an educational program which prepared for this reason among the participants.

Table 4.1: Allocation of the Demographic characteristics of the study sample (study and control group).

Demographic characteristics	Rating and intervals	Control group		Study group	
		F	%	F	%
Age / Years	Less than 40	4	12.5	8	28.6
	40-49	5	15.6	6	21.4
	50-59	9	28.1	13	46.4
	More than 59	14	43.8	1	3.6
	Total	32	100.0	28	100.0
Gender	male	17	53.1	18	64.3
	female	15	46.9	10	35.7
	Total	32	100.0	28	100.0
Education Status	able to read and write	2	6.25	3	10.7
	primary school	4	12.5	5	17.85
	intermediate school	9	28.1	7	25.0
	secondary school	11	34.4	5	17.85
	Institutes	4	12.5	2	7.15

	college	2	6.25	6	21.45
	Master or Doctorate	0	0	0	0
	Total	32	100.0	28	100.0
Marital Status	Single	2	6.3	0	0
	Married	25	78.1	27	96.4
	Widow	0	0	1	3.6
	Divorced	5	15.6	0	0
	separated	0	0	0	0
	Total	32	100.0	28	100.0
occupation	employer	10	31.3	7	25.0
	unemployed	8	25.0	16	57.1
	house wife	12	37.5	5	17.9
	retied	2	6.3	0	0.00
	Total	32	100.0	28	100.0
Address	rural	17	53.1	19	67.9
	urban	15	46.9	9	32.1
	Total	32	100.0	28	100.0

The demographic data is shown in this table for (60) patients their undergoing to open heart surgery who agree to participate in the study, (28) patients act as study group and the other (32) act as control group. The table shows that most of participants in both groups 14 (43.8) were between 50-59 age group, 14 (43.8%) were more than 59 years age group, 18 (64.3%) ,17 (53.1%), were male. Related to educational status 7 (25.0%) were intermediate school in study group, , while 11 (34.4%) were secondary school in the control group, Both group recorded high percentage 27 (96.4%) ,25 (78.1%) ,

were married , The patients who participate in the study group recorded high percentage 16 (57.1%) were unemployment , while the result of the control group patients show that 12 (37.5%) were house wife. Both groups recorded 19 (67.9%) ,17 (53.1%), were rural as residency area.

Table 4.2: Allocation of the clinical information of the study sample (study and control group).

clinical information	Rating and intervals	Control group		Study group	
		F	%	F	%
Chronic diseases	no have any chronic diseases	6	18.8	4	14.25
	DM	5	15.8	9	32.1
	HTN	7	21.9	5	17.9
	ASTMA	0	0	1	3.6
	RH	3	9.4	5	17.9
	Dm & HTN	11	34.1	4	14.25
	Total	32	100.0	28	100.0
Smoking	No	20	62.5	13	46.4
	Yes	12	37.5	15	53.6
	Total	32	100.0	28	100.0
Previous hospitalization	1	3	9.4	7	25.0
	2	13	40.6	10	35.7
	3	7	21.9	4	14.3
	4	9	28.1	7	25.0

	Total	32	100.0	28	100.0
Self-care education	Free of chronic diseases	29	90.7	21	75.0
	social media	1	3.1	7	25.0
	Nurse	1	3.1	0	0
	Physician	1	3.1	0	0
	Total	32	100.0	28	100.0
Types of surgery	CABG	12	37.5	9	32.1
	VALVULAR DIS	17	53.1	15	53.6
	CABG & VALVULAR	3	9.4	4	14.3
	Total	32	100.0	28	100.0

This table presents the distribution of clinical information for (60) patients, (9) patients were participant with study group suffer from diabetic mellitus and (11) patients from control group suffer from diabetic and hypertension as chronic disease, both group the high percentage were not smoking. previous hospitalization related heart diseases both groups were 2 admission to hospital, self-care education the high percentage of control and study group not receive education about self-care. the both groups were undergoing to valvular surgery related to types of surgery.

Table (3.4) Assessment of the study sample (study and control) and control group related to knowledge related to cardiac information

N	Items	Control group		Study group	
		Pretest	Posttest	Pretest	Posttest
		M ± Std	M ± Std	M ± Std	M ± Std
1.	The heart consist of four chambers	1.28 0.457	1.38 0.492	1.25 0.441	1.91 0.262
2.	CABG mean coronary artery bypass grafting surgery	1.19 0.072	1.13 0.336	1.22 .420	1.89 0.315
3.	The coronary artery are branch from aortic artery	1.15 0.053	1.22 0.420	1.18 0.341	1.82 0.390
4.	The number of normal heart rate 60-100 beat per min	1.22 0.420	1.28 0.457	1.14 0.356	2.00 0.000
General mean and SD		1.210 0.059	1.252 0.441	1.197 0.397	1.905 0.169
Evaluation		poor	poor	poor	good
No.		32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 2, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about heart anatomy, the general mean and SD for study group (1.197 ± 0.397) in their pre-test, while significant change is clearly presented in the following post-test (1.905 ± 0.169). this indicate significant improvement in patient's knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.21 ± 0.059) in their pre-test, while no significant change is presented in the following post-test (1.252 ± 0.441).

Table (4.4) comparison between the mean score of the knowledge related to cardiac information for of both groups

T-test: Independent							
	Groups	No.	M	Std.	Std. E	P-value	Assessment
Pretest	Control	32	4.84	1.023	32	0.740	N.S
	Study	28	4.78	.678	28		
Posttest	Control	32	5.05	1.136	.201	0.001	H.S
	Study	28	7.64	.559	.106		

No.= (number of study sample), M= mean, Std= (stander deviation), Std. E= (stander error), P. value= (probability value), N. S= (Non-Significant), H.S= (Highly significant)

This table shows a highly significant difference between the pre-test and post-test of the study sample after participated in the program at p-value (0.001).

Table 4.5 Assessment of the study sample (study and control) patients information related to preparation for surgery:

N	Items	Control group		Study group	
		Pretest	Posttest 1	Pretest	Posttest 1
		M ± Std	M ± Std	M ± Std	M ± Std
	a.The open heart surgery take about 3 to 6 hours	1.09 0.296	1.13 0.336	1.07 0.262	1.96 0.189
	b. The surgeon uses a healthy vein or artery to create a new path around the blocked artery	1.16 0.000	1.03 0.177	1.11 0.315	1.86 0.356
	c. The patient is given a soapy solution to bathe to reduce the risk of infection	1.03 0.177	1.06 0.246	1.07 0.262	1.93 0.262

d. The nurse shaves operation area	1.06 0.246	1.16 0.369	1.18 0.341	1.89 0.315
e. The patient stays a one day or more in the intensive care unit after the open heart surgery, depending on the patient's condition	1.18 0.341	1.09 0.296	1.14 0.356	1.79 0.418
f. The patient suffers from some symptoms and complications after operation, including	1.32 0.471	1.24 0.246	1.44 0.507	1.82 0.398
General mean and SD	1.140 0.356	1.118 0.315	1.168 0.369	1.87 0.085
Assessment	poor	poor	poor	Good
No.	32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 2, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about preparation for surgery, the general mean and SD for study group (1.168 ± 0.369) in their pre-test, while significant change is clearly presented in the following post-test (1.87 ± 0.085). this indicate significant improvement in patients knowledge regarding preparation for surgery after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.140 ± 0.356) in their pre-test, while no significant change is presented in the following post-test (1.118 ± 0.315).

Table (4.6) comparison between the mean score of the of both groups knowledge for both study group and control group

t-test: Independent							
	Groups	No.	M	Std.	Std. E	P-value	Assessment
Pretest	Control	32	6.840	.751	.133	0.800	N.S
	Study	28	7.008	.390	.074		
Posttest	Control	32	6.708	.879	.155	0.001	H.S
	Study	28	11.25	.645	.122		

No= (number of study sample), M= mean, Std= (stander deviation), Std. E= (stander error), P. value= (probability value), N. S= (Non-Significant), H.S= (Highly significant).

This table shows a highly significant difference between the pre-test and post-test of the study sample after participated in the program at p-value (0.001), and no significant difference between the pre-test and post-test of the control group

Table 4.7 Patient Activity and Movement and walking In-hospital: after discharge from ICU

N	Items	Control group		Study group	
		Pretest	Posttest	Pretest	Posttest
		M ± Std	M ± Std	M ± Std	M ± Std
	1.The patient can move after disconnected from devices from him and gradually increase movement during his stay in the	1.18	1.16	1.25	1.89
		0.246	0.369	0.440	0.315

hospital				
2. After discharge from hospital walking inside the house	1.13 0.336	1.34 0.397	1.44 0.418	1.86 0.356
3. Walking outside the house	1.32 0.369	1.25 0.440	1.32 0.441	1.82 0.390
4. After the operation, the patient can do arm stretching exercises and do personal care by himself such as ADLs	1.20 0.296	1.19 0.397	1.18 0.341	1.79 0.418
General mean and SD	1.207 0.053	1.235 0.020	1.297 0.054	1.84 0.044
Evaluation	poor	poor	poor	good
No.	32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 1.5, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity and Movement and walking In-hospital, the general mean and SD for study group (1.297 ± 0.054) in their pre-test, while significant change is clearly presented in the following post-test (1.84 ± 0.044). this indicate significant improvement in patients knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.207 ± 0.053) in their pre-test, while no significant change is presented in the following post-test (1.235 ± 0.020).

Table 4.8: patients self care knowledge related to physical activities between 1 to 4 weeks after surgery

N	Items	Control group		Study group	
		Pretest	Posttest	Pretest	Posttest
		M ± Std	M ± Std	M ± Std	M ± Std
	1. Walking at a slow pace	1.25 0.440	1.42 0.336	1.11 0.315	1.93 0.262
	2. Washing your hands and body	1.31 0.336	1.45 0.369	1.50 0.000	1.89 0.315
	3. Combing your hair while sitting or standing	1.09 0.296	1.06 0.246	1.07 0.262	1.86 0.356
	4. Showering with warm water while sitting or standing in the shower	1.03 0.177	1.03 0.177	1.04 0.189	1.82 0.390
	5. patient is able to change clothes	1.07 0.262	1.16 0.369	1.11 0.315	1.96 0.189
	6. Hobbies like playing card games, needlework, playing the piano, reading	1.00 0.000	1.09 0.296	1.13 0.336	1.79 0.418
	General mean and SD	1.125 0.107	1.201 0.076	1.160 0.103	1.88 0.085
	Assessment	Poor	poor	poor	good
	No.	32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 1.5, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 1 to 4 weeks after surgery , the general mean and SD for study group (1.160± 0.103) in their pre-test, while

significant change is clearly presented in the following post-test (1.88 ± 0.058). this indicate significant improvement in patients knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.125 ± 0.107) in their pre-test, while no significant change is presented in the following post-test (1.201 ± 0.076).

Table 4.9: patients self care knowledge related to physical activities between 4 to 6 weeks after surgery

N	Items	Control group		Study group	
		Pretest	Posttest	Pretest	Posttest
		M $\pm$ Std	M $\pm$ Std	M $\pm$ Std	M $\pm$ Std
	1. Walking at a moderate pace	1.09 0.296	1.16 0.39	1.11 0.315	1.93 0.262
	2. Lifting items that weigh less than 10 pounds (4.5 kilograms)	1.07 0.262	1.03 0.177	1.04 0.189	1.96 0.189
	3. Preparing light meals. For example: chopping salad while sitting	1.06 0.246	1.13 0.336	1.07 0.262	1.89 0.315
	4. Washing the dishes, making the bed and doing light housekeeping such as dusting or light gardening	1.19 0.397	1.22 0.420	1.13 0.336	1.86 0.448
	General mean and SD	1.102 0.164	1.130 0.104	1.087 0.117	1.91 0.110
	Assessment	Poor	poor	Poor	good
	No.	32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 1.5, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 4 to 6 weeks after, the general mean and SD for study group (1.087 ± 0.117) in their pre-test, while significant change is clearly presented in the following post-test (1.91 ± 0.110). this indicate significant

improvement in patient's knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.102 ± 0.164) in their pre-test, while no significant change is presented in the following post-test (1.130 ± 0.104).

Table 4.10 patients self care knowledge related to physical activities between 6 to 8 weeks after surgery

N	Items	Control group		Study group	
		Pretest	Posttest 1	Pretest	Posttest 1
		M $\pm$ Std	M $\pm$ Std	M $\pm$ Std	M $\pm$ Std
	1. Walking up steep hills or walking at a quicker pace	1.22 0.420	1.18 0.341	1.25 0.440	1.93 0.262
	2. Carrying things that are 13 to 27 kilograms	1.13 0.336	1.06 0.246	1.07 0.262	1.86 0.356
	3. Hanging laundry on the line to dry	1.09 0.296	1.16 0.369	1.04 0.189	1.79 0.499
	4. Cleaning at a slow pace such as vacuuming, washing floors, laundry	1.06 0.246	1.09 0.296	1.07 0.262	1.71 0.535
	5. Shopping for groceries and carrying bags	1.13 0.336	1.13 0.336	1.14 0.356	1.86 0.448
	6. Doing light home repairs. For example: hanging a small picture or gardening	1.16 0.369	1.22 0.420	1.08 0.278	1.82 0.390
General mean and SD		1.131 0.171	1.143 0.156	1.108 0.059	1.83 0.063
Assessment		Poor	Poor	poor	good
No.		32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 1.5, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 6 to 8 weeks after surgery, the general mean and SD for study group (1.108 ± 0.059) in their pre-test, while significant change is clearly presented in the following post-test (1.83 ± 0.063). this indicate significant improvement in patient's knowledge regarding Patient Activity after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.131 ± 0.171) in their pre-test, while no significant change is presented in the following post-test (1.143 ± 0.156).

Table 4.11 8 weeks after surgery

N	Items	Control group		Study group	
		Pretest	Posttest 1	Pretest	Posttest 1
		M $\pm$ Std	M $\pm$ Std	M $\pm$ Std	M $\pm$ Std
	1.Walking up hills at a fast pace	1.13 0.336	1.19 0.397	1.22 0.420	1.93 0.262
	2. Doing heavy washing or scrubbing with your arms above your shoulders	1.06 0.246	1.13 0.336	1.07 0.262	1.79 0.418
	3. Doing heavy gardening such as digging, spading, raking, trimming branches overhead	1.06 0.246	1.18 0.341	1.04 0.189	1.86 0.448
	4. Playing tennis, jogging, swimming, or bicycling at a medium or fast pace	1.00 0.000	1.04 0.136	1.11 0.315	1.82 0.390
	5. Doing heavy home repairs such as painting a room	1.03 0.177	1.09 0.296	1.16 0.369	1.71 0.535
	General mean and SD	1.056 0.125	1.126 0.186	1.120 0.179	1.82 0.099
	Assessment	Poor	Poor	Poor	Good
	No.	32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 1.5, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 8 weeks after surgery, the general mean and SD for study group (1.120 ± 0.179) in their pre-test, while significant change is clearly presented in the following post-test (1.82 ± 0.099). this indicate significant improvement in patient's knowledge regarding Patient Activity after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.056 ± 0.125) in their pre-test, while no significant change is presented in the following post-test (1.126 ± 0.186).

Table (4.12) comparison between the mean score of the of both groups knowledge for both study group and control group

t-test: Independent							
	Groups	No.	M	Std.	Std. E	P-value	Assessment
Pretest	Control	32	28.06	1.865	.330	0.120	N.S
	Study	28	28.68	.945	.179		
Posttest	Control	32	28.78	2.366	.418	0.043	S
	Study	28	46.32	2.919	.552		

No= (number of study sample), M= mean, Std= (stander deviation), Std. E= (stander error), P. value= (probability value), N. S= (Non-Significant), S= (Significant).

Table 4.13: Problems it takes 4 to 6 weeks that consider normal

N	Items	Control group		Study group	
		Pretest	Posttest	Pretest	Posttest
		M ± Std	M ± Std	M ± Std	M ± Std
	1. Incision pain	1.34 0.483	1.41 0.499	1.29 0.460	1.86 0.356
	2. Poor appetite	1.31 0.471	1.34 0.483	1.21 0.418	1.79 0.418
	3. Mood swings and feel depressed	1.06 0.246	1.03 0.177	1.07 0.262	1.61 0.497
	4. Swelling in the leg that the vein graft was taken from	1.09 0.296	1.06 0.246	1.25 0.441	1.68 0.476
	5. Feel itchy, numb, or tingly around the incisions on your chest and leg for 6 months or more	1.16 0.369	1.09 0.296	1.18 0.390	1.75 0.441
	6. trouble sleeping at night	1.13 0.336	1.06 0.246	1.14 0.356	1.71 0.460
	7. tired or not have much energy	1.22 0.420	1.19 0.397	1.11 0.315	1.82 0.390
General mean and SD		1.19 0.088	1.16 0.125	1.18 0.071	1.74 0.049
Assessment		Poor	Poor	Poor	good
No.		32	32	28	28

M= mean of scores, Std= (stander deviation), cut off point= 0.5, mean of scores = 1.5, (poor knowledge= 1-1.49), (good knowledge = 1.50-2).

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Problems it takes 4 to 6 weeks that consider normal, the general mean and SD for study group (1.18± 0.071) in their pre-test, while

significant change is clearly presented in the following post-test (1.74 ± 0.049). this indicate significant improvement in patients knowledge about Problems it takes 4 to 6 weeks that consider normal after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.19 ± 0.071) in their pre-test, while no significant change is presented in the following post-test (1.16 ± 0.125).

Table (4.14) comparison between the mean score of the of both groups knowledge for both study group and control group

t-test: Independent							
	Groups	No.	M	Std.	Std. E	P-value	Assessment
Pretest	Control	32	8.53	1.344	.238	0.379	N.S
	Study	28	8.25	1.076	.203		
Posttest	Control	32	8.19	1.176	.208	0.008	H.S
	Study	28	12.07	1.720	.325		

No= (number of study sample), M= mean, Std= (stander deviation), Std. E= (stander error), P. value= (probability value), N. S= (Non-Significant)

Table (4.15) Patients self care knowledge related to nutrition and medication

N	Items	Control group		Study group	
		Pretest	Posttest 1	Pretest	Posttest 1
		M $\pm$ Std	M $\pm$ Std	M $\pm$ Std	M $\pm$ Std
	1. eat food low cholesterol to prevent heart diseases	1.47 0.507	1.41 0.499	1.43 0.573	1.89 0.315
	2. eat food low salt to maintain	1.41	1.50	1.46	1.93

	normal blood pressure	0.499	0.508	0.508	0.262
	3. eat five portions of fresh fruits and vegetables a day and whole grains can reduce the risk of heart disease	1.25 0.440	1.41 0.499	1.39 0.497	1.79 0.418
	4. Olive oil contains antioxidants that can reduce the risk of heart disease	1.38 0.492	1.31 0.471	1.46 0.508	1.82 0.390
	5. Increasing the intake of green leafy vegetables helps reduce the risk of heart disease	1.34 0.483	1.38 0.492	1.39 0.497	1.75 0.518
	6. Diuretics have an onset of action 2 hours after taking them and last for 6-8 hours.	1.34 0.483	1.25 0.440	1.43 0.504	1.89 0.315
	7. Diuretics are taken during the early morning	1.16 0.369	1.28 0.457	1.25 0.441	1.86 0.356
	8. When taking blood-thinning medications and the appearance of black or blue spots on the skin or the appearance of blood in the urine or the change in the color of the urine to dark, the medication should be stop	1.25 0.440	1.22 0.420	1.32 0.476	1.82 0.390
	9. Digoxin is taken after food	1.19 0.397	1.19 0.397	1.21 0.418	1.79 0.568
General mean and SD		1.31 0.048	1.32 0.039	1.37 0.044	1.84 0.098
Assessment		poor	poor	poor	good
No.		32	32	28	28

This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Nutrition and medication, the general mean and SD for study group (1.37 ± 0.044) in their pre-test, while significant change is clearly presented in the following post-test (1.84 ± 0.098). this indicate significant improvement in patients knowledge regarding heart

anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.31 ± 0.048) in their pre-test, while no significant change is presented in the following post-test (1.32 ± 0.039).

Table (4.16) comparison between the mean score of the of both groups knowledge for both study group and control group

t-test: Independent							
	Groups	No.	M	Std.	Std. E	P-value	level
Pretest	Control	32	11.78	2.075	.367	0.282	N.S
	Study	28	12.36	2.022	.382		
Posttest	Control	32	11.94	1.625	.287	0.004	H.S
	Study	28	16.54	1.319	.249		

No= (number of study sample), M= mean, Std= (stander deviation), Std. E= (stander error), P. value= (probability value), N. S= (Non-Significant)

Table (4.17) Mean score of the of both groups knowledge for both study group and control group Pretest and posttest (Overall)

	Groups	No.	M	Std.	level
Pretest	Control	32	60.44	4.134	poor
	Study	28	60.11	2.872	poor
Posttest	Control	32	59.46	5.394	poor
	Study	28	93.96	3.854	Good

No.= (number of study sample), M= mean, Std= (stander deviation), poor= (52-78), good = (79-104)

This table show significant changing in overall mean of score and stander deviation for study group between pretest, posttest with good level. while there is no change in mean of score for control group with poor level.

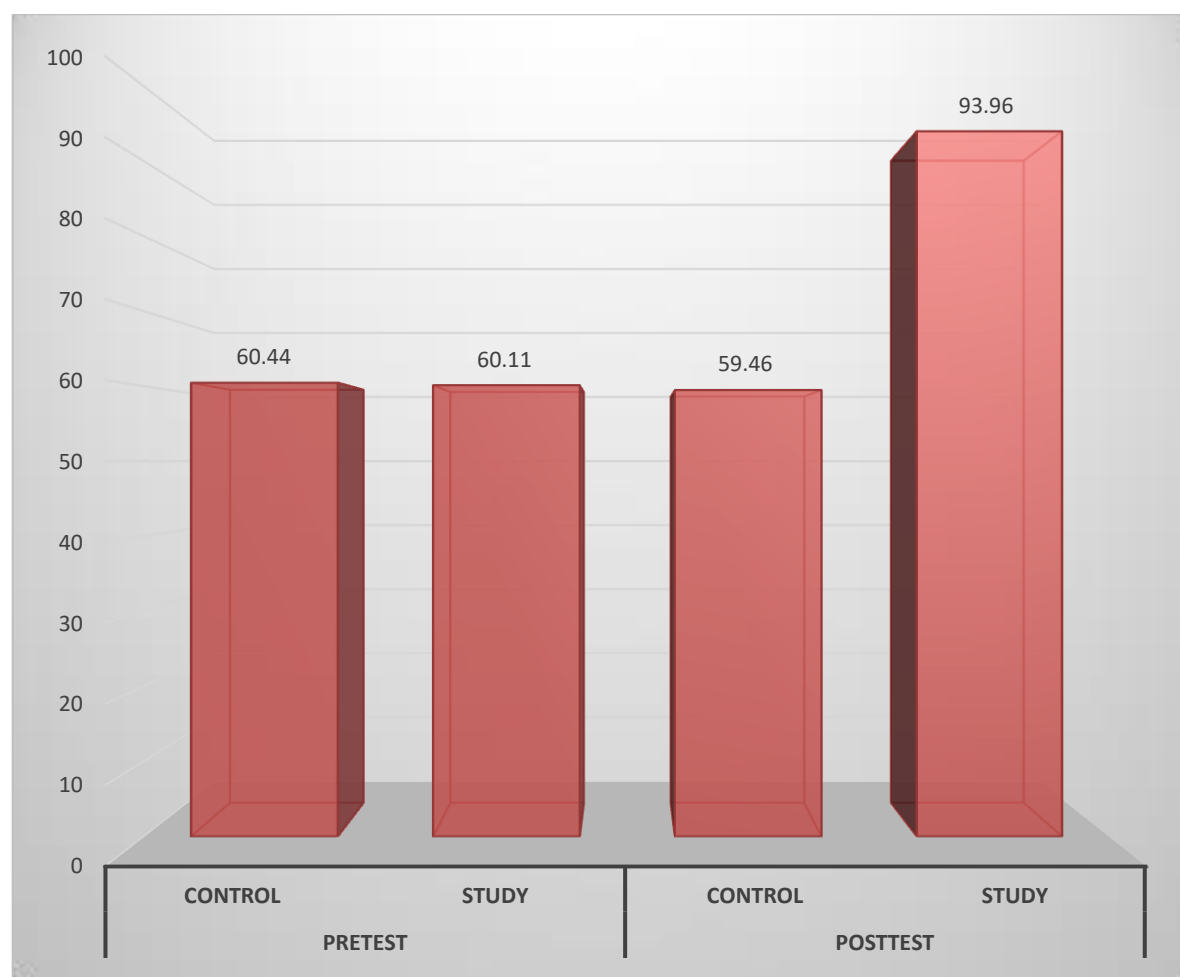


Figure (4.1) Mean score of the of both groups knowledge for both study group and control group pretest and posttest (Overall)

Table (4.18) Differentiation between the mean of score of the control group pretest and posttest

Paired Samples Statistics							
	Mean	N	Std. Deviation	Std. Error Mean	d.f	P.value	Assessment
Pretest Control	60.44	32	4.134	.731	31	0.294	N.S
Posttest Control	59.46	32	5.394	.95354			

This table shows a no significant difference between the pre-test and post-test of the control sample at p-value (0.294).

Table (4.19) Differentiation between the mean of score of the study group pretest and posttest

Paired Samples Statistics							
	Mean	N	Std. Deviation	Std. Error Mean	d.f	p.value	Assessment
Pretest study	59.46	28	2.872	.543	27	0.001	H.S
Posttest study	93.96	28	3.854	.728			

This table shows a highly significant difference between the pre-test and post-test of the study sample after participated in the educational program at p-value (0.001).

Table (4.20) Association between demographic characteristics and patient's knowledge for control group.

No.	Socio-demographic	Chi-square	d.f	P-value	ass
1.	age	49.926	3	0.113	N.S
2.	gender	12.925	1	.454	N.S
3.	Educational level	49.244	6	.583	N.S
4.	Marital status	29.600	4	.285	N.S
5.	occupation	31.400	3	.801	N.S
6.	address	19.284	1	.115	N.S
7.	Chronic disease	51.619	4	.886	N.S
8.	smoking	12.089	1	.520	N.S
9.	Previous hospitalization	37.796	4	.025	S
10.	Type of surgery	23.660	2	.595	N.S

The above table show no significant association between patients knowledge and demographical characteristics except the Previous hospitalization have significance at p.value 0.025 which is less than 0.05 .

Table (4.21) Association between demographic characteristics and patients knowledge for study group.

No.	Socio-demographic	Chi-square	d.f	P-value	ass
1.	age	16.548	3	0.977	N.S
2.	gender	10.722	1	0.379	N.S
3.	Educational level	52.640	6	0.087	N.S
4.	Marital status	3.802	2	0.956	N.S
5.	occupation	26.675	3	0.145	N.S
6.	address	15.163	1	0.126	N.S
7.	Chronic disease	52.313	4	0.384	N.S
8.	smoking	10.444	1	0.402	N.S
9.	Previous hospitalization	30.307	4	0.450	N.S
10.	Type of surgery	23.453	2	0.267	N.S

The above table show no significant association between patients knowledge and demographical characteristics.

Chapter Five

Discussion

Discussion:

Results of self care education program application toward patients undergoing to open heart surgery are discussed in this chapter. The data was collected using knowledge for patients in middle Euphrates governorate , and the data collected was analyzed and reported in accordance with the study's objectives. The education session is intended to give patients with sufficient knowledge in self care .

Patient educational process relevant to the patient's level of understanding, comprehensive, delivered at the appropriate time, as well as designed to understand can be one of the prerequisites for the patient to get some inspiration to change attitudes, increase knowledge, practice, motivation and awareness of the importance of co-responsibility to make decisions about medical treatment, the patient's behavior or change of habits. (Bēta, 2014 & Koren & Sharaf, 2016).

Interpretation and discussion of results obtained from the current study were presented in three main sections; the first section described the patients' demographic data and medical history of the study subjects. The second section was concerned with patients' level of knowledge.

socio-demographic characteristics

Table (1) which presented the results related to the demographical characteristic of the study sample shows that most of participants in both groups 13(43.8) were between 50-59 age group , 14 (43.8%) were more than 59 years age group,. This result supported by study carried out by (Lemaire A, et al 2020) titled as “The impact of age on outcomes of coronary artery bypass grafting” , the finding revealed that most of the participants A total of 67,568 patients were identified who were ≥ 70 years old and underwent

CABG. Most of the patients were reviewing to out patients department in cardiac center were more than 50 years age group .

This mean age of the present study may be due to aging which is an un-modifiable risk factor for CAD. The WHO reports that the principal cause of death of people over 65 years is CAD, and CAD risk increase as age increases. This may be due to increased life stressors even among people. This result is in accordance with Leathy &Jada(2015), Moreover a study conducted by Amaal F et al, (2017) revealed that the average age of the studied sample was ranged between 50 and 59 years

Regarding gender, the present study clarified most of the study and control group were males. This finding is in line with Mohammed (2014) who found that more than half of both the study and control group patient were males. Also the result of the present study is supported by Abdeaal, et al (2013) & Amin (2015) who indicates that 64% of coronary artery disease cases were men. On the other hand, this result may be not in line with Beltrame, et al (2012) who reported that CAD is the leading cause of mortality for both adult males and females alike worldwide. Although the initial manifestation of CAD is delayed in females by about ten years compared to males, there is no abrupt increase in CAD mortality rates for females immediately following menopause but a progressive increase over subsequent years.

Relation to marital status, the findings of the present study represent that all the patients were married. this result was agree with a study which determined that most of their patients in their study were married .The finding of present study's supportive evidence is available in the study reported that CAG was the most frequent surgery and cardiac valve surgery was increasingly performed on the patients (Ali, S., & Jacoub, S. 2018).

Regarding residence, the current study showed that more than half of studied patients were from rural areas, this may be due to lack of health care provided, take more time to diagnosed, and low educational level in rural area. This result was in the same line with Kapwata & Manda, (2018)) who found that, when increase distance from health care facilities, the cardiovascular disease was increased and morbidity and mortality also worsen. Moreover our findings were in the same line with another study conducted by Amaal F et al, (2017)) who revealed that majority of the studied patients were from rural area.

Regarding occupation status, the finding of the present study revealed that, about near half of studied patients were employed; this may be due to increase job strain and increase stress of lack income. This was in accordance with Ferrario et al, (2017) Who reported that, higher coronary heart disease incidence rates was found among manual workers.

Regarding education the present study revealed that the minority of study population had bachelor degree. The result of the present study is supported by Tillmann, etal (2018) who concluded that low education is a causal risk factor in the development of coronary heart disease.

Also the result of present study is supported by Chair, etal (2012) who mentioned that 62.8% of the participants in his study received no education or were educated at a primary school level. This result may ascertain that decreasing educational level may be a cause of the unsatisfactory level of knowledge of the patients. And increasing educational level should increase satisfactory level of knowledge.

Regarding chronic diseases history of studied patients, the results of the present study showed that, all of the studied patients had heart disease and

near two third of studied patients had hypertension and diabetic. This may be due to poor treatment adherence, genetic factor or unhealthy life style. This was in the same line with **Lancellotti et al, (2017)** who reported that, most of subjects complain of CHD and minority valvular heart disease. Moreover a study conducted by Bassand et al, (2018) found that, about two thirds of patients had hypertension and diabetic. Also, American Heart Association (AHA) (2017) which reported a positive association between hypertension and insulin resistance as when patients have both hypertension and diabetes, which is a common combination, their risk for cardiovascular disease doubles. This demonstrates the importance of prevention of hypertension and diabetes occurrence, and also demonstrates the beneficial of hypertension and diabetes control in secondary prevention of CAD.

Concerning smoking, the result revealed that more than half of study group patients had a history of smoking. The result of the present study is supported by Mohammed (2014); Amin (2015); Byrne & Espnes (2016) & Rosch & Dimsdale (2017), who mentioned that Cigarette smoking pose an established and potent risk for CVD. Also, Law & Wald (2013) who studied "Environmental tobacco smoke and ischemic heart disease" and evidenced the presence of a significant effect of tobacco smoke exposure in causing ischemic heart disease. This result ascertains that smoking is a modifiable risk factor of CAD. But the control group 62.5% were no smoking this result due to the near half of patients participants in study were female gender .

Table (3,4) presents the statistical analysis of patients undergoing to open heart surgery knowledge about heart anatomy , the general mean and SD for interventional group (1.210 ± 0.059) in their pre-test, while significant change is clearly presented in the following post-test (1.905 ± 0.169). this indicate

significant improvement in patients knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.21 ± 0.059) in their pre-test, while no significant change is presented in the following post-test (1.252 ± 0.441) and shows a highly significant difference between the pre-test and post-test of the study sample after participated in the program at p-value (0.001).

the differences between study and control groups related to their information toward heart surgery the pre –test and post-test, revealed that there were significant difference between the study and control groups related to their information to cardiac surgery thought the pre-test and post –test . This result supported by study carried out by (Arthur,H., Danicls,etal 2013).

Table 5,6 This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about preparation for surgery , the general mean and SD for interventional group (1.168 ± 0.369) in their pre-test, while significant change is clearly presented in the following post-test (1.87 ± 0.085). this indicate significant improvement in patients knowledge regarding preparation for surgery after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.140 ± 0.356) in their pre-test, while no significant change is presented in the following post-test (1.118 ± 0.315) and this table shows a highly significant difference between the pre-test and post-test of the study sample after participated in the program at p-value (0.001), and no significant difference between the pre-test and post-test of the control group

The finding of present study's supportive evidence is available in the study that examine the effect of a multidimensional preoperative preparation or intervention on the patients with cardiac surgery .They found that during the waiting period, the patients received exercise training, education was offered to the patients to improve their outcome (Emre K. 2017)

Moreover, The finding of present study's supportive evidence is available in the study that reported the effects of psychological preparation for surgery can facilitate recovery thus psychological preparation supplies information which reduced uncertainty (Smith A, Fortin A, Dwamena A ,etal2013)

Table 7 This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity and Movement and walking In-hospital, the general mean and SD for interventional group (1.297 ± 0.054) in their pre-test, while significant change is clearly presented in the following post-test (1.84 ± 0.044). this indicate significant improvement in patients knowledge regarding activity after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.207 ± 0.053) in their pre-test, while no significant(1.235 ± 0.020) change is presented in related post-test.

The finding of present study's supportive evidence is available in the study Effect of cardiac rehabilitation on functional outcomes after coronary revascularization (Pasquali SK, Alexander KP,etal 2013) reported improved physical functioning and adoption of secondary preventive measures in patients with coronary disease who participated in cardiac rehabilitation.

Table 8 This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 1 to 4 weeks after

surgery , the general mean and SD for interventional group (1.125 ± 0.107) in their pre-test, while significant change is clearly presented in the following post-test (1.88 ± 0.058). this indicate significant improvement in patients knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.160 ± 0.103) in their pre-test, while no significant change is presented in the following post-test (1.25 ± 0.107).

The reported mean life expectancy a week after the intervention was significantly higher in the intervention group (176.76 ± 43.38) compared to the control group (159.50 ± 41.87) ($P=0.035$). They also reported the mean score of life expectancy (post- intervention) had significantly increased in the intervention group compared to pre-intervention (mean difference of 13.35 ± 14.07 , $P<0.001$). Similar to our study, their participants were mainly male patients (63%) and had an undergraduate degree (67%). However, they only conducted three sessions of intervention with training

This result reported by (Salimi T, Tavangar H, Shokripour S, et al 2017).

Table 9 this table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 4 to 6 weeks after , the general mean and SD for interventional group (1.130 ± 0.104) in their pre-test, while significant change is clearly presented in the following post-test (1.91 ± 0.110). this indicate significant improvement in patients knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.21 ± 0.059) in their pre-test, while no significant change is presented in the following post-test (1.25 ± 0.441).

Table 10 This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 4 to 6 weeks after

surgery , the general mean and SD for interventional group (1.108 ± 0.059) in their pre-test, while significant change is clearly presented in the following post-test (1.83 ± 0.063). this indicate significant improvement in patients knowledge regarding Patient Activity after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.131 ± 0.171) in their pre-test, while no significant change is presented in the following post-test (1.143 ± 0.156).

This result accepted with study of (Macchi, Claudio MD; Fattirolli ,etal 2007) that reported in the end of the rehabilitation program, more than 90% of patients showed significant increases in walking distance, and during the follow-up, no significant difference was found with regard to mortality, nonfatal events, functional ability, or control of cardiovascular risk factors, independent of rehabilitation timing

Table 13 this table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Problems it takes 4 to 6 weeks that consider normal

, the general mean and SD for interventional group (1.18 ± 0.071) in their pre-test, while significant change is clearly presented in the following post-test (1.74 ± 0.049). this indicate significant improvement in patients knowledge about Problems it takes 4 to 6 weeks that consider normal after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.18 ± 0.071) in their pre-test, while no significant change is presented in the following post-test (1.16 ± 0.125).

Table 15 This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about nutrition and medication , the general

mean and SD for interventional group (1.13 ± 0.072) in their pre-test, while significant change is clearly presented in the following post-test (1.91 ± 0.169). this indicate significant improvement in patients knowledge regarding nutrition and medication after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.21 ± 0.059) in their pre-test, while no significant change is presented in the following post-test (1.25 ± 0.441).

The finding of present study's supportive evidence is available in the study Role of nutrition support in adult cardiac surgery: a consensus statement from an International Multidisciplinary Expert Group on Nutrition in Cardiac Surgery

Targeting preoperative optimization of the nutritional state may result in improved postoperative outcome. Structured scoring tools should be validated and implemented as part of preoperative assessment and to monitor the efficacy of nutrition therapy and In identified patients, the feasibility and clinical significance of early-initiated postoperative nutrition support needs to be evaluated (toppe C, Goetzenich etal 2017)

Table (4.17) This tables show simple significant changing in overall mean of score and stander deviation for interventional group between pretest, posttest with good assessment. while there is no change in mean of score for control group with poor assessment. This result due to increase the knowledge from intended to the educational program .

Table (4.18) This table shows a no significant difference between the pre-test and post-test of the control sample at p-value (0.294). This result due to the patients not exposed to the educational program .

Table (4.19) This table shows a highly significant difference between the pre-test and post-test of the study sample after participated in the educational program at p-value (0.001). The result in table 4.17,18,19 supported by (Mahnaz Rakhshan, etal 2020) .

There was no significant difference in the mean score of knowledge between the control and intervention groups before the intervention. However, a significant difference between the groups was observed post-intervention ($P < 0.001$). The results showed a significant difference in the mean score of knowledge between pre-intervention (182.36 ± 23.07) and post-intervention (216.94 ± 23.05) in the intervention group ($P < 0.001$), whereas the difference in the control group was not significant ($P = 0.095$). The measured post-intervention effect size was high (1.05).

Table 4.20 shows that there were not significant differences between male and females in all items of patients' information related to cardiac surgery, such results provide an evidence which is supported study found that there were no significant differences . Such issues also are supported by study reported that there is no statistically significant effect of preoperative information to patients according to their gender on their stress of cardiac surgery. This result supports the scientific cause of stress which is associated with sympathetic nervous activities.)Also this result is in line with the study stated that preoperative teaching which contributes to meet patients information needs would help in lowering stress .Nevertheless, the fact of gender difference in physiological responses to stress deserves attention in the preparation of patient for surgery.

In the point of view, the researcher believes that the undergoing cardiac surgery is very stressful experience for many

patients; but there is usefulness and effectiveness of information prior surgery through the result of differences with educational level. The finding of present study's supportive evidence is available in the study reported the decrease the level of knowledge by almost all the cardiac surgical patients during preoperative period of heart surgery; but preoperative preparation can help patients to be prepared for surgery and reduce complication of surgery especially in the postoperative period

Overall, the current study findings shows that the good influences of educational sessions on the patients knowledge these findings support the research hypothesis of the study there is significant effective of the educational program on the patient self care knowledge which it rejected the null hypothesis .

Chapter Six

Conclusions & Recommendations

6.1. Conclusion:

- 1- Most of participants in both groups were between 50-59 age group were male. Related to educational status most were intermediate school in study group, , while more were secondary school in the control group, Both group recorded high percentage were married .
- 2- The patients who participate in the study group recorded high percentage were unemployment , while the result of the control group patients show most were house wife. Both group recorded were rural as residency area
- 3- Related to clinical information for (60) patients, most patients were participant with study group suffer from diabetic mellitus and more patients from control group suffer from diabetic and hypertension as chronic disease ,both group the high percentage were not smoking . previous hospitalization related heart diseases both group were 2 admission to hospital , self care education the high percentage of control and study group not receive education about self care .the both group were undergoing to valvular surgery related to types of surgery.
- 4- The comparison between the responses of both groups in their first pre-test recorder low mean score and shows a highly significant difference between the pre-test and post-test of the study group after participated in the program at p-value (0.001).
- 5- No significant difference between the pre-test and post-test of the control sample at p-value (0.294).
- 6- Highly significant difference between the pre-test and post-test of the study sample after participated in the educational program at p-value (0.001).
- 7- No significant association between patients knowledge and demographical data except the previous hospitalization for the control group

and no significant association between patients knowledge and demographical data for the study group

8- The finding shows positive effect of the educational program on the patients knowledge which act a strong reason to accept the alternative hypothesis.

6.2. Recommendations:

1. Implementation of the educational program for patients undergoing cardiac surgery performed by nurses before surgery, as well as explanations of the risks associated with cardiac surgery throughout hospitalization and at home.
2. Establishing rehabilitation unit in cardiac centers , which may caring out the responsibilities of patients and training to enhance self care and improve their quality of life.

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Appendix- A

Expert who Assess the Questionnaire

Table of Experts

ت	اسم الخبير	اللقب العلمي	الاختصاص	سنين الخبرة	مكان العمل
1	د. امين عجيل الياسري	استاذ	تمريض صحة الأسرة والمجتمع	37	جامعة بابل / كلية التمريض
2	د. سلمى كاظم جهاد	استاذ	تمريض صحة الأسرة والمجتمع	36	جامعة بابل / كلية التمريض
3	د. راجحة عبد الحسن	استاذ	تمريض بالغين	36	جامعة الكوفة / كلية التمريض
4	د. وداد كامل محمد	استاذ	تمريض بالغين	35	جامعة بغداد / كلية التمريض
5	د. حسين هادي عطية	استاذ	تمريض بالغين	35	جامعة بغداد / كلية التمريض
6	د. صباح عباس احمد	استاذ	تمريض بالغين	34	جامعة بغداد / كلية التمريض
7	د. حكيمة شاكر حسن	استاذ	تمريض بالغين	34	جامعة بغداد / كلية التمريض
8	د. هدى باقر حسن	استاذ	تمريض بالغين	33	جامعة بغداد / كلية التمريض
9	د. نظيرة حسين علوان	استاذ	تمريض بالغين	33	كلية الزهراوي الجامعة
10	د. سحر ادهم علي	استاذ	تمريض بالغين	32	جامعة بابل / كلية التمريض
11	د. شذى سعدي محمد	استاذ	تمريض بالغين	25	جامعة بابل / كلية التمريض
12	د. فاطمة مكي محمود	استاذ مساعد	تمريض بالغين	27	جامعة كربلاء / كلية التمريض
13	د. حسن عبد الله عذبي	استاذ مساعد	تمريض بالغين	18	جامعة كربلاء / كلية التمريض
14	د. فائق عبد الامير الصفار	استاذ مساعد	تمريض صحة الام والوليد	29	كلية الزهراوي الجامعة
15	د. محمد باقر الجبوري	استاذ مساعد	تمريض بالغين	16	جامعة بغداد
16	د. ابراهيم علوان كاظم	استاذ مساعد	تمريض بالغين	15	جامعة الكوفة / كلية التمريض
17	د. صادق عبد الحسين	استاذ مساعد	تمريض بالغين	12	جامعة بغداد / كلية التمريض
18	د. حيدر حمزة عمران		طبيب استشاري امراض القلب	23	مركز شهيد المحراب

Appendix-B

Administrative Agreements

Ministry of Health
Babil Health Directorate
Imam Sadiq General Hospital

جمهورية العراق



وزارة الصحة
دائرة صحة بابل
مستشفى الامام الصادق (ع)
العدد ١٤٨٢٩
التاريخ ١/٩/٢٠٢١

إلى /دائرة صحة بابل /مكتب المدير العام/ مركز التدريب والتنمية البشرية

م/ تسهيل مهمة

إشارة الى كتابكم المرقم (٧٤٤) بتاريخ ١٢ /٨/ ٢٠٢١ لامانع لدينا من تسهيل مهمة طالب الدكتوراه (أمير حسن كاظم فرحان) لاتمام بحثه في مستشفىنا قدر تعلق الامر بنا وحسب الضوابط على ان لاتتحمل مؤسستنا أي تبعات مالية او قانونيه وحسب الضوابط.

....مع الاحترام .

٢
الطبيب الاختصاص

خالد فاهم نعمه الفتلاوي

مدير مستشفى الإمام الصادق (ع) التعليمي

٢٠٢١ / ٨ / ١

مرولة هادي محمد
مدير مستشفى الإمام الصادق (ع) التعليمي



نسخة منه الى

- مكتب مدير المستشفى
- وحدة التدريب والبحوث
- الأرشيف/الإدارية
- المعاون العلمي

جمهورية العراق

Ministry Of Health
Babylon Health Directorate
Email:-
Babel_Healthmoh@yahoo.com
Tel:282628 or 282621



وزارة الصحة والبيئة
دائرة صحة محافظة بابل
المدير العام
مركز التدريب والتنمية البشرية
وحدة إدارة البحوث

العدد : ٧٩٤
التاريخ: ٢٠٢١/٨/١٤

إلى / مستشفى الأمام الصادق (ع)
مركز شهيد المحراب لأمراض وجراحة القلب

وزارة الصحة
دائرة صحة بابل
مركز التدريب والتنمية البشرية

م/ تسهيل مهمة

السلام عليكم ...
أشارة إلى كتاب جامعة بابل/ كلية التمريض / لجنة الدراسات العليا ذي العدد
٢٣٢٣ في ٢٠٢١/٨/٨
ترفق لكم ربطا استمارات الموافقة المبذنية لمشروع البحث العائده للباحث طالب
الدكتوراه امير حسن كاظم فراحان) .
للتفضل بالاطلاع وتسهيل مهمة الموما إليه من خلال توقيع وختم استمارات اجراء
البحث المرفقة في مؤسساتكم وحسب الضوابط والإمكانات لاستحصال الموافقة
المبذنية ليتسنى لنا اجراء اللازم على أن لا تتحمل مؤسساتكم أية تبعات مادية
وقانونية مع الاحترام

المرفقات :

استمارة عدد ٢/

المعادن ليلي

٢٠٢١

الدكتور

محمد عبد الله عجرش

مدير مركز التدريب والتنمية البشرية

٢٠٢١ / /

٢٠٢١

ولي العهد

منصل

وحدة البحوث

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جمهورية العراق

Ministry Of Health
Babylon Health Directorate
Email:-
Babel_Healthmoh@yahoo.com
Tel:282628 or 282621

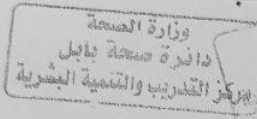


وزارة الصحة والبيئة
دائرة صحة محافظة بابل
المدير العام
مركز التدريب والتنمية البشرية
وحدة إدارة البحوث

العدد :

١٦٩٥
التاريخ: ٢٠٢١/٨/١٣

إلى / مستشفى الأمام الصادق (ع)
مركز شهيد المحراب لأمراض وجراحة القلب
مديره مرحان الصبيح
م/ تسهيل مهمة

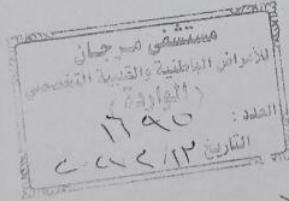


السلام عليكم ...

أشارة إلى كتاب جامعة بابل/ كلية التمريض / لجنة الدراسات العليا ذي العدد
٢٣٢٣ في ٢٠٢١/٨/٨
نرفق لكم ربطا استمارات الموافقة المبدئية لمشروع البحث العائده للباحث طالب
الدكتوراه امير حسن كاظم فراحان) .
للتفضل بالاطلاع وتسهيل مهمة الموما اليه من خلال توقيع وختم استمارات اجراء
البحث المرفقة في مؤسساتكم وحسب الضوابط والإمكانات لاستحصل الموافقة
المبدئية ليتسنى لنا اجراء اللازم على أن لا تتحمل مؤسساتكم أية تبعات مادية
وقانونية مع الاحترام

المرفقات :

استمارة عدد ٢/



١٦٩٥

الدكتور

محمد عبد الله عجرش
مدير مركز التدريب والتنمية البشرية
٢٠٢١ / /

نسخة منه إلى :

• مركز التدريب والتنمية البشرية / وحدة إدارة البحوث مع الأولويات

٨/١٢

دائرة صحة محافظة بابل / مركز التدريب والتنمية البشرية // ايميل المركز babiltraining@gmail.com



University of Babylon
College of Nursing

جامعة بابل
كلية التمريض
لجنة الدراسات العليا

Ref. No. :

Date: /



العدد : ٧٧٧
التاريخ : ٢٠٢٢ / ٢ / ١٨

الى / مستشفى الكفيل التخصصي
مستشفى الامام زين العابدين التخصصي
م/ تسهيل مهمة

تحية طبية :

يطيب لنا حسن التواصل معكم ويرجى تفضلكم بتسهيل مهمة طالب الدكتوراه (أمير حسن كاظم) لغرض جمع عينة دراسة الدكتوراه والخاصة بالبحث الموسوم
فاعلية البرنامج التعليمي للرعاية الذاتية على معارف المرضى الخاضعين لعمليات القلب المفتوح في محافظات الفرات الأوسط

Effectiveness of self – care Educational Program on the Knowledge of Patients
Undergoing Open Heart Surgeries in the Middle Euphrates Governorates

مع الاحترام ...

المرفقات //

- بروتوكول.
- استمارة.

ا.م.د. نهاد محمد قاسم الدوري
معاون العميد للشؤون العلمية والدراسات العليا
٢٠٢٢ / ٢ / ١٨

صورة عنه الى //

- مكتب السيد العميد للتفضل بالاطلاع مع الاحترام .
- لجنة الدراسات العليا
- الصادرة .

E-mail:nursing@uobabylon.edu.iq



07711632208
009647711632208

وطني
المكتب

www.uobabylon.edu.iq

جمهورية العراق

Ministry Of Health
Babylon Health Directorate
Email:-
Babel_Healthmoh@yahoo.com
Tel:282628 or 282621



وزارة الصحة والبيئة
دائرة صحة محافظة بابل
المدير العام
مركز التدريب والتنمية البشرية
وحدة إدارة البحوث

العدد : ٤٤٤

التاريخ: ٢٠٢١ / ٨ / ١٤

إلى / مستشفى الأمام الصادق (ع)
مركز شهيد المحراب لأمراض وجراحة القلب

وزارة الصحة
دائرة صحة بابل
مركز التدريب والتنمية البشرية

م/ تسهيل مهمة

السلام عليكم ...
أشارة إلى كتاب جامعة بابل / كلية التمريض / لجنة الدراسات العليا ذي العدد
٢٣٢٣ في ٢٠٢١/٨/٨
ترفق لكم ربطا استمارات الموافقة المبدئية لمشروع البحث العانده للباحث طالب
الدكتوراه أمير حسن كاظم فراحان .
للتفضل بالاطلاع وتسهيل مهمة الموما إليه من خلال توقيع وختم استمارات اجراء
البحث المرفقة في مؤسساتكم وحسب الضوابط والإمكانات لاستحصال الموافقة
المبدئية ليتسنى لنا اجراء اللازم على أن لا تتحمل مؤسساتكم أية تبعات مادية
وقانونية مع الاحترام

المرفقات :

استمارة عدد ٢/

١٨١

الدكتور

محمد عبد الله عجرش
مدير مركز التدريب والتنمية البشرية

٢٠٢١ / /

نسخة منه إلى :

• مركز التدريب والتنمية البشرية / وحدة إدارة البحوث مع الأوليات ...

سوزان ٨/١٢

دائرة صحة محافظة بابل / مركز التدريب والتنمية البشرية // ايميل المركز babiltraining@gmail.com



Ref. No. :

Date: /



العدد : ٧٧٨
التاريخ : ١٨ / ٤ / ٢٠٢٢

الى / دائرة صحة بابل
دائرة صحة النجف الأشرف
م/ تسهيل مهمة

تحية طيبة :

يطيب لنا حسن التواصل معكم ويرجى تفصلكم بتسهيل مهمة طالب الدكتوراه (أمير حسن كاظم) لغرض جمع عينة دراسة الدكتوراه والخاصة بالبحث الموسوم

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Effectiveness of self – care Educational Program on the Knowledge of Patients
Undergoing Open Heart Surgeries in the Middle Euphrates Governorates

مع الاحترام ...

المرافقات //

- بروتوكول.
- استمارة.

ا.م.د. نهاد محمد قاسم الدوري
معاون العميد للشؤون العلمية والدراسات العليا
2022 / 2 / ١٨

صورة عه الى //

- مكتب السيد العميد للتفضل بالاطلاع مع الاحترام .
- لجنة الدراسات العليا
- الصادرة .

Appendix- C

Questionnaire

Questionnaire for the research:

((Effectiveness of self-care educational program on the knowledge of patients undergoing open heart surgeries in the middle Euphrates governorate))

Objectives the study:

1. To assess patient knowledge toward self-care management before and after conducting special educational program
2. To evaluate the effectiveness of the self-care management educational program on the patients knowledge who undergoing open heart surgeries
3. to identify the demographical characteristics of the study sample
4. to find out the relation between the self-care educational program effectiveness and demographical characteristics of the study sample such as (age ,gender , educational level

Part 1

The Demographic and Socio- demographic Characteristics.

1- gender:

- ☐ Male
- ☐ Female

2- Age **years**

3- Educational level

- ☐ Illiterate
- ☐ Able to read and write
- ☐ Primary school
- ☐ Intermediate school
- ☐ Secondary school
- ☐ Institutes
- ☐ College
- ☐ Master or Doctorate

4- marital status:

☐ Single ☐ married ☐ Separated ☐ divorce ☐ widow

5- Occupation:

- ☐ student
- ☐ Employer.
- ☐ unemployed.
- ☐ house wife
- ☐ Retired.

6- Address:

Rural Urban

Part 2

Clinical information

1- Chronic disease(s)

2- Smoking :- yes no

3- Previous hospitalization related cardiac disease

4- would you receive self care education yes ☐ No ☐

if yes from nurse ☐ physician ☐ friends ☐ social media ☐

5-Types of surgery

Part 3

The questionnaire knowledge related to self care management of patient undergoing open heart surgeries

Items	YES	NO
1.Related cardiac :		
a. The heart consist of four champers		
b. CABG mean coronary artery bypass grafting surgery		
c. The coronary artery are branch from aortic artery		
d. The number of normal heart rate 60-100 beat per min		
2. Preparation for surgery		
a. The open heart surgery take about 3 to 6 hours		
b. The surgeon uses a healthy vein or artery to create a new path around the blocked artery		
c. The patient is given a soapy solution to bathe to reduce the risk of infection		
d. The nurse shaves operation area		
e. The patient stays a one day or more in the intensive care unit after the open heart surgery, depending on the patient's condition		
f. The patient suffers from some symptoms and complications after operation, including: pain in the muscles and chest, and swelling in		

the feet		
3. Patient Activity		
A. Movement and walking In-hospital : after discharge from ICU		
1.The patient can move after disconnected from devices from him and gradually increase movement during his stay in the hospital		
2. After discharge from hospital walking inside the house		
3. Walking outside the house		
4. After the operation, the patient can do arm stretching exercises and do personal care by himself such as ADLs		
B. 1 to 4 weeks after surgery		
1. Walking at a slow pace		
2. Washing your hands and body		
3. Combing your hair while sitting or standing		
4. Showering with warm water while sitting or standing in the shower		
5. patient is able to change clothes		
6. Hobbies like playing card games, needlework, playing the piano, reading		
C. 4 to 6 weeks after surgery		
1. Walking at a moderate pace		
2. Lifting items that weigh less than 10 pounds (4.5 kilograms)		
3. Preparing light meals. For example: chopping salad while sitting		
4. Washing the dishes, making the bed and doing light housekeeping such as dusting or light gardening		

D. 6 to 8 weeks after surgery		
1. Walking up steep hills or walking at a quicker pace		
2. Carrying things that are 13 to 27 kilograms		
3. Hanging laundry on the line to dry		
4. Cleaning at a slow pace such as vacuuming, washing floors, laundry		
5. Shopping for groceries and carrying bags		
6. Doing light home repairs. For example: hanging a small picture or gardening		
E. 8 weeks after surgery		
1. Walking up hills at a fast pace		
2. Doing heavy washing or scrubbing with your arms above your shoulders		
3. Doing heavy gardening such as digging, spading, raking, trimming branches overhead		
4. Playing tennis, jogging, swimming, or bicycling at a medium or fast pace		
5. Doing heavy home repairs such as painting a room		
4. Problems it takes 4 to 6 weeks that consider normal :		
1. Incision pain		
2. Poor appetite		
3. Mood swings and feel depressed		
4. Swelling in the leg that the vein graft was taken from		
5. Feel itchy, numb, or tingly around the incisions on your chest and leg for 6 months or more		
6. trouble sleeping at night		
7. tired or not have much energy		

5. Nutrition and Medication		
1. eat food low cholesterol to prevent heart diseases		
2. eat food low salt to maintain normal blood pressure		
3. eat five portions of fresh fruits and vegetables a day and whole grains can reduce the risk of heart disease		
4. Olive oil contains antioxidants that can reduce the risk of heart disease		
5. Increasing the intake of green leafy vegetables helps reduce the risk of heart disease		
6. Diuretics have an onset of action 2 hours after taking them and last for 6-8 hours.		
7. Diuretics are taken during the early morning		
8. When taking blood-thinning medications and the appearance of black or blue spots on the skin or the appearance of blood in the urine or the change in the color of the urine to dark, the medication should be stop		
9. Digoxin is taken after food		

(فاعلية البرنامج التعليمي للرعاية الذاتية على معارف المرضى الخاضعين لعمليات القلب المفتوح
في محافظات الفرات الأوسط)

المحور الاول :المعلومات الشخصية :

1. الجنس : ذكر ☐ أنثى ☐

2. العمر :

3. مستوى التعليمي : 1- لا يستطيع القراءة والكتابة ☐

2- يستطيع القراءة والكتابة ☐

3- ابتدائي ☐

4- متوسط ☐

5- اعدادي ☐

6- بكالوريوس ☐

7- عالي ☐

4.المهنة: موظف ☐ كاسب(مهنة خاصه) ☐ متقاعد ☐ ربة بيت ☐

5.العنوان: ريف ☐ حضر ☐

6.الحالة الزوجية: أعزب ☐ متزوج ☐ مطلق ☐ ارمل ☐ منفصل ☐

المحور الثاني / المعلومات السريرية

1- الامراض المزمنة/ غير مصاب بأمراض مزمن / ضغط الدم / السكري / الربو / السكري
وضغط الدم

2- التدخين : نعم ☐ لا ☐

3- عدد مرات دخول المستشفى المتعلقة بأمراض القلب

4. هل تلقيت تعليمات حول العناية الذاتية نعم ☐ لا ☐

اذا نعم من قبل الطبيب ☐ الممرضة ☐ الاصدقاء ☐ وسائل التواصل الاجتماعي ☐

المحور الثالث

عناصر الاستبيان المتعلقة بالعناية الذاتية لمرضى جراحة القلب

لا	نعم	الفقرات	
		1 الاسئلة المتعلقة بفسلجة وتشريح القلب	
		أ القلب يتكون من اربع حجرات او ردهات	
		ب عملية القلب المفتوح تعني ترقيع الشرايين التاجية او اصلاح او تبديل الصمامات	
		ت الشريان التاجي هو فرع من الشريان الابهر	
		ث المعدل الطبيعي لعدد ضربات القلب في حالة الراحة هي 60 الى 100 ضربة بالدقيقة	
		2 التحضير لعملية جراحة القلب	
		أ يستخدم الجراح وريداً أو شرياناً سليماً لإنشاء مسار جديد حول الشريان المسدود	
		ب يستخدم المريض محلولاً صابونياً للاستحمام لتقليل خطر الإصابة بالعدوى	
		ت تهيئة الجلد (الحلاقة) لمنطقة العملية من قبل الممرض	
		ث يبقى المريض يوماً أو أكثر في وحدة العناية المركزة بعد جراحة القلب المفتوح حسب حالة المريض	
		ج يعاني المريض من بعض المشاكل الصحية بعد العملية ومنها: ألم في العضلات والصدر ، وتورم في القدمين.	
		3 نشاط المريض	
		أ الحركة والمشي في المستشفى: بعد الخروج من وحدة العناية المركزة	
		1 يمكن للمريض التحرك بعد فصل الأجهزة عنه وزيادة حركته تدريجياً أثناء تواجده بالمستشفى	
		2 المشي داخل المنزل بعد الخروج من المستشفى	
		3 المشي خارج المنزل	
		4 يمكن للمريض القيام بتمارين شد الذراع والقيام بالعناية الشخصية بنفسه بعد العملية	
		ب من 1 إلى 4 أسابيع بعد الجراحة	

1	المشي بوتيرة بطيئة		
2	غسل اليدين والجسم		
3	تمشيط شعرك وأنت جالس أو واقف		
4	الاستحمام بالماء الدافئ أثناء الجلوس أو الوقوف في الحمام		
5	خلع الملابس واخلع الملابس		
6	هوايات مثل لعب ألعاب الورق والتطريز ولعب البيانو والقراءة		
ج	4 إلى 6 أسابيع بعد الجراحة		
1	المشي بوتيرة معتدلة		
2	رفع الأشياء التي يقل وزنها عن (4.5 كجم)		
3	تحضير وجبات خفيفة. على سبيل المثال: تقطيع السلطة أثناء الجلوس		
4	غسل الأطباق ، وترتيب السرير والقيام بأعمال منزلية خفيفة مثل إزالة الغبار والأتربة أو البستنة الخفيفة		
د	من 6 إلى 8 أسابيع بعد الجراحة		
1	المشي بوتيرة أسرع فوق التلال شديدة الانحدار		
2	حمل الأشياء التي يتراوح وزنها بين 13 و 27 كيلوغراماً		
3	تعليق الغسيل أو نشرة حتى يجف		
4	التنظيف بوتيرة بطيئة مثل التنظيف بالمكنسة الكهربائية وغسيل الأرضيات وغسيل الملابس		
5	تسوق البقالة وحمل الحقائب		
6	القيام بإصلاحات منزلية خفيفة. على سبيل المثال: تعليق صورة صغيرة أو البستنة		
هـ	8 أسابيع بعد الجراحة		
1	المشي فوق التلال بوتيرة سريعة		
2	الغسل أو التدليك بذراعيك فوق كتفيك		
3	القيام بأعمال البستنة الثقيلة مثل الحفر ، التجريف ، تقليم الأغصان العلوية		
4	لعب التنس أو الركض أو السباحة أو ركوب الدراجات بسرعة متوسطة أو سريعة		
5	القيام بإصلاحات منزلية ثقيلة مثل صباغة الغرفة		
4	المشاكل التي تستغرق من 4 إلى 6 أسابيع والتي تعتبر طبيعية:		

1	ألم الشق في منطقة الجرح		
2	ضعف الشهية		
3	تقلب المزاج ويشعر بالاكتئاب		
4	تورم في الساق تم أخذ طعم الوريد منه		
5	الشعور بالحكة أو الخدر أو الوخز حول الشقوق الموجودة على صدرك وساقك لمدة 6 أشهر أو أكثر		
6	صعوبة في النوم في الليل		
7	متعب أو ليس لديه الكثير من الطاقة		
4	التغذية والادوية		
1	تناول الطعام منخفض الكوليسترول للوقاية من أمراض القلب		
2	تناول الطعام منخفض الملح للحفاظ على ضغط الدم الطبيعي		
3	تناول خمس حصص من الفواكه والخضروات الطازجة يوميًا ويمكن للحبوب الكاملة أن تقلل من خطر الإصابة بأمراض القلب		
4	يحتوي زيت الزيتون على مضادات الأكسدة التي يمكن أن تقلل من خطر الإصابة بأمراض القلب		
5	يساعد إحداث تناول الخضار الورقية الخضراء على تقليل مخاطر الإصابة بأمراض القلب		
6	تبدأ مدرات البول بالعمل بعد ساعتين من تناولها وتستمر لمدة 6-8 ساعات.		
7	يتم تناول مدرات البول خلال النهار		
8	يجب إيقاف تناول أدوية منع تجلط الدم عند ظهور بقع سوداء أو زرقاء على الجلد أو ظهور دم في البول أو تغير لون البول إلى اللون الداكن		
9	يؤخذ الديجوكسين بعد الطعام		

Appendix - D

Interventional Program

البرنامج التثقيفي لمرضى جراحة القلب

اهداف البرنامج

1. لزيادة معرفة المريض بالقلب بخصوص التغيرات او التداخلات الجراحية التي ستجري بشكل مختصر
2. تعريف المريض حول كيفية اجراء العملية ومدتها والاجراءات والفحوصات التي يجب اجرائها قبل العملية
3. لزيادة معرفة المريض بخصوص النشاطات المسموحة والغير مسموحة له بعد العملية
4. زيادة معلومات المريض حول الاطعمة المسموحة تناولها والممنوعة التي يمكن ان تؤثر على صحة المريض
5. تعريف المريض حول كيفية استخدام الادوية ونوع الادوية المستخدمة بصورة دائمية او موقتة
- 6 . تعليم المريض حول معدل النبض الطبيعي لغرض مراقبة حالته الصحية وتجنب حصول المضاعفات
7. تقليل المضاعفات التي ممكن ان تحدث بسبب عدم التزام المريض بالتعليمات والتوصيات الخاصة بالغذاء
8. زيادة معلومات المريض بخصوص العلامات والاعراض التي ممكن ان تحدث بعد العملية
- 9 .تثقيف المريض حول المضار الناتجة من التدخين وبعض العادات المضرة بعد العملية وتأثيرها على صحته

المحاضرة الاولى

نبذة مختصرة عن القلب

القلب هو أحد أعضاء جسم الإنسان، ويقع بين الرئتين في منتصف الصدر؛ تحديداً خلف عظمة القص ويُشار إلى أنه يميل إلى جهة اليسار قليلاً، أمّا بالنسبة لحجمه فهو أكبر من قبضة اليد بمقدارٍ قليل ويتراوح وزنه ما بين 200-425 غرام، ويبلغ معدل نبضاته حوالي 60 الى 100 نبضة في الدقيقة الواحدة، ويتميّز القلب بأنه يُشبه المضخة الدّم الى كافة اجزاء الجسم حيث يقوم الجزء الأيمن من القلب باستقبال الدّم من أجزاء الجسم المختلفة ثمّ ضخّه إلى الرئتين، ويقوم الجزء الأيسر منه باستقبال الدّم من الرئتين وضخّه إلى أجزاء الجسم ويطلق على هذه العملية اسم الدورة الدّموية

وظيفة القلب

يمكن القول بأنّ القلب يشكل أحد أهم الأعضاء في جسم الإنسان؛ نظراً لكونه مسؤول بشكلٍ رئيسي عن ضخّ الدّم وتوزيع الأكسجين والمواد الغذائية حول أجزاء الجسم، ويُمكن أن تحدث تغيرات جذرية في أعضاء جسم الإنسان بمجرد وجود تشوّهات أو اختلالات في القلب بغضّ النظر عن شدّتها

أجزاء القلب

يُنظّم القلب التدفق الطبيعي للدّم في جسم الإنسان عن طريق تركيبته؛ فهو يتكوّن من أربعة حُجرات والعديد من الصمامات كما أنّ للقلب جداراً يتكوّن من ثلاثة طبقات، وفيما يأتي توضيح لهذه المكونات:

طبقات القلب يتكوّن القلب من ثلاثة طبقاتٍ من الأنسجة، نُبيناها كما يأتي:

التامور: وهو غشاء رقيق ثنائيّ أو مُزدوج الطبقات يُمثّل البطانة الخارجيّة التي تُحيط بالقلب وتحميه كال كيس، ومن الجدير ذكره أنّ الطبقة الخارجيّة من التامور تُحيط بجذور الأوعية الدّموية الرئيسة في القلب

أما الطبقة الداخليّة من التامور فترتبط بعضلة القلب ويفصل بينهما سائل يسمح للقلب بالحركة أثناء النبض.

الحجرات:

الأذنين: وهما الحُجرتان العلويتان الصغيرتان. تقع في الحجرة العلويّة اليُمنى من القلب منطقة تُسمّى العقدة الجبيّة والتي تُمثّل منظّم ضربات القلب الطبيعيّ؛ حيث تُساهم هذه العقدة في المحافظة على عمليّة ضخّ القلب عن طريق إرسال إشارات كهربائيّة عبره.

البُطينين: وهما الحُجرتان السفليتان الأكبر حجمًا.

الصمامات

تُشكّل الصمّامات لوحات أو وريقات تعمل كمداخل ذات اتجاه واحد تُنظّم دخول الدّم إلى البُطين، ومخارج أحادية الاتجاه تنظم خروج الدّم من البُطين؛ وبالتالي فإنّها تمنع من حدوث التدفق العكسي للدّم، وفيما يأتي بيان لصمّامات القلب الأربعة للقلب:

الصمام ثلاثي : ويقع بين البُطين الأيمن والأذنين الأيمن.

الصمام الرئوي: ويقع بين الشريان الرئويّ والبُطين الأيمن.

الصمام الثنائي : ويحتوي على لوحتين فقط ويقع بين البُطين الأيسر والأذنين الأيسر.

الصمام الأبهرى: ويقع بين البطين الأيسر والأبهر.

آليّة عمل القلب يستقبل الأذنين الأيمن الدّم من الأوردة الدميّة ويضخّه إلى البُطين الأيمن الذي يقوم بدوره بضخّه للرئتين؛ حيث يُحمّل بالأوكسجين، ثمّ ينتقل الدم المؤكسج للأذنين الأيسر من الرئتين ويضخّه للبُطين الأيسر الذي يتميّز بأنّه أكثر الحُجرات قوّة؛ حيث إنّهُ يضخ الدّم الغني بالأوكسجين لبقية أجزاء الجسم، حيث أنّ ضغط الدّم في الجسم ينتج عن طريق الانقباضات القويّة للبُطين الأيسر، ويتمّ توفير الدّم الغنيّ بالأوكسجين لعضلة القلب عن طريق الشرايين التاجية الموجودة على طول سطح القلب

أمّا بالنسبة لتوقيت مضخة الدّم فيتمّ التحكّم به عن طريق النظام الكهربائي الذي يُحافظ على انتظام إيقاع القلب ويضبط معدّل نبضاته مع أداء مهامه بشكل صحيح.

نبض القلب

تتضمّن عمليّة نبض القلب دفع الدّم في جميع أنحاء الجسم، ويُقاس النبض الذي يُمكن الإحساس به في الرّقبة أو الرّسغ عن طريق حساب عدد نبضات القلب في الدقيقة الواحدة بما يُعرف بمعدل ضربات القلب

حيث أنّ المعدّل الطبيعي لضربات القلب يتراوح في حالة الرّاحة وعدم النشاط ما بين 60-100 نبضة في الدقيقة الواحدة.

امراض الشرايين التّاجية: ويُمثّل حدوث اضطراب أو تلف في الشرايين التّاجيّة التي تزوّد عضلة القلب بحاجتها من العناصر الغذائيّة والأكسجين، وعادةً ما يُعزى السبب وراء هذا المرض إلى تراكم الرواسب التي تحتوي على الكوليسترول.

فشل القلب أو فشل القلب الاحتقاني وتتمثل بعدم قدرة القلب على ضخ الدّم إلى أجزاء الجسم بكفاءة.

امراض صمامات القلب: قد يؤدّي حدوث اضطراب في صمام القلب إلى جعل عمليه فتحها وإغلاقها بالشكل الصحيح أمراً أكثر صعوبة، الأمر الذي يؤثر في وظيفته التي تتمثّل بالفتح والإغلاق لتوجيه تدفق الدّم بين حجرات القلب الأربعة والرئتين والأوعية الدّموية. (Michigan Medicine 2019)

المحاضرة الثانية

نبذة عن عمليات القلب المفتوح وانواعها

جراحة القلب المفتوح هي نوع من الجراحة يتم فيه فتح الصدر، ويتم إجراء الجراحة على عضلات القلب أو الصمامات أو الشرايين، تسمى جراحة القلب المفتوح أحياناً جراحة القلب

يمكن إجراء جراحة القلب المفتوح لإجراء عملية تحويل مسار الشريان التاجي، لكونه ضرورياً للأشخاص المصابين بأمراض القلب التاجية.

يحدث مرض القلب التاجي عندما تصبح الأوعية الدموية التي تزود عضلة القلب بالدم والأكسجين ضيقة وصلبة غالباً ما يسمى هذا "تصلب الشرايين".

يحدث التصلب عندما تشكل المادة الدهنية لوحة على جدران الشرايين التاجية. تضيق هذه اللوحة الشرايين ، مما يجعل من الصعب مرور الدم. عندما لا يتدفق الدم بشكل صحيح إلى القلب ، قد تحدث نوبة قلبية.

تُجرى جراحة القلب المفتوح أيضاً من أجل:

1:إصلاح أو استبدال صمامات القلب التي تسمح للدم بالمرور عبر القلب.

2:إصلاح المناطق التالفة أو غير الطبيعية من القلب.

3:زرع الأجهزة الطبية التي تساعد القلب على الخفقان بشكل صحيح.

4:استبدال القلب التالف بقلب متبرع (زراعة القلب).

كيف يتم إجراء جراحة القلب المفتوح

بحسب المصادر العلمية ان تستغرق عملية تحويل مسار الشريان التاجي من ثلاث إلى ست ساعات، و يتم إجراؤه عموماً باتباع الخطوات الأساسية التالية:

- 1: يعطى المريض تخدير عام هذا يضمن أنه سيكون نائم وخالي من الألم خلال الجراحة بأكملها.
- 2: يقوم الجراح بعمل جرح في الصدر.
- 3: يقوم الجراح بفتح جزء من عظام الصدر لكشف القلب.
- 4: يستخدم الجراح وريداً أو شرياناً سليماً لعمل مسار جديد حول الشريان المسدود.
- 5: يغلق الجراح عظام الصدر .

كيفية التحضير للعملية

يتم تجهيز المريض مُسبقاً للعملية بمبيته قبل عدّة أيام من العملية لمتابعة ضغطه، وإجراء بعض الاختبارات التشخيصية واختيار الوقت الملائم لإجراء العملية، حيث يتم إعطاء المريض محلول صابوني خاص يغتسل به للتقليل خطر الإصابة بالالتهابات التي تُسببها الجراثيم والميكروبات، ثم تتم حلاقة الشعر من منطقة الصدر التي سيُجرى فيها الفتح، ومن ثم إعطاء المريض بعض الأدوية عن طريق الوريد حتى يتم إدخاله إلى غرفة العمليات وتخديره تخديراً كاملاً لإجراء العملية New York Heart Association (NYHA)

بعد جراحة القلب المفتوح يوضع المريض في وحدة العناية المركزة مدّة يوم أو أكثر حسب حالة المريض الصحية حتى يفيق من التخدير ويبدأ بالتحرّك، يتم إعطاء المريض بعض السوائل تدريجياً وبعدها يتم تزويد المريض بأوكسجين إضافي عن طريق قناع الأوكسجين عند الحاجة له، ثم يتم إخراج المريض من وحدة العناية المركزة ويبقى في المستشفى لعدّة أيام قبل العودة إلى المنزل، وخلال هذه الفترة يتم فحص سرعة قلب المريض، وضغط الدّم، والتنفّس. يسترجع المريض صحته تدريجياً، ويُنصح بعدم زيارة المريض خلال الأسبوع الأول من إجراء العملية، حيث يكون جسم

المريض حساساً لأي نوع من الجراثيم والميكروبات التي قد تُسبب له العدوى وبعض المضاعفات، الأمر الذي قد يؤثر على نجاح عملياته.

تختلف استجابة المرضى للعمليات حسب نوع المشكلة القلبية، والعمليات المُجرّاة، وقد يخبر الطبيب بعد الجراحة كيفية الاهتمام بالجرح، وتمييز أعراض الإصابة بالعدوى والالتهابات، وكيفية التعامل مع الآثار اللاحقة للعمليات ومضاعفاتها. يحتاج المريض إلى فترة نقاهة لاسترداد صحته، وقد يُصاب المريض ببعض الأعراض والمضاعفات بعد إجراء العملية، منها:

1. ألم في العضلات والصدر، وانتفاخ في القدم بعد العملية

2. احتباس البول والإمساك والاكنتاب والعصبية الرائدة، وفقدان الشهية، والشعور بطعم مر أثناء تناول الطعام، والقلق ليلاً وعدم الرغبة في النوم. وتُعد جميع هذه الأعراض طبيعية تبدأ بالزوال تدريجياً، حيث يرجع المريض إلى كامل صحته ويبدأ بالتعافي بشكل ملحوظ بعد الشهور الأولى من إجراء العملية،

ويُحدّد الطبيب حسب حالة المريض الصحية متى يستطيع الشخص ممارسة حياته بشكل طبيعي، مثل العودة للعمل، والقيادة، والقيام بالأنشطة البدنية دون أية مُعوقات. تستمر العناية بالمريض عن طريق إجراء فحوصات طبية دورية لمراقبة عمل القلب بعد الجراحة، وقد تتطلب حالة المريض تغييرات في نمط حياته، مثل: الإقلاع عن التدخين، وتغيير النظام الغذائي الخاص به، وممارسة النشاط البدني، والتقليل من التوتر والإجهاد النفسي

المحاضرة الثالثة

النشاطات وقواعد الأمان لممارسة التمارين بعد جراحة القلب المفتوح

عمليات القلب المفتوح من العمليات الكبرى التي يشعر المريض بعدها بالتعب والضعف ومن الممكن ان يستعيد نشاطه بالتدريج لذا ينصح المريض بالتحرك بعد رفع الاجهزة عنه وزيادة الحركة له تدريجيا خلال وجودة في المستشفى وكذلك عليه القيام بتمارين شد للذراع ويشجع المريض على القيام بالعناية الشخصية بنفسه مثل تناول الطعام وغسل الوجه وتفريش الاسنان . ويشجع ايضا على

ممارسة بعض التمارين والأنشطة الرياضية البسيطة خلال وجودة في المستشفى والاستمرار على التمارين بعد خروجه من المستشفى .

مرحلة الاستشفاء

- يمكن أن تستغرق هذه المرحلة بعد جراحة القلب المفتوح ما بين ستة إلى ثمانية أسابيع.
 - في هذه المرحلة الراحة في الفراش مهمة
 - يجب أن تلتزم بالمبادئ التوجيهية المحددة المقدمة من قبل الجراح أو طبيب القلب.
 - ومن المهم بنفس القدر أن تقوم بنشاط منخفض المستوى أثناء مرحلة الاستشفاء.
- حيث تعتبر الأنشطة العملية مثل المشي، حتى بوتيرة بطيئة، مهمة لتجنب الآثار السلبية لكل من الجراحة والراحة في الفراش (أي لمنع ضمور العضلات وتصلب المفاصل وفقدان التوازن والتنسيق)

بعد الجراحة ، يستغرق الشفاء التام من 4 إلى 6 أسابيع والبدء في الشعور بالتحسن. من الطبيعي أن :

- ❖ تشعر بألم في منطقة صدرك حول الشق
- ❖ ضعف الشهية لمدة 2 إلى 4 أسابيع
- ❖ لديك تقلبات مزاجية وتشعر بالاكتئاب
- ❖ لديك تورم في الساق التي تم أخذ الوريد منها في حالة ترقيع الشرايين التاجية
- ❖ تشعر بالحكة أو التميل أو الوخز حول الشقوق الموجودة في صدرك ورجلك لمدة 6 أشهر أو أكثر
- ❖ يجدون صعوبة في النوم ليلاً
- ❖ يكون ممسكاً من أدوية الألم
- ❖ لديك مشكلة في الذاكرة قصيرة المدى أو تشعر بالارتباك ("ذهول ضبابي")
- ❖ كن متعباً أو ليس لديك الكثير من الطاقة
- ❖ ضيق تنفس و ضعف في ذراعيك في الشهر الأول

إرشادات حول الأنشطة التي يمكن للمريض القيام بها ومتى

من 1 إلى 4 أسابيع بعد الجراحة - أنشطة خفيفة جداً

• المشي بوتيرة بطيئة

• غسل يديك وجسمك

• تمشيط شعرك أثناء الجلوس أو الوقوف

• الاستحمام بالماء الدافئ أثناء الجلوس أو الوقوف أثناء الاستحمام

• خلع الملابس

• الهوايات مثل لعب الورق والتطريز والعزف على البيانو والقراءة

4 إلى 6 أسابيع بعد الجراحة - أنشطة خفيفة

• المشي بوتيرة معتدلة

• رفع الأشياء التي يقل وزنها عن 10 أرطال (4.5 كجم)

• تحضير وجبات خفيفة. على سبيل المثال: تقطيع السلطة أثناء الجلوس

• غسل الأطباق وترتيب السرير وتنظيف المنزل بشكل خفيف مثل إزالة الغبار أو أعمال البستنة

الخفيفة (The British Association for Cardiovascular Prevention and Rehabilitation)

6 إلى 8 أسابيع بعد الجراحة - أنشطة معتدلة

• المشي فوق التلال شديدة الانحدار أو المشي بوتيرة أسرع

• حمل أشياء تزن من (13 كجم)

• تعليق الغسيل على الخط حتى يجف

• التنظيف بوتيرة بطيئة. على سبيل المثال: الكنس ، غسل الأرضيات ، الغسيل

• تسوق البقالة وحمل الحقائب

• عمل إصلاحات منزلية خفيفة. على سبيل المثال: تعليق صورة صغيرة أو البستنة

8 أسابيع بعد الجراحة - أنشطة شاقة

• المشي فوق التلال بوتيرة سريعة

- الغسل المكثف أو الدعك بذراعيك فوق كتفيك
- القيام بأعمال البستنة الثقيلة. على سبيل المثال: الحفر ، التجريف ، التجريف ، تقليم الفروع
- لعب التنس أو الركض أو السباحة أو ركوب الدراجات بوتيرة متوسطة أو سريعة

ملاحظة

في حالة حدوث ألم في الصدر أو ضيق في الصدر يجب على المريض التوقف عن الحركة

دليل النشاطات البيئية :

1. الموازنة بين الراحة والنشاط
2. النوم من 8 الى 10 ساعات خلال الليل مع اخذ قيلولة 20 الى 30 خلال النهار
3. الراحة بعد كل وجبة طعام او التعب
4. تستطيع تسلق السلم
5. لا تحاول شد جسمك عند ممارسة اي نشاط كرفع جسم ثقيل او فتح شباك محكم
6. الامتناع عن التدخين نهائيا
7. السفر بالسيارة مسموح بعد مرور اسبوع من خروجك من المستشفى اما السفر بالطائرة فهو بعد مرور اسبوعين من خروجك من المستشفى

المحاضرة الرابعة

الاغذية والادوية لمرضى القلب

أهمية اتباع نظام غذائي لمرضى القلب

يلعب النظام الغذائي دورًا مهمًا في صحة القلب ويمكن أن يؤثر على خطر الإصابة بأمراض القلب؛ حيث يمكن لبعض الأطعمة أن تؤثر على ضغط الدم والدهون الثلاثية ومستويات الكوليسترول، وكلها عوامل خطر للإصابة بأمراض القلب، وبالنسبة لشخص مُصاب بأحد أمراض القلب، فإن اتباع

نظام غذائي لمرضى القلب هو أحد أهم أركان العلاج جنبًا إلى جنب مع العادات الصحية الأخرى، والتي يمكن أن تُبطئ أو حتى تعكس جزئيًا تضيق شرايين القلب وتساعد في منع المزيد من المضاعفات.

نظام غذائي لمرضى القلب

هناك بعض الأطعمة المفيدة لصحة القلب نظرًا لاحتوائها على العناصر الغذائية المهمة مثل الفيتامينات والمعادن والدهون الأحادية غير المُشبعة وغيرها من العناصر المفيدة لصحة القلب؛ ولذلك يُفضل تناول هذه الأطعمة عند اتباع نظام غذائي لمرضى القلب، وتشمل هذه الأطعمة:

❖ الخضروات الخضراء. الحبوب الكاملة، بعض الفواكه، الأسماك الدهنية، وزيت السمك. الجوز. الفول. الشوكولاتة الداكنة. الطماطم. اللوز. الثوم. زيت الزيتون. الشاي الأخضر. كما أن هناك أطعمة أخرى قد تضر القلب أو تزيد من عوامل خطر الإصابة بأمراض القلب، ولذلك فمن المُفضل تجنبها عند اتباع نظام غذائي لمرضى القلب، وتشمل هذه الأطعمة:

❖ جوز الهند. الخضروات المقلية. الفواكه المعلبة، الفواكه المجمدة مع السكر المُضاف. الدقيق الأبيض المكرر، الخبز الأبيض وخبز الذرة، الفشار بالزبدة. الأطعمة عالية الدهون. صلصة اللحم. زبدة الكاكاو الموجودة في الشوكولاتة. زيوت جوز الهند والنخيل. الحليب كامل الدسم ومنتجات الألبان الأخرى. اللحوم الدهنية. ملح الطعام. التوابل مثل الكاتشب والمايونيز وصلصة الصويا. الأطعمة الجاهزة.

الأطعمة المُفضَّل تناولها في نظام غذائي لمرضى القلب

إن لمن الضروري التعرف على ماهية الأطعمة المُفضَّل تناولها في نظام غذائي لمرضى القلب، لضمان الصحة العامة، وفيما يأتي شرح لهذه الأطعمة وبيان فوائد كلٍ منها بالتفصيل:

الخضروات الخضراء إن الخضروات ذات الأوراق الخضراء مثل الغنية بالفيتامينات والمعادن ومضادات الأكسدة، كما تُعدّ مصدرًا كبيرًا لفيتامين ك، الذي يساعد على حماية الشرايين وتعزيز تخثر الدم بشكل مناسب، كما أنها تحتوي على نسب عالية من النترات الغذائية، والتي ثبت أنها تُقلل من ضغط الدم، وتُقلل من تصلب الشرايين، وتُحسن وظيفة الخلايا المبطنة للأوعية الدموية، وقد وجدت بعض الدراسات أيضًا وجود صلة بين زيادة

تناول الخضروات ذات الأوراق الخضراء وبين انخفاض خطر الإصابة بأمراض القلب بنسبة 16%؛ لذلك يُفضل زيادة تناولها عند اتباع نظام غذائي لمرضى القلب.

الحبوب الكاملة الحبوب الكاملة تحتوي على نسب أعلى من الألياف مقارنةً بالحبوب المكررة، مما قد يساعد في تقليل الكوليسترول الضار ويقلل من خطر الإصابة بأمراض القلب، بعض الفواكه مثل التوت والفراولة وتوت العليق وعنب العليق والعنب البري تحتوي على العديد من العناصر الغذائية المهمة التي تلعب دورًا هامًا في صحة القلب؛ فالتوت غني بمضادات الأكسدة .

زيت الزيتون يحتوي زيت الزيتون على مضادات أكسدة يمكن أن تقلل من خطر الإصابة بالأمراض المزمنة، كما أنه غني بالأحماض الدهنية الأحادية غير مشبعة، وقد أظهرت إحدى الدراسات أن أولئك الذين يتناولون زيت الزيتون يقل لديهم خطر الإصابة بأمراض القلب بنسبة 35%؛ لذلك يُفضل زيادة تناوله عند اتباع نظام غذائي لمرضى القلب.

ان اتباع نظام غذائي متوازن، مع الالتزام بالأطعمة قليلة الدسم الغنية بالألياف والحرص على تناول خمسة أجزاء من الفواكه والخضروات الطازجة يوميًا، وزيادة تناول الحبوب الكاملة وتقليل كمية الملح والسكر في النظام الغذائي. ممارسة التمارين الرياضية بانتظام. الحفاظ على وزن الجسم ضمن المعدل الطبيعي. الابتعاد عن التدخين. تجنب شرب الكحول. السيطرة على الأمراض التي تؤثر على صحة القلب، مثل ارتفاع ضغط الدم ومرض السكري.

الادوية بعد عملية جراحة القلب

الوضع الصحي للمريض بعد إجراء عملية القلب المفتوح يتطلب عناية خاصة، وتبعاً لهذه النقطة فإن استخدام الأدوية بعد عملية القلب المفتوح قد يكون ضروريا للحصول على نتائج جيدة من العملية، أو ممنوعاً لتفادي حدوث أية مشاكل صحية وضمان مرور العملية بأمان

والأدوية المستخدمة والموصوفة من قبل الطبيب بعد عملية القلب المفتوح تعمل على:

- تحسين كفاءة القلب
- زيادة الامداد الدموي للقلب عن طريق توسيع الشرايين
- منع تكون الجلطات الدموية و باستعمال أدوية السيولة

• الوقاية من النوبة القلبية

وينبغي الالتزام بالأدوية الموصوفة والتي تشمل

• ACE inhibitor

تعمل على تقليل الجهد على عضلة القلب وتوسيع الاوعية الدموية وبالتالي تقليل ضغط الدم

Beta blockers

يعمل عمل على تقليل الجهد على عضلة القلب وله اثار جانبية تتمثل بالارهاق

stains مضادات الدهون

يمكن لهذه المجموعة من الادوية ان تتحكم وتقلل نسبة الكولسترول والدهون بالدم مما يقلل فرصة الاصابة بنوبات قلبية وتصلب الشرايين

مسكنات الالم

تستخدم لتخفيف الالم بعد العملية وتوصف على شكل حبوب

المدرات

من ادوية المدررات هي (موديوريتك , لازكس- الدكتون) يكون بداية عملها 2 ساعة بعد أخذها ويستمر عملها من 6-8 ساعة .

ارشادات للمريض الذي يأخذ مدررات

١ - هذه الأدوية تسبب ادرار كثير فعليك تنظيم نشاطك عند اخذك للدواء .

٢ - تناول سوائل كافية .

٣ - هذه الأدوية تتعارض مع بعض الأدوية لذا لا تأخذ دواء غير موصوف لك من قبل

الطبيب وخصوصا الاسبرين ومضادات السكر .

4- تناول الدواء خلال النهار وذلك لتفادي ازعاجك في الليل (اذا كانت الجرعة لمرة واحدة

فتناولوها عند الصباح اما اذا كانت الجرعة لمرتين فتناول الدواء واحدة في الساعة الثامنة صباحا وواحد في الساعة الثانية ظهرا .

5- طعامك يكون غني بالبوتاسيوم و الحمضيات (البرتقال ، الليمون ، العنب ، والتفاح ، والأجاص ، والكمثرى ، والمشمش ، والموز ، واللحوم ، والسّمك ، ولحم الطيور ، والدجاج) .

مميعات الدم

وهو من العلاجات التي يتناولها المريض مدى الحياة وهو يزيد من وقت تخثر الدم والهدف منه هو المحافظة على وقت التخثر من ١٠٪ الى ٣٠٪ من وقت التخثر الطبيعي ويعطى عن طريق الفم والجرعة تنظم حسب ما يشير اليه التحليل الذي يجري للمريض وهو (وقت التخثر)

نصائح للمرضى الذين يتناولون مميع ادم.

- 1- اذا كان هناك أي علامات للنرف (مثلا النزف من اللثة خلال تفريش او بقع سوداء او زرقاء على الجلد او ظهور دم في الادرار او تغير لون الادرار الى غامق) فعليك التوقف عن اخذ الدواء وراجع طبيبك المعالج.
- 2 -لا تأخذ دواء غير موصوف لك من قبل طبيبك لان هذا الدواء ليس كباقي الادوية انه يتعارض مع أدوية كثيرة وخصوصا الاسبرين والفيتامين الذي في تركيبه فيتامين K وكذلك عدم تناول الكحول.

3- عند مر اجعتك لطبيب غير طبيبك اخبره انك تأخذ مميعات الدم

4- استعمل ماكينة حاقه كهر بائية عند الحلاقة لمنع تخدش الجلد .

5- استعمل فرشاة اسنان ناعمة عند تفريش الاسنان.

الديجوكسين

يتركز عمله على زيادة انقباضيه عضلة القلب وتقليل النبض

ارشادات للمريض

1- نظم جرعة الدواء بحيث المحددة تاخذ الدواء وعدم نسيانه واذا كنت تنسى تأخذ الدواء في اوقاته

اعمل ورقة لتأشير وقت اخذ الدواء

2 - تناول الدواء بعد الطعام.

3 - احسب نبضك قبل دقيقة على الاقل قبل اخذ الدواء واذا كان النبض ٦٠ مرة في الدقيقة

او اقل وغير منتظم توقف عن اخذ الدواء وراجع طبيبك مباشرة.

4- عند حدوث بعض العلامات والاعراض مثل عدم الشهية للأكل او الم او التعب او ضعف

عام بالعضلات او كسل او عدم انتظام النبض ايضا، توقف عن اخذ الدواء وراجع طبيب

مباشره. .

5- تأكد من طعامك يجب ان يكون قليل الملح خلال فترة اخذ العلاج (Michigan Medicine

. 2019)

الخلفية: توصف الرعاية الذاتية بأنها طريقة للتعامل مع أحداث الحياة والصعوبات الناتجة عن زيادة عملية الشيخوخة ، وتستلزم الرعاية الذاتية اتخاذ إجراءات معينة للتخفيف من الأعراض والحفاظ على الصحة وتحسينها. الرعاية الذاتية هي أحد الجوانب الأساسية الشائعة في علاج مرضى جراحة القلب

الأهداف: تقييم فعالية البرنامج التعليمي لإدارة الرعاية الذاتية على معرفة المرضى الذين يخضعون لجراحات القلب المفتوح الطرق: لتحقيق أهداف هذه الدراسة، تم استخدام دراسة كمية شبه تجريبية للتصميم مع ما قبل وما بعد الاختبار لكل من المجموعات المدروسة والضابطة. بدأ هذا البحث في مركزين للقلب في شهيد المحراب و مركز النجف لأمراض وجراحة القلب كانت المواقع المخصصة لجمع البيانات من 20 أغسطس 2021 إلى 10 سبتمبر 2022. وكانت عينة هادفة غير محتملة يتم اختيارها من المجموعة المستهدفة التي يتم استيفائها المعايير المحددة خلال فترة زمنية محددة. تتكون عينة الدراسة من (60) مريضاً يخضعون لعملية قلب مفتوح لديهم نفس معايير الشمول. ينقسم هؤلاء المرضى إلى مجموعتين: (28) مريضاً يعملون كمجموعة دراسة والآخر (32) مريضاً يعملون كمجموعة ضابطة ، وكان المرضى يزورون هذه المراكز بشكل متكرر للمتابعة والاستشارة. ووضع استبيان لتقييم المعارف المتعلقة بالرعاية الذاتية ؛ يتكون من ثلاثة أجزاء: الجزء الأول: الخصائص الديموغرافية والاجتماعية الديموغرافية للمرضى هذا الجزء يتعلق بجمع البيانات الديموغرافية التي يتم الحصول عليها من المريض من خلال ورقة استبيان مقابلة مثل [العمر، والجنس، والحالة الاجتماعية، ومستوى التعليم، والعنوان، والمهنة. عرضت الأسئلة الستة خيارات إجابة من نوع ملء. صلاحية حصل عليها 15 خبيراً، في حين تم الحصول على موثوقية قدرت بـ (0.794) للمعرفة المقبولة إحصائياً.

النتائج: معظم المشاركين في المجموعتين 14 (43.8) بين 50-59 سنة، 14 (43.8) في المائة) أكثر من 59 سنة، 18 (64.3 في المائة)، 17 (53.1 في المائة)، ذكور. فيما يتعلق بالحالة التعليمية 7 (25.0٪) كانت المدرسة المتوسطة في مجموعة الدراسة، في حين أن 11 (34.4٪) كانت مدرسة ثانوية في المجموعة الضابطة، وسجلت كلتا المجموعتين نسبة عالية 27 (96.4٪)، و 25 (78.1٪)، كانوا متزوجين. يبين أن الاختلافات بين الاختبار المسبق والاختبار اللاحق لعينة البحث بعد المشاركة في البرنامج التعليمي كبيرة للغاية عند القيمة (0.001) p، في حين أنه لا توجد اختلافات كبيرة مسجلة بين أعضاء المجموعة الضابطة.

استنتاجات: تظهر النتيجة تأثيراً جيداً للبرنامج التعليمي على معرفة المرضى.

التوصية: يجب أن يحصل المرضى الذين يخضعون لجراحة القلب على برنامج تعليمي ينفذ من قبل الممرضين قبل الجراحة، بالإضافة إلى تفسيرات للمخاطر المرتبطة بجراحة القلب طوال فترة الاستشفاء وفي المنزل و افتتاح مركز خاص بتأهيل امراض القلب من ضمن المراكز المشار اليها بالدراسة تكون مسؤوليتها متابعة المرضى وتدريبهم حول كيفية الرعاية الذاتية

3.1.Methodology:

This chapter will review the design of the study and all the steps and preparations performed to achieve it, starting with the design of study, administration of permission, choose of study setting, sampling, validity, pilot study, data collection methods, and statistical analysis of data .

3.2. Design of the Study :

To achieve the objectives of this study, a quasi-experimental design with pre- and post-testing for both the studied and control groups was employed. started from 20th August 2021 to 10th September 2022.

3.3. Administrative Agreements:

Before gathering the information written authorized permissions are obtained to conduct the study as shown by appendix (B).

1. The researcher obtains an agreement from the Nursing Science Department in College of Nursing / University of Babylon.
- 2.The premier consent was acquired from the development and training center in the MOH.
- 3.An formal consent was acquired from the Babylon health administration and AL-Najaf Alashraf from shaheed almehrab for cardiac disease and surgery and Al-najaf Center for cardiovascular Surgery and cardiac catheterization

3.4. Setting of the Study:

This study conducted in Shaheed Almehrab for cardiac disease and surgery and Al-najaf Center for cardiovascular Surgery and cardiac were

the designated sites for data collection. These centers were selected for the following reasons:

1. There are only two cardiac surgery center in middle Euphrates .
2. These centers received all adult patients with cardiac diseases who attend the clinics for treatment and follow up.
3. These centers have medical departments and cardiac care unit and outpatient department .
4. A large number of patients refer to the centers for treatment and consultation , allowing for data collection completion within a limited time period.
5. Cooperative staff for educational Program implementation .
6. Availability of physical requirements such as classrooms, chairs, tables, computers, data show, and lights during the implementation of the program.

3.5. The Study Samples :

Non-probability purposive sample selected from the target population who are met the specific criteria during specific time interval. A total sample of (84) patients who refer to the centers for treatment and consultation during the study period, participants must have met the study's requirements and consent to participation .10 patients for pilot study were excluded from the study .Ten patients for assessment need .32patients the study group selected from Shaheed Almehrhab for cardiac disease and surgery and thirty two were assigned to the control group selected from Al-najaf Center for cardiovascular Surgery and cardiac catheterization .four patients for the study group were

dropped out of the study for the following reasons : two patients who going to the ibn albitar hospital for doing surgery in this center ; two patients not complete the session of education program .Now a total are (60) patients in the study having the same inclusion criteria. Those patients are divided into two groups: (28) patients act as study group and the other (32) patients act as a control group the patients were frequent visits to these centers for follow up and consultation.

3.5.1. Inclusion Criteria

The criteria for the selection of the study sample were:

3.4.1. 1. Patients undergoing open heart surgery

3.4.1. 2. Patients who agreed to participate in the study.

3.4.1. 3. Patients more than 20 years old

3.4.1. 4. Arab nationality.

3.4.1.5. Oriented patients who did not experience any alteration in their degree of consciousness.

3.5.2. Exclusion Criteria

3.5.2. 1. patients who scored higher than 60% on the pre- test .

3.5.2.2. patients with previous cardiac surgery

2.6. Steps of the Study

The present study was conducted at the following step:

2.6 .1. Assessment of patients' need for an Educational program for self-care of cardiac surgery patients

To accomplish this phase of the study, we used a multiple choice questionnaire format used .

The objectives of this assessment was to assess the knowledge of the patients about self-care . Test applied to a sample consisted of (10) patients undergoing to open heart surgeries during the period from 12th November 2021 to 20th November 2021 in the outpatients department of cardiac surgery and cardiac care units.

The questionnaire which is related to assessing the patients need for educational program is composed of (10) questions for knowledge. Under the strict supervision of the investigator, each patient was given a time period between (10-15) minutes to answer the questions. The results of the assessment revealed that the majority of the patients (70%) have knowledge deficit in self care according to assessment result the patients' needs to construct an educational program for these patients in order to improve their knowledge toward self-care .

3.6.2. Construction of the Educational Program

The educational program was constructed based on the results of patients' needs assessment and on information gained from reviewing the relative scientific literature, previous studies.

3.6.3. Process of the program

The educational program consists of three key sections, and it was produced with respect to essential knowledge about Self-Care for patient undergoing open heart surgery .

The presentation of the educational program started from the period (from 25th January 2022 to 20th March 2022) between the sessions distributed according to the patients according dealing with them, each session take about (30-40minites), sample group session dependent related to the social with consider as protective measure related to covid 19 face mask provided the patient during their attendance to the session which used to presented in the center hall.

3.7.3. The study Instrument:

To evaluate the effectiveness of the educational program on the patients' was developed to assess the knowledge toward self-care ; it consisted of three parts:

3.7.4.Part: I: The Socio- demographic Characteristics of the patients :

This part is concerned with the collection of demographic data obtained from the patient by interview questionnaire sheet such as[age, gender, marital status, level of educations, address , occupation . The six questions offered response options of a fill in type (Appendix C).

3.7.5.Part II: Clinical Information :

This part was constructed to collect clinical information .It consisted of 5 questions :

1-Chronic disease(s)

2-Smoking

3- Previous hospitalization related cardiac disease

4- would you receive self-care education

5-Types of surgery

3.7.6.Part III. The questionnaire knowledge related to self care management of patient undergoing open heart surgeries

A questionnaire knowledge check list was constructed by the researcher to evaluate the patients knowledge .

The questionnaire checklist for patients was composed of 6 items related to self care management of patient undergoing open heart surgeries.

These items were rated according to correct and incorrect answer

the questionnaire consist of :

1. Related cardiac composed of 4 items

2. Preparation for surgery composed of 6 items

3. Patient Activity composed of 25 items

4. Problems it takes 4 to 6 weeks composed of 7 items

5. Nutrition and Medication composed of 9 items

3.7.7.Rating scoring

mean scores (1.5) due to((yes)) and ((no)) scales through two levels of assessment, under cut off point (1-1.5), and above cut off point (more than 1.5); and items based assessment based on the mean of scores (1.5) by two levels of assessment, poor (1-1.5), good (more than 1.5) for knowledge.

3.8. Group Assignment

3.8.1 Control Group

patients in the control group were participant in study without intervention

3.8.2. Study Group :

The study group received the same questioner as the control group; plus an educational program to increase the patients knowledge about self-care .

The program consisted of four session and was implemented for two weeks period in lecture room.

Each session was designed and scheduled for approximately (30-40) minutes a time for one day per week.

The study group during the giving educational program divided to small group for more than reasons, for maintaing patients safety

Teaching aids which were used during these sessions included (class-rooms, computer, data-show and discussions). All lectures of education program were taught in Education Classroom in Diabetic Center in Merjan Medical City .

First session:

This session contains an introduction to the program and it's important for the patients, general information about the self-care . this session deals the follows :

- 1- describe the program, its importance, and its goals.
- 2-Introduction of topic and explanation of the objectives of the study.
- 3-General over review of the heart .
- 4-function of the heart .
- 4-Anatomy and physiology of the heart
- 5- Heart pulse

Place and time of lecture

Education Classroom in Diabetic Center in Merjan Medical City and persist for 30 minutes at least .

Learning devices

that are used in all sessions are:

- Lecture with discussion
- Poster with pictures
- Data show slides

Second session:

The following topics were performed:

- 1- Brief about open heart surgeries and its types

Place and Time of lecture

Education Classroom in Diabetic Center in Merjan Medical City and persist for 30 minutes at least .

Learning devices

that are used in all sessions are:

- Lecture with discussion
- Poster with pictures
- Data show slides

Third session:

The following topics were performed:

Activities and safety rules for exercising after open heart surgery

Place and Time of lecture

Education Classroom in Diabetic Center in Merjan Medical City and persist for 30 minutes at least.

Learning devices that are used in all sessions are:

- Lecture with discussion
- Poster with pictures
- Data show slides

Fourth session:

The following topics were performed:

Nutrition and medication for heart patients

Place and Time of lecture

Education Classroom in Diabetic Center in Merjan Medical City and persist for 30 minutes at least.

Learning devices that are used in all sessions are:

- Lecture with discussion
- Poster with pictures
- Data show slides

3.9. Validity of the Questionnaire and the Program :

"The content validity of the program and the study instruments knowledge test and practices were determined by the panel of 18 experts, who had more than five years' experience in their field to investigate the content of the educational program and questionnaire of self-care (Appendix A). Also, experts distributed for (7) experts from the college of Nursing / University of Baghdad ,(4) experts from the college of Nursing / University of Babylon ,(2) experts from the University of Kufa , (2) expert from the college of Nursing / University of Karbala, (2) expert from the Alzahrawi university college and last one expert from Ministry of Health. Moreover, the mean of experience years for expert panel is 25 years. Those experts were asked to review the instruments; the program for content, clarity, relevancy, and adequacy; some items were excluded and others were added after a face-to-face discussion with each expert and after the instrument was considered valid after taking all

the comments and recommendations in consideration. 100% of experts agreed upon the final draft.

3.10. Pilot Study :

In order to determine the reliability of the education program and study instruments, A pilot study was carried out on (10) patients who were randomly selected from shaheed almehrab during the period from 10th December 2021 to 10th January 2022. The participants were selected according to special inclusion criteria for test collected after obtaining the participant agreement it takes about 8 days. 10 days later retest was performed up on the same participants.

3.10.1. The Purpose of Pilot Study :

1. To find out whether the contents of the program were clear and understandable by the participants of the study.
2. To estimate the time required for answering each question.
3. To determine the reliability of the questionnaires.

3.11. Reliability:

Dependability, consistency of the variables which included in the study questionnaire was measured by using correlation coefficients, it's an important indicator of an instrument's quality. The pilot study performed as a small and primary study before starting the study procedures in order to assess the stability of the instrument which is prepared to collect the data. The results of the pilot study were statistically managed and the results revealed that the reliability which estimated as (0.794) which is statistically acceptable.

3.12 Implementation of the Program :

The Implementation was carried out in two cardiac centers in Al-najaf Center for cardiovascular Surgery and cardiac catheterization in al najaf governorate and shaheed al mehirab cardiac center in babile governorate started from 25th January 2022 to 20th March 2022.

The implementation of the program which was started after complete all an formal consent was acquired from the Babylon health administration and AL-Najaf Alashraf from shaheed almehrab for cardiac disease and surgery and Al-najaf Center for cardiovascular Surgery and cardiac catheterization for Cardiac .

The study group during the giving educational program divided to four small group for more than reasons, for safety patients from corona virus, than need to personal distance and more infection control.

First group

First session is presented at 6th February 2022 for patients coming to out patients department in the shaheed almehrab for cardiac disease and surgery . This group consists of 8 patients . The lecture started at 9:30 am and take about (35) minutes. Break time was given. Second session started after break takes about (40) minutes. Third session is presented in the next week at 13th February 2022 the session started at 9:40 am and take about (35) minutes. Break time was given. The fourth session started after break and take about (45) minutes . post-test collected after the end of the fourth session .

Second group

First session is presented at 17th February 2022 for patients coming to out patients department in the shaheed almehrab for cardiac disease and surgery . This group consists of 8 patients . The lecture started at 9:30 am and take about (40) minutes. Break time was given. Second session started after break takes about (35) minutes. Third session is presented in the next week at 24th February 2022 the session started at 9:40 am and take about (35) minutes. Break time was given. The fourth session started after break and take about (40) minutes . post-test collected after the end of the fourth session .

Third group

First session is presented at 27th January 2022 for patients coming to out patients department in the shaheed almehrab for cardiac disease and surgery . This group consists of 6 patients . The lecture started at 9:30 am and take about (40) minutes. Break time was given. Second session started after break takes about (35) minutes. Third session is presented in the next week the session started at 9:30 am and take about (43) minutes. Break time was given. The fourth session started after break and take about (35) minutes . post-test collected after the end of the fourth session .

Fourth group

First session is presented at 13th march 2022 for patients coming to out patients department in the shaheed almehrab for cardiac disease and surgery . This group consists of 6 patients . The lecture started at 9:40 am and take about (40) minutes. Break time was given. Second session started after break takes about (35) minutes. Third session is presented in the next week 20th march 2022 the session started at 9:00 am and take about (45) minutes. Break

time was given. The fourth session started after break and take about (35) minutes . post-test collected after the end of the fourth session .

3.13 Statistical Analysis:

The SPSS (Statistical Package for the Social Sciences) version 26.0 application Statistical analysis system and Excel program are used to analyze the data. The following statistical data analysis techniques were utilized to investigate and evaluate the study's findings:

3.14. I. Descriptive statistic includes the following methods:

- a- Percentages and frequencies
- b- Tables and figures (Charts and Bar).
- c- Mean score and standard deviation.

3.14. II. Inferential data analysis:

These were used to accept or reject the statistical hypotheses, which included the following:

Chi-Square test: It examines the deviation between observed and expected values. It is determined by calculating the difference between the frequencies actually seen in a sample data set and the probabilistically expected frequencies. Reliability of the questionnaire estimated by .

- a- Testing the independency and measuring the association between the variables.
- b- Analysis of variance (ANOVA).
- c- P- value.

$$\text{Chi-square Test: } \chi^2 = \sum_{i=1}^k \left[\frac{(o_i - e_i)^2}{e_i} \right]$$

Independent samples t-test: comparing the means of two samples drawn at random from distinct populations. It determines the probability of obtaining these population means under the null hypothesis that population means are equal. It utilized to find out the association between patients knowledge and self-care with (gender and other variable). (gender and other variable).

T-test (paired sample t-test) : to quantify the mean difference in patient responses between two measurement levels (pre-test and post-test).

Discussion:

Results of self care education program application toward patients undergoing to open heart surgery are discussed in this chapter. The data was collected using knowledge for patients in middle Euphrates governorate , and the data collected was analyzed and reported in accordance with the study's objectives. The education session is intended to give patients with sufficient knowledge in self care .

Patient educational process relevant to the patient's level of understanding, comprehensive, delivered at the appropriate time, as well as designed to understand can be one of the prerequisites for the patient to get some inspiration to change attitudes, increase knowledge, practice, motivation and awareness of the importance of co-responsibility to make decisions about medical treatment, the patient's behavior or change of habits. (Bēta, 2014 & Koren & Sharaf, 2016).

Interpretation and discussion of results obtained from the current study were presented in three main sections; the first section described the patients' demographic data and medical history of the study subjects. The second section was concerned with patients' level of knowledge.

socio-demographic characteristics

Table (1) which presented the results related to the demographical characteristic of the study sample shows that most of participants in both groups 13(43.8) were between 50-59 age group , 14 (43.8%) were more than 59 years age group,. This result supported by study carried out by (Lemaire A, et al 2020) titled as “The impact of age on outcomes of coronary artery bypass grafting” , the finding revealed that most of the participants A total of 67,568 patients were identified who were ≥ 70 years old and underwent

CABG. Most of the patients were reviewing to out patients department in cardiac center were more than 50 years age group .

This mean age of the present study may be due to aging which is an un-modifiable risk factor for CAD. The WHO reports that the principal cause of death of people over 65 years is CAD, and CAD risk increase as age increases. This may be due to increased life stressors even among people. This result is in accordance with Leathy &Jada(2015), Moreover a study conducted by Amaal F et al, (2017) revealed that the average age of the studied sample was ranged between 50 and 59 years

Regarding gender, the present study clarified most of the study and control group were males. This finding is in line with Mohammed (2014) who found that more than half of both the study and control group patient were males. Also the result of the present study is supported by Abdeaal, et al (2013) & Amin (2015) who indicates that 64% of coronary artery disease cases were men. On the other hand, this result may be not in line with Beltrame, et al (2012) who reported that CAD is the leading cause of mortality for both adult males and females alike worldwide. Although the initial manifestation of CAD is delayed in females by about ten years compared to males, there is no abrupt increase in CAD mortality rates for females immediately following menopause but a progressive increase over subsequent years.

Relation to marital status, the findings of the present study represent that all the patients were married. this result was agree with a study which determined that most of their patients in their study were married .The finding of present study's supportive evidence is available in the study reported that CAG was the most frequent surgery and cardiac valve surgery was increasingly performed on the patients (Ali, S., & Jacoub, S. 2018).

Regarding residence, the current study showed that more than half of studied patients were from rural areas, this may be due to lack of health care provided, take more time to diagnosed, and low educational level in rural area. This result was in the same line with Kapwata & Manda, (2018)) who found that, when increase distance from health care facilities, the cardiovascular disease was increased and morbidity and mortality also worsen. Moreover our findings were in the same line with another study conducted by Amaal F et al, (2017)) who revealed that majority of the studied patients were from rural area.

Regarding occupation status, the finding of the present study revealed that, about near half of studied patients were employed; this may be due to increase job strain and increase stress of lack income. This was in accordance with Ferrario et al, (2017) Who reported that, higher coronary heart disease incidence rates was found among manual workers.

Regarding education the present study revealed that the minority of study population had bachelor degree. The result of the present study is supported by Tillmann, etal (2018) who concluded that low education is a causal risk factor in the development of coronary heart disease.

Also the result of present study is supported by Chair, etal (2012) who mentioned that 62.8% of the participants in his study received no education or were educated at a primary school level. This result may ascertain that decreasing educational level may be a cause of the unsatisfactory level of knowledge of the patients. And increasing educational level should increase satisfactory level of knowledge.

Regarding chronic diseases history of studied patients, the results of the present study showed that, all of the studied patients had heart disease and

near two third of studied patients had hypertension and diabetic. This may be due to poor treatment adherence, genetic factor or unhealthy life style. This was in the same line with **Lancellotti et al, (2017)** who reported that, most of subjects complain of CHD and minority valvular heart disease. Moreover a study conducted by Bassand et al, (2018) found that, about two thirds of patients had hypertension and diabetic. Also, American Heart Association (AHA) (2017) which reported a positive association between hypertension and insulin resistance as when patients have both hypertension and diabetes, which is a common combination, their risk for cardiovascular disease doubles. This demonstrates the importance of prevention of hypertension and diabetes occurrence, and also demonstrates the beneficial of hypertension and diabetes control in secondary prevention of CAD.

Concerning smoking, the result revealed that more than half of study group patients had a history of smoking. The result of the present study is supported by Mohammed (2014); Amin (2015); Byrne & Espnes (2016) & Rosch & Dimsdale (2017), who mentioned that Cigarette smoking pose an established and potent risk for CVD. Also, Law & Wald (2013) who studied "Environmental tobacco smoke and ischemic heart disease" and evidenced the presence of a significant effect of tobacco smoke exposure in causing ischemic heart disease. This result ascertains that smoking is a modifiable risk factor of CAD. But the control group 62.5% were no smoking this result due to the near half of patients participants in study were female gender .

Table (3,4) presents the statistical analysis of patients undergoing to open heart surgery knowledge about heart anatomy , the general mean and SD for interventional group (1.210 ± 0.059) in their pre-test, while significant change is clearly presented in the following post-test (1.905 ± 0.169). this indicate

significant improvement in patients knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.21 ± 0.059) in their pre-test, while no significant change is presented in the following post-test (1.252 ± 0.441) and shows a highly significant difference between the pre-test and post-test of the study sample after participated in the program at p-value (0.001).

the differences between study and control groups related to their information toward heart surgery the pre –test and post-test, revealed that there were significant difference between the study and control groups related to their information to cardiac surgery thought the pre-test and post –test . This result supported by study carried out by (Arthur,H., Danicls,etal 2013).

Table 5,6 This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about preparation for surgery , the general mean and SD for interventional group (1.168 ± 0.369) in their pre-test, while significant change is clearly presented in the following post-test (1.87 ± 0.085). this indicate significant improvement in patients knowledge regarding preparation for surgery after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.140 ± 0.356) in their pre-test, while no significant change is presented in the following post-test (1.118 ± 0.315) and this table shows a highly significant difference between the pre-test and post-test of the study sample after participated in the program at p-value (0.001), and no significant difference between the pre-test and post-test of the control group

The finding of present study's supportive evidence is available in the study that examine the effect of a multidimensional preoperative preparation or intervention on the patients with cardiac surgery .They found that during the waiting period, the patients received exercise training, education was offered to the patients to improve their outcome (Emre K. 2017)

Moreover, The finding of present study's supportive evidence is available in the study that reported the effects of psychological preparation for surgery can facilitate recovery thus psychological preparation supplies information which reduced uncertainty (Smith A, Fortin A, Dwamena A ,etal2013)

Table 7 This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity and Movement and walking In-hospital, the general mean and SD for interventional group (1.297 ± 0.054) in their pre-test, while significant change is clearly presented in the following post-test (1.84 ± 0.044). this indicate significant improvement in patients knowledge regarding activity after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.207 ± 0.053) in their pre-test, while no significant(1.235 ± 0.020) change is presented in related post-test.

The finding of present study's supportive evidence is available in the study Effect of cardiac rehabilitation on functional outcomes after coronary revascularization (Pasquali SK, Alexander KP,etal 2013) reported improved physical functioning and adoption of secondary preventive measures in patients with coronary disease who participated in cardiac rehabilitation.

Table 8 This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 1 to 4 weeks after

surgery , the general mean and SD for interventional group (1.125 ± 0.107) in their pre-test, while significant change is clearly presented in the following post-test (1.88 ± 0.058). this indicate significant improvement in patients knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.160 ± 0.103) in their pre-test, while no significant change is presented in the following post-test (1.25 ± 0.107).

The reported mean life expectancy a week after the intervention was significantly higher in the intervention group (176.76 ± 43.38) compared to the control group (159.50 ± 41.87) ($P=0.035$). They also reported the mean score of life expectancy (post- intervention) had significantly increased in the intervention group compared to pre-intervention (mean difference of 13.35 ± 14.07 , $P<0.001$). Similar to our study, their participants were mainly male patients (63%) and had an undergraduate degree (67%). However, they only conducted three sessions of intervention with training

This result reported by (Salimi T, Tavangar H, Shokripour S, et al 2017).

Table 9 this table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 4 to 6 weeks after , the general mean and SD for interventional group (1.130 ± 0.104) in their pre-test, while significant change is clearly presented in the following post-test (1.91 ± 0.110). this indicate significant improvement in patients knowledge regarding heart anatomy after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.21 ± 0.059) in their pre-test, while no significant change is presented in the following post-test (1.25 ± 0.441).

Table 10 This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Patient Activity 4 to 6 weeks after

surgery , the general mean and SD for interventional group (1.108 ± 0.059) in their pre-test, while significant change is clearly presented in the following post-test (1.83 ± 0.063). this indicate significant improvement in patients knowledge regarding Patient Activity after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.131 ± 0.171) in their pre-test, while no significant change is presented in the following post-test (1.143 ± 0.156).

This result accepted with study of (Macchi, Claudio MD; Fattirolli ,etal 2007) that reported in the end of the rehabilitation program, more than 90% of patients showed significant increases in walking distance, and during the follow-up, no significant difference was found with regard to mortality, nonfatal events, functional ability, or control of cardiovascular risk factors, independent of rehabilitation timing

Table 13 this table presents the statistical analysis of patients undergoing to open heart surgery knowledge about Problems it takes 4 to 6 weeks that consider normal

, the general mean and SD for interventional group (1.18 ± 0.071) in their pre-test, while significant change is clearly presented in the following post-test (1.74 ± 0.049). this indicate significant improvement in patients knowledge about Problems it takes 4 to 6 weeks that consider normal after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.18 ± 0.071) in their pre-test, while no significant change is presented in the following post-test (1.16 ± 0.125).

Table 15 This table presents the statistical analysis of patients undergoing to open heart surgery knowledge about nutrition and medication , the general

mean and SD for interventional group (1.13 ± 0.072) in their pre-test, while significant change is clearly presented in the following post-test (1.91 ± 0.169). this indicate significant improvement in patients knowledge regarding nutrition and medication after their attendance to the educational program session, while the results shows that the general mean and SD for control group (1.21 ± 0.059) in their pre-test, while no significant change is presented in the following post-test (1.25 ± 0.441).

The finding of present study's supportive evidence is available in the study Role of nutrition support in adult cardiac surgery: a consensus statement from an International Multidisciplinary Expert Group on Nutrition in Cardiac Surgery

Targeting preoperative optimization of the nutritional state may result in improved postoperative outcome. Structured scoring tools should be validated and implemented as part of preoperative assessment and to monitor the efficacy of nutrition therapy and In identified patients, the feasibility and clinical significance of early-initiated postoperative nutrition support needs to be evaluated (toppe C, Goetzenich etal 2017)

Table (4.17) This tables show simple significant changing in overall mean of score and stander deviation for interventional group between pretest, posttest with good assessment. while there is no change in mean of score for control group with poor assessment. This result due to increase the knowledge from intended to the educational program .

Table (4.18) This table shows a no significant difference between the pre-test and post-test of the control sample at p-value (0.294). This result due to the patients not exposed to the educational program .

Table (4.19) This table shows a highly significant difference between the pre-test and post-test of the study sample after participated in the educational program at p-value (0.001). The result in table 4.17,18,19 supported by (Mahnaz Rakhshan, etal 2020) .

There was no significant difference in the mean score of knowledge between the control and intervention groups before the intervention. However, a significant difference between the groups was observed post-intervention ($P < 0.001$). The results showed a significant difference in the mean score of knowledge between pre-intervention (182.36 ± 23.07) and post-intervention (216.94 ± 23.05) in the intervention group ($P < 0.001$), whereas the difference in the control group was not significant ($P = 0.095$). The measured post-intervention effect size was high (1.05).

Table 4.20 shows that there were not significant differences between male and females in all items of patients' information related to cardiac surgery, such results provide an evidence which is supported study found that there were no significant differences . Such issues also are supported by study reported that there is no statistically significant effect of preoperative information to patients according to their gender on their stress of cardiac surgery. This result supports the scientific cause of stress which is associated with sympathetic nervous activities.)Also this result is in line with the study stated that preoperative teaching which contributes to meet patients information needs would help in lowering stress .Nevertheless, the fact of gender difference in physiological responses to stress deserves attention in the preparation of patient for surgery.

In the point of view, the researcher believes that the undergoing cardiac surgery is very stressful experience for many

patients; but there is usefulness and effectiveness of information prior surgery through the result of differences with educational level. The finding of present study's supportive evidence is available in the study reported the decrease the level of knowledge by almost all the cardiac surgical patients during preoperative period of heart surgery; but preoperative preparation can help patients to be prepared for surgery and reduce complication of surgery especially in the postoperative period

Overall, the current study findings shows that the good influences of educational sessions on the patients knowledge these findings support the research hypothesis of the study there is significant effective of the educational program on the patient self care knowledge which it rejected the null hypothesis .

6.1. Conclusion:

- 1- Most of participants in both groups were between 50-59 age group were male. Related to educational status most were intermediate school in study group, , while more were secondary school in the control group, Both group recorded high percentage were married .
- 2- The patients who participate in the study group recorded high percentage were unemployment , while the result of the control group patients show most were house wife. Both group recorded were rural as residency area
- 3- Related to clinical information for (60) patients, most patients were participant with study group suffer from diabetic mellitus and more patients from control group suffer from diabetic and hypertension as chronic disease ,both group the high percentage were not smoking . previous hospitalization related heart diseases both group were 2 admission to hospital , self care education the high percentage of control and study group not receive education about self care .the both group were undergoing to valvular surgery related to types of surgery.
- 4- The comparison between the responses of both groups in their first pre-test recorder low mean score and shows a highly significant difference between the pre-test and post-test of the study group after participated in the program at p-value (0.001).
- 5- No significant difference between the pre-test and post-test of the control sample at p-value (0.294).
- 6- Highly significant difference between the pre-test and post-test of the study sample after participated in the educational program at p-value (0.001).
- 7- No significant association between patients knowledge and demographical data except the previous hospitalization for the control group

and no significant association between patients knowledge and demographical data for the study group

8- The finding shows positive effect of the educational program on the patients knowledge which act a strong reason to accept the alternative hypothesis.

6.2. Recommendations:

1. Implementation of the educational program for patients undergoing cardiac surgery performed by nurses before surgery, as well as explanations of the risks associated with cardiac surgery throughout hospitalization and at home.
2. Establishing rehabilitation unit in cardiac centers , which may caring out the responsibilities of patients and training to enhance self care and improve their quality of life.