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Nurses Knowledge Related to Communicable Disease Control Precautions

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By

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Supervised

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وزارة التعليم العالي والبحـث العلمـي
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إلى

مجلس كلية التمريض- جامعة بابل

كجزء من متطلبات نيل درجة الدكتوراه فلسفه في التمريض

بإشـــــــراف

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مارس ٢٠٢٣ م

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وننزل من القرآن ما هو شفاءٌ ورحمة

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Supervisor Certification

I certify that this dissertation, which is entitled " **Nurses Knowledge Related to Communicable Disease Control Precautions**",was prepared under my supervision at the College of Nursing, University of Babylon in partial fulfillment of the requriements for the Doctorate Degree of Philosophy in Nursing.

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Dedication

" Who Ever Has Something To Teach Us, let him come Forword and Contribute, We Learn From Our Friends And From Our Foes "

"Nightingale

With great respect a dedicate this work to my dear spirit of my father & to the soul of my dear aunt who had dreamed to see me in this success.

My lovely mother for her full support , understanding and tolerance of my busy academic schedule during the whole course of my Doctorate study

All those who participated in this study

To My Brother and Sisters

With love and all respect

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Abstract

Early detection and prompt response are crucial measures to prevent and control outbreaks. therefore, a crucial part of system-wide quality assurance is prevention, for this reason.

This study aims to nurses knowledge related to communicable disease control Precautions. A descriptive design study conducted on a non-probability (convenient sample), selected from (3) hospitals government from AL-Hilla City , through a comprehensive review of the relevant literature and previous studies, a questionnaire was prepared for the purpose of the study.

Sample was carried – out in order to achieve the stated goals and Identify socio-demographic characteristics of the study sampling starting from the period 15th September 2020 to 20th May 2022. In order, to determine whether the study objectives were achieved or not, two statistical approaches were used for analyzed the data of the research. Pilot study was conducted to test the reliability of the study, questionnaire that was used to assess the study variable. Selected (20) from nurses who had the same criteria as the study sample was selected randomly to participate in the data collection. Sampling was performed by convenient sample, which consists of (200) workers in the epidemiological wards, were selected as randomly. Data were collected through the self- report method was constructed .

The findings indicated that the organizational structure suffers from a lack of infrastructure, a shortage of employees, and a lack of financial funding commensurate with the unit requirements

According to the study results indicate, most nurses participated in communicable disease training courses and had little knowledge and the majority of them did not participate in these courses, the majority of whom are male.

The study concluded that the majority of the staff did not participate in the training courses for the communicable diseases of both gender and they have little knowledge and the reason is the lack of continuous training courses for medical personnel about the program

The study recommended application and training for national programs communicable disease control and continuous medical education program for all staff is the most crucial point.

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List of Abbreviation/Symbosis

Acronym	Meaning
ABHR	Alcohol-Based Hand Rub
AIDS	Acquired ImmunoDeficiency Syndrome
AMR	Antimicrobial Resistance
APHA	American Public Health Association
BC.	Before Christ
BLS	Bureau of Labor Statistics
CDC	Centers for Disease Control
CDSS	Communicable Disease Surveillance System
CHWs	Community Health Worker's
DOH	Directorate of Health
EPDs	Epidemic Prone Diseases
et. al	Et. alia(others)
HAIs	Healthcare- Associated Infections
HCFs	Infection in Healthcare Facilities
HCID	High Consequence Infectious Diseases
HCWs	Health care workers
HH	Hand Hygiene
HIS	Health Information System
HIV	Human Immunodeficiency Virus
HR	Human Resource
HRFHc	Human Resources for Healthcare
HRM	Human Resources Management
HRSA	Health Resources and Services Administration

IOM	Institute of Medicine
IPC	Infection Prevention and Control
IRCS	Iraqi Red Crescent Society
LMIC	Low- and middle-income countries
M&E	Monitoring and Evaluation
MOH	Ministry of Health
No.	Number
NTP	National Tuberculosis Control Program
OSH	Occupational Safety and Health
OSHA	Occupational Safety and Health act.
OSHC	Occupational Safety and Health Council
P.P	Paper Page
P.V	Probability Value
PH	Public Health
PHC	Primary Health Care
PHCC	Primary Health Care Center.
PPE	Personal Protective Equipment
QI	Quality Improvement
QA	Quality Assurance
QAPI	Quality Assurance and Performance Improvement
SOPS	Standard Operation Procedure
Std.	Standard
SP	Standard Precautions
SPSS	Statistical Package of Social Sciences

SMW	Solid Medical Waste
SWM	Solid Waste Management
TB	Tuberculosis
TQM	Total Quality Management
TBP	Transmission Based Precautions
Unicef	Unicef Nations International Childern's Emergency Foundation
Vol.	Volume
WHO	World Health Organization
ZQAP	Zambia Quality Assurance Program
%	Percentage
≤	Less than or equal
≥	More than or equal
Σ	Sum
χ^2	Chi-Squared

Chapter One

1.1. Introduction

Communicable disease can be defined as an ailment due to a pathogen or its toxic product which arises through transmission from an infected person,adiseased animal or a contaminated inanimate object to a vulnerable host. Communicable disease control and prevention relies on a thorough understanding of the causes determining transmission, about (2.7) million neonatal deaths each year, infectious illnesses continue to offer a significant barrier to newborn and child health, with infection-related infectious disorders accounting for (23%) of all neonatal fatalities (Candel, 2019).

Although infection is most prevalent in patients upon admission, health care workers also act as potential vectors for pathogenic agents, healthcare workers (HCWs) are at increased, risk of occupationally acquired infections transmitted from both blood-borne pathogens. The COVID-19 pandemic has had a wide range of effects on people's health and quality of life. Hand hygiene and social separation are two current preventative strategies,epidemic control and monitoring of contagious diseases are successful systems that have enabled Iraq to effectively control different epidemics such as the current polio virus outbreak (Aung, 2020) .

The Centers for Disease Control (CDC) recommends mitigation strategies that schools can adopt to reduce the risk for transmission of SARS-CoV-2, the virus that causes coronavirus disease 2019 (COVID-19). The centers for disease control and prevention (CDC) has listed travel concerns(e.g.transportation, lodging and activities) as well as

potential risk, health care organizations should study CDC resources to determine (HCW) travel expectations and the course of action (e.g., testing, 14-day quarantine) for Health care worker who participate in non-essential travel(Hussar, 2020) .

The best control of communicable diseases necessitates knowledge of incubation and contagion periods, which can be used to determine whether operative measures such as temporary seclusion from the community to avoid future exposure are necessary health promotion aims to reduce mortality by assuring timely case treatment and to reduce morbidity by providing clean drinking water adequate sanitation and health promotion (along with improved hygiene and food safety) to local communities (Alabass & Raad, 2021) .

All of these health-care stakeholders are working by the same goal: ensuring the highest quality of care for every patient while keeping social concerns like cost control and accessibility out of sight.Centers for Disease Control and Prevention (CDC) recommend that everyone should use standard precautions whenever come into contact with body fluids. Nurses are the backbone of the modern medical infrastructure and play a significant role in patient care and counselling policy implementation service coordination and disease prevention. Nurses have a role in every department in a hospital from surgery to outpatient services dietetics safety first aid medical record management and community outreach such is the importance of nurses that a modern hospital will cease to function without them (Kang, 2022).

Chapter One : Introduction

Ever since the establishment of the modern profession of nursing in the late 1800s by Florence Nightingale,this medical community has grown by leaps and bounds to become an indispensable part of any healthcare setting. It is its first line of defence for hospitals and clinics during regular days and in times of crisis. The environmental theory developed by Florence Nightingale in the second half of the nineteenth century in England, has focused primarily on the environment, interpreted as all external conditions and influences that affect the life and development of an organism, that are able to prevent, suppress or contribute to disease and death . The disease is considered, in this theory, a restoring health process and the nurse's function is to balance the environment, in order to save the patient's life energy to recover from the disease, prioritizing the delivery of an stimulating environment for the development of the patient's health. Nightingale believed that providing a suitable environment was the difference in the recovery of patients and in this perception underlies the environmentalist theory. Thus, Nightingale became known for her actions that have brought innovative results to treatment of patients (Medeiros,2015) .

Nightingale initiated seemingly disparate wide-ranging projects to improve patient centered care, competence of the staff, and the healthcare environment. She surveyed the organization’s human resources, determined the members for the interdisciplinary teams and assigned them accordingly to set projects in motion to support the wellbeing of the patients. Nightingale emphasized that the person had a key role in his/her own health and that health was a function of the interaction between person,nurse and environment.She indicated that proper use of fresh air, light,warmth,cleanliness,quiet had least expense in terms of vital

power,she believed in a “healthy house” in order to prevent illness and promote wellness two of the elements to a healthy house that were emphasized in her theory were fresh air and sunlight. Health of houses as she prescribed were the administration of each or all of these: ventilation of patients’ rooms and the larger environment light cleanliness punctuality eating of food and interpersonal mileau (Matthews, 2019) .

Many infection control measures such as appropriate hand hygiene and the correct application of basic precautions during invasive procedures are simple and of low-cost, but require staff accountability and behavioral change, in addition to improving staff education reporting and surveillance systems to utilize these precautions, the human element plays an important role in increasing or decreasing the chances of catching HCAI. Therefore, adequate nursing staff is necessary because a higher patient-to nurse ratio increases the risk of nosocomial infection (Fashafsheh, 2015) .

Health sector effects of communicable disease occurrences are frequently the simplest for ward to estimate or at the very least tally retroactively. Nevertheless, for novel or reemerging pathogens with unexpected clinical outcomes, predictions can be difficult and cost estimates are frequently 1imited to short-term medical spending health burden or mortality measuring quality and safety achievements from health care providers’viewpoints on those aspects of care that need to be improved can contribute to achievement of higher quality care (Smith, 2019) .

The condition is more likely to develop in older persons with comorbidities, and can result in severe and even deadly respiratory,

diseases, according to the epidemiology of the novel coronavirus (SARS-CoV-2),which was discovered in 2019, investigational agents are now being tested in studies and trials for the successful management of the condition,coronavirus is also one of the microorganisms that cause human respiratory tract infection (Ahmed, 2020) .

Used standard precautions by healthcare personnel has been identified as an effective method of preventing and controlling healthcare-associated illnesses.These precautions safeguard not just the patient, but also the medical personnel and the environment infectious diseases are caused by pathogenic microbes such as bacteria, viruses, parasites, and fungus. the diseases can be passed from one person to another either directly or indirect-ly through fluid exchange or exposure to vectors, or through the environment (Hussein, 2022).

Compliance with the evidence-based isolation precaution guidelines is essential to prevent the spread of infectious diseases among hospitalized patients and its ensuing complications. Despite this epidemiological transition, researchers believe in the resurgence of infectious diseases. Thus infectious diseases continue to be a main public health concern and problem. Healthcare workers (HCWs) compliance and mainly nurses by following the infection control precautions are known as effective means to prevent and control diseases transmission not only among patients but also among HCWs and to the environment. The nurses are the key members of providing continuous care for patients. Their knowledge and adherence to all measures associated with disease transmission prevention and control are considered as a top priority (Ramadan, 2021).

In this context the application of the (TBP) demands microbiology knowledge infectious diseases and microbial transmission chain besides clinical and epidemiological reasoning in the decision-making regarding a patient on suspicion or diagnosis of infection. According to the Centers for Disease Control and Prevention (CDC) HAIs defined as infections localized or systemic condition resulting from adverse reaction to the presence of infectious agent or its toxins acquired from health care settings that was not incubating or symptomatic at the time of admission to the healthcare facility.These infections are a major public health concern and a threat to patient safety,contributing to increased morbidity,mortality and cost (Eichemberger, 2022).

1.2. Importance of the study :-

The latest Ministry of Health and Environment statistics show that communicable diseases account for (17%) of all deaths in Iraq and are the second largest cause of mortality and morbidity in the country. Communicable diseases statistics were revealed, a ccording to the Ministry of Health for years (2020),the statistics were gathered by Communicable Diseases Control Center/Public Health Directorate/Ministry of Health (MOH). Death due to the total number of covid-19 cases are estimated at (595291)**,** the death was rate from the Corona virus (2.15 %), while the total number of MOH staff deaths was (256). In addition the total number of medical staff deaths was (56) and the total number of paramedical staff deaths (133) and the total number of other MOH staff deaths estimated (67) cases (MOH, 2021).

Chapter One : Introduction

Iraq's health system has faced numerous challenges, including the world's biggest mass displacement in 2014–2016 and internal conflict few years ago, all of these affected the health system to reduce the morbidity rate of COVID-19.Iraqi government used a number of proactive measures,including a boycott of gathering areas, lockout school closure social distance and mass quarantine (Al-Jumaili & Hamed, 2020) .

The mortality and morbidity related with infection-related health care are extremely high. COVID-19 has spread over Iraq infecting every region. The overall number of cases increased to (458) also, the death chide increased to (40) the four new deaths were approved. Furthermore, the number recovery rate increased to 122 (Al-Mosawi, 2020) .

To minimize mortality, it is critical to maintain and enhance the quality of care. According to the world health organization (WHO), improving the quality of health care services offered to patients and their families will enhance their health. To do this, health care must be safe effective and inexpensive timely efficient fair and people-centered (Avia & Hariyati, 2019).

Covid-19 disease has emerged as a new no-tifiable infectious disease in Iraq and changed the modality of notifiable infectious diseases in Iraq,in addition, there were (123102) patients with notifiable communicable diseases other than Covid-19 disease recorded by the state and local health authorities in Iraq in 2020 (McGovern, 2021).

According to the world health organization,there were114,653, 749 confirmed cases of coronavirus illness (COVID-19) by March 2021, with 2,550,500 deaths (WHO). A total of 36,862 confirmed cases were recorded from Duhok, with (740) deaths (mortality rate: 2.0%) .Health-care-associated infection is connected with a high rate of mortality and morbidity, as a result of inefficient infection control practices, it is estimated that 10% of patients in developed nations and 25% of patients in developing countries are affected (Merza, 2021) .

Though these healthcare workers (HCWs) provide services to their patients or customers, they are exposed to multiple occupational risks on a daily basis endangering their health and lives, a ccording to several academics who have done studies on this critical subject, an estimated 100,000 individuals die from occupational injuries each year, while another 400,000 new cases are identified communicable diseases have always afflicted the entire human race despite major advances in prevention and treatment, infectious diseases continue to be the leading cause of death, morbidity and worsening of living conditions (Hamalaw, 2021).

Iraq's health-care system suffers through problems in technical facilities and functional services, which leads to preventable deaths and unplanned readmission to the hospital. Poor health- services lead to the patient's lack of confidence in the hospital, also it leads to the migration of patients outside Iraq for treatment. In a time, health- care has become a tourist destination for many countries that receive patients (Alkafaji, 2020) .

A dysfunctional healthcare system has political economic cultural and social level. Poor health-care quality has a direct impact on users' quality of life which is clearly presented during global pandemic of COVID-19. Nurses play a vital role in prevention as they are often the first to encounter infected patients. Every year they affect a considerable number of patients and health-care personnel and they frequently outcome in epidemic amplification, the effect of health-care-associated infections, according to available evidence, includes prolonged hospital stays,long-term, disability increased microorganism resistance to antimicrobials,massive additional financial burden for health-care systems (Ipenza, 2021) .

1.3. Statement of the Study :

"Nurses Knowledge Related to Communicable Disease Control Precautions "

1.4. Objectives of the Study are to:

1. Assessing nurses knowledge related to communicable disease control precautions .
2. Identify socio-demographic characteristics of the study sample.
3. Find out relationship between nurses knowledge and their socio-demographic characteristics.

1.5. Definitions of Basic Terms :

1.5.1.Knowledge:

1.5.1.a.Theoretical definition:

Knowledge a familiarity, awareness, or understanding of someone or something, such as facts information, descriptions or skills, which is acquired through experience education by perceiving discovering or learning (Bolisani, 2018) .

1.5.1.b. Operational definition:

The concept of knowledge is one of the key processes in knowledge management that precedes the exploitation of knowledge. Knowledge sharing is viewed as a behavior (process or operation) through which individuals mutually exchange their knowledge (information, skills, and expertise) .

1.5.2. Communicable Diseases

1.5.2.a. Theoretical definition:

Illness induced by a specific infectious agent's direct or indirect transfer (or its harmful compounds) from an infected person, animal, or inanimate source to a susceptible host (Guest, 2013) .

1.52.b. Operational definition:

Communicable diseases is any disease that passes between people or animals.People sometimes refer to communicable diseases as infectious or transmissible diseases.

1.5.3. Precautions

1.5.3.a. Theoretical definition:

Precautions are preventative steps needed to be taken by healthcare team members and staff at healthcare facilities to prevent the spread of infections (Douedi, 2022) .

1.5.3.b. Operational definition:

Infection prevention practices that apply to all patient care, regardless of suspected or confirmed infection status of the patient, in any setting where health care is delivered.

ChapterTwo

1. Review of Literature:

The purpose of this chapter is to synthesize the literature on quality evaluation of services provided to health workers and health facilities, as well as the program's scope of applicability in health institutions.

In 1948, the World Health Organization (WHO) Trusted Source defined health with a phrase that modern authorities still apply. Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. This means that health is a resource to support an individual's function in wider society, rather than an end in it self. A healthful lifestyle provides the means to lead a full life with meaning and purpose (Narayanan, 2021) .

2.1 . Historical Review

Throughout history infectious diseases have affected humanity. However, these diseases became more serious as society shifted to agricultural life about 10,000 years ago. The creation of more closely related societies has allowed infectious diseases to turn into epidemics. Diseases such as influenza, smallpox, leprosy, malaria, and tuberculosis were among the diseases that flourished since this transition and as human civilization developed and societies became more interconnected, the potential for subsequent epidemics increased (Jocelyne & Boivin, 2021) .

The first recorded pandemic occurred during the Peloponnesian War in Athens, Greece in 430 BC. The disease spread through the Athenian walls during the siege. Historians estimate that about two-thirds of the population died of the disease, after which the Antonine Plague appeared in AD 163 and is now considered an early version of smallpox. This plague began when the Huns struck the Germans, who then transmitted it to the Romans. Once the Romans got the Antonine plague, they had the opportunity to spread throughout the Roman Empire. As of July 2021, more than 4.13 million deaths have been attributed to COVID-19, with over 192 million confirmed cases. Other than the loss of life and the number of cases, COVID-19 has changed the world dramatically, temporarily halting economies and preventing social interaction, both of which inevitably have impacted mental health, food security and much more for the world's population (Taylor, 2020) .

Early detection is very important and takes a high priority to the control of emerging, reemerging, and innovative communicable diseases, no matter naturally occurring or intentionally introducing disease detection is an act of discovering the origin disease event and identifying its causes, most infections tend to spread, making an outbreak likely to occur. This can cause unnecessarily high rates of disease and debilitation and even death (Yasir & Hussein, 2018) .

Illnesses have important impact on human life and place a significant strain on a country's economy and infrastructure, the world's poorest people continue to be the ones most affected by infectious diseases vaccine-preventable diseases continue to claim the lives of about (2.4 million) young people each year globally

there were (56.9 million) deaths in 2016 from varying causes among different regions, after nearly two years since the onset of the COVID-19 pandemic, countries continue to respond to the disease in a variety of ways across the globe. there was significant inequality in health care access and a deficit in relevant infrastructure during this global health emergency(Okoroiwu, 2020).

In conflict situations,communicable diseases grow. Because of decreasing nutrition, overcrowding and unclean circumstances in displaced persons' camps, and deteriorating health care infrastructure, outbreaks can spread quickly. The global burden of morbidity and mortality chronic diseases, particularly cardiovascular disease, are estimated to be responsible for nearly (60%) of the world's (56.5) million total recorded deaths and (46%) of the global burden of disease in 2001 (Zhao, 2019).

More than 3.2 million confirmed cases of the Covid- 19 virus and more than 326,000 deaths were recorded at the end of April 2020 in worldwide, the majority of deaths and infections were distributed between the North America and Western European Countries.These statistics prompted many countries to declare a state of health emergency close many public life facilities and put restrictions on the travel and transportation to limit the spread of the pandemic.Traditionally, environmental public health has focused on reducing exposure to environ- mental hazards known to be related to disease Increasing emphasis is placed on upstream inter-ventions eliminating the source of the hazard rather than just preventing or reducing exposure. Similarly,decision makers could potentially use infectious disease forecasts to prepare for prevent illness hospitalization and death, as well

as the economic burden experienced during infectious disease epidemics (Lutz, 2019) **.**

Infection control is an important concern in all health care services worldwide. A health system is an arrangement of organizational structure, physical resources and personnel aimed at improving the health of a certain population. In the last decades, strengthening the health system and its infrastructure has become as one of the priorities in progressive health systems particularly in developing countries (Gholipour,2018).

Rising infection and mortality rates in HCWs paralyze a country's response to COVID-19, it has a significant, long-term impact on healthcare delivery,especially in health systems already dealing with workforce shortages due to a lack of trained personnel, skilled labor migration and geographic maldistribution,even before the pandemic.The training of service providers has been a focal point of international health.Health care employees required to do new tasks, the underlying assumption is that this training, along with existing health-care infrastructure, would be sufficient to realize the potential of new skills (Bandyopadhyay, 2020).

Ideally,unsatisfied nurse knowledge leads to poor quality which to increased infections and costs, as well as a loss of public trust wasted time and low staff morale as well as a waste of limited resources. Stakeholder perceptions and expectations of quality (including patient, community expectations provider and manager expectations) must be included in the definition of quality standards (Kareem & Alalawe, 2020).

In fact, physical ideal and social welfare must be the goal towards which we all work in my talk on the new european health policy. Health 2020, put simply, we must all work towards and share responsibility for the realization of health and well-being both are essential in fostering economic development poverty reduction and overall social cohesion both nationally and locally approaching health from a population perspective commits the nation to understanding and acting on the full array of factors that affect health (Jakab, 2011) .

The value of scientific research in the field of epidemiology has long been recognised in particular with the development of the germ theory of disease,this theory states that some diseases are caused by microorganisms (Pathogens) and the diseases they cause are called infectious diseases. The germ theory of disease the theory that certain diseases are caused by the invasion of the body by microorganisms, organisms too small to be seen except through a microscope. It states that microorganisms known as pathogens or "germs" can lead to disease (Marmarà, 2021) .

Infectious diseases burden communities and societies throughout the world, when the prevalence of an infectious disease rises in a community people seek for the most efficient means for containing the outbreak, or at the very least limiting the number of infections the fight against sickness, scientists have made enormous progress infectious infections. However,continue to be a leading cause of death. In epidemiology; the goal is to look at the progression of health and disease in a certain community in order to control linked health issues (Han, 2018).

In 2010 heralded a significant shift in American health care, with increased emphasis on population health, disease prevention, and cost containment. Health care systems are encouraging primary care providers to practice patient-centered care,employing strategies that engage with and activate patients. Improved understanding of how patients think about and define their health is needed to more effectively (activate) patients and to nurture and support patients' efforts to improve their health (Gessert, 2015).

Iraq's health system remains ill equipped to deal with the COVID-19 pandemic. More than 844,000 Iraqis have contracted the novel coronavirus and more than 14,200 have died, the official figures are almost certainly lower than the actual number of cases and deaths.Historically, the idea of quality has been an evolutionary concept originating from the Japanese business community quality was conceived as an idea of rationalizing the production process and the standardization of outputs to ensure efficiency and effectiveness hence quality became key principle in the production process and also, a critical tool for gaining a competitive advantage in the business sector. However, in the public sector, it has become a tool for assuring efficiency (Paintsil, 2016).

Quality measurement, a focus on patient outcomes have a long history in the United States, dating back hundreds of years to pioneers like Florence Nightingale and Ernest Codman. Important occurrences awareness of measurement and improvement, as well as investments in measurement and improvement have been catalyzed (Burstin, 2016) .

Most health systems across the globe continue to be largely focused on sickness and do little to maximize health and so reduce the burden of illness particularly for disadvantaged people inadequate resource allocation to address priority needs with equity (universality accessibility and affordability) exacerbates the failure to improve the underlying conditions for health the goal is to advocate for more integrated and universally accessible health systems (White, 2015) .

An understanding of the infection process should lead to appropriate actions which help to protect patients, and healthcare workers themselves. There are important public health issues in the prevention and control of infection, including the general health and nutritional status of the public and their living conditions, such as housing, water and sanitation facilities. These influence the level of infectious disease in the community, thus affecting the burden on healthcare facilities (Heinasmaki, 2001).

Health-education focuses on health promotion and disease prevention.The community health nurses duty is teaching and enabling individuals to avoid disease, adopt lifestyle changes and enhance health for themselves their families, environment and their community.Consciously constructed opportunities for learning involve some from of communication designed to improve health literacy,including improving knowledge and developing life skills, which are conductive to individual and communty health (Saadoon, 2014).

Health-care,services are generated and used at the same moment and they cannot be saved for later use. Stakeholders in health-care have varying perspectives interests and meanings and according to Joss and Kogan. McLaughlin, Kaluzny Naveh and Stern health-care service quality is dependent on the health-care service process patients and healthcare provider interactions due-to it is intangibility.As a result,a multidimensional definition of healthcare quality is required one that takes into account the many perspectives of healthcare stakeholders (Endeshaw, 2021).

While some health initiatives fail to realize their full potential, others significantly improve health outcomes. Limited and inconsistent funding, a lack of automatic mechanisms to assess and improve performance, personnel restrictions, and a lack of political commitment may all lead to the failure of public health initiatives, the technical aspects of successful program execution . A new diagnostic technique, treatment, or vaccine can make a previously unattainable goal possible, new microbial genomic sequencing and bioinformatics technologies may help us to discover outbreaks that we are now unable to detect and better prevent and control the spread of infectious illness (Frieden, 2014) .

When evaluating healthcare quality there are several aspects and settings to consider.First, to evaluate the three aspects of quality multiple indicators are definitely necessary namely effectiveness security and / or patient-centeredness since they are related to very different concepts such as patient health, medical errors and patient happiness. Secondly, quality evaluation must be based on the role of the healthcare system in issue i.e., whether quality is assessed in preventative medicine or in acute treatment a cute chronic or

palliative care are all options. Changes in health and outcomes for example: may sometimes be observable only after a lengthy period of time, but they will be seen more rapidly in the domain of acute care. Thirdly, the quality measurement initiative's target audience will differ depending on whether it is payers provider organizations, professionals, technology or patients (Busse, 2020).

Highly sensitive diagnostic tests continue to improve meedical practice science; however, clinical interviews by skillful health care providers will always be the foundation of quality health care, when the patient and provider speak different languages clinical interviews are compromised and the quality of health care is negatively affected, research has dem-onstrated that Latino patients with limited proficiency in english report poorer health and lower health care quality (Gonza´lez, 2010).

2.2. Environmental Theory

Florence Nightingale's Environmental Theory defined Nursing as "the act of utilizing the patient's environment to assist him in his recovery." It involves the nurse's initiative to configure environmental settings appropriate for the gradual restoration of the patient's health and that external factors associated with the patient's surroundings affect the life or biologic and physiologic processes and his development (Sher & Akhtar, 2018).

Over View of Theory

Four major concept meta-paradigms of Florence nightingale theory are the following :

1. Human

In Florence Nightingale's theory "A person is one of the elements in the four meta-paradigms in the individual receiving care"

2. Environment

The environment plays a very vital role in maintaining health and wellbeing and promoting recovery. Environment of patient is a changeable thing. It could change according to the person's need and health by nurses. “An environment that promotes health allows the patient to retain their energy, or vital powers for use towards selfhealing”. As many have noted, Florence Nightingale introduced the importance of the environment in nursing in the mid-1800s. Ms. Nightingale (1860) believed that the environment was the fundamental cause of suffering and disease. Literally, disease came ‘out of the air, however, this emphasis on the environment fell out of favor with the advent of the germ theory, when biological agents - not the environment itself - were identified as the cause of disease. The ‘patient’ became ‘host’ to these biological agents. Overall, exposure became synonymous with hazardous agents in the environment that contributed or caused disease. In the 1900s, when the interrelationship of host-agent-environment was described as an equilibrium state, disease was re-conceptualized as an imbalance or disequilibrium and no longer ‘a reparative process’ as described by Nightingale (Thompson, 2018).

3. Nursing

Nursing is basically the modification of patient environment to provide him comfort during disease period. Florence nightingale describes “I use the word nursing for want of a better. It has been limited to signify little more than the administration of medicines

and the application of poultices". Nursing aids in the ability of a person to maintain health and to heal,by managing the environment. Nursing in Nightingale's view is an art of how to let nature work on humans to make the ill healthy and the healthy remain the same a nurse is the one who makes such conditions in which these laws are easily applicable on patients to achieve the desired health status.She describes "I use the word nursing for want of a better. It has been limited to signify little more than the administration of medicines and the application of poultices". Nursing aids in the ability of a person to maintain health and to heal by managing the environment (AliSher, 2019) .

4. Health

Health is a dynamic process according to nightingale "Health is not only to be well, but to be able to use well every power we have"

Florence defended a solid knowledge base in nursing and anchored in principles; if this were not possible,it would be like building a house with a weak foundation, this premise becomes even more current when applied in nursing education, i.e., nurses trained with strong bases and principles will have subsidies to provide quality care, applying their critical thinking to making accurate decisions for the benefit of patients under their responsibility.Florence argued that nurses should accurately observe their patients and report the real state of health in an orderly manner to the physician (Riege F., 2020).

Immunization is one of the most successful global health interventions and one of the most cost- effective ways to save lives and prevent disease; and in the majority of cases, immunization delivery systems and strategies have been the most

effective ways to reach everywhere and deliver health preventive interventions, including in emergency settings (WHO, 2021) .

Presently, the routine national surveillance system for the main communicable diseases in Iraq is not implemented in the temporary mobile clinics during mass gatherings events, as these clinics are more concerned with provision of basic curative services. In recent years there has been an upsurge in awareness in universal health. This is to be recommended, as the health and well-being of poor people in underdeveloped clearly have a solid, claim as a-moral imperative (Lami, 2019).

With the COVID-19 pandemic, the quality of information on health-care and public safety and the quality of their presentation online grew more important.Both public administration websites and websites of healthcare providers play a significant role in this regard. Among them, websites of hospitals with infectious disease wards earmarked for helping patients with the severe acute respiratory syndrome caused by SARS-CoV-2 presenta particular case.The impact of the COVID-19 pandemic on the quality of health services is clearly noticeable. In the scientific literature, numerous examples point to problems with the availability of medical services, as well as patients' fear of becoming infected during a visit to a medical facility (Król & Zdonek, 2021) .

Communicable diseases (CD) such as, pneumonia, diarrheal diseases and malaria are major causes of childhood morbidity and mortality world-wide which have account for 41% of annual death globally and 49% out of them in Africa. A communicable disease (CD) is a clinically manifest disease of humans or animals due to a

specific infectious agent or its toxic products,that arises through transmission of that agent or its products from an infected person animal or inanimate source to a susceptible host; either directly or indirectly through an intermediate plant or animal host, vector or the inanimate environment (El-Hamid, 2018).

Effective infection prevention and control (IPC)programmes are the cornerstone for combating healthcare-associated infections (HAIs) and AMR . IPC is unique in the field of patient safety and quality universal health coverage (UHC) since it affects the safety of health workers and patients IPC programmes are therefore, a fundamental element for safe, high quality, people-centred and integrated care. Although the evidence related to the economic burden of HAI is limited, particularly in LMICs, available data from the USA and Europe suggest costs estimated at several billions (Pillay, 2020) .

Patients and the public require information that is timely, relevant, reliable and easy to understand.medication adherence and self management of chronic disease. Patients have many decisions to make about their healthcare and like all decision-makers, they require information to inform their choices reliable information is also essential to help patients understand their health problems and how to deal with them (Coulter, 2014).

Staff who work mainly with clinical specimens or have patient contact may be exposed to a variety of infections, while staff who mainly work with specific pathogens are only likely to be exposed to those pathogens handled in their laboratory, vaccines play a critical role in preventing deaths,and hospitalisation caused by infectious diseases, contributing to controlling the spread of the

disease, thus their impact on infection and serious illness is significant. Both vaccinated and unvaccinated people also need to be aware of the additional protective behaviours required to control the pandemic locally.The global impact of the COVID-19 pandemic has resulted in an unprecedented level of public interest in vaccines this includes a focus on the development of vaccines and their regulatory review and safety monitoring (Zhang, 2021) .

2. 3. Human Resource Management

Human resources management (HRM) one of three principle health system inputs (HRM) can be defined as the different kinds of clinical and non clinical staff responsible for public and individual health care intervention, for a high-quality and powerful health-care delivery,competent and motivated human resources (HR) are essential. Understanding the restrictions and challenges that health managers face is critical for successful and efficient health-care management. Policymakers must pay immediate attention to human resource management challenges. Adopting strong human resource management methods will go a long way toward guaranteeing the availability of appropriately trained skilled and motivated individuals in the health-care delivery organization (Kumar& Khan, 2014).

In spite of the fact that effective human resources management is essential for the success of organizations, limited knowledge is available about the challenges and the nature of interventions utilized by human resource managers in hospitals including enabling factors and the competences they have or require (CHWs) to collaborate as a health team and respond to community-identified

health needs.This necessitates a shift in resources from specialized curative care to community and primary care (Shanthosh, 2021).

Human resources for healthcare (HRFHc) comprising of health professionals and skilled health workers are crucial in shaping health outcomes. (ranging from doctors, nurses to all other paramedics) are crucial in shaping health outcomes across,the countries on the globe. The human resources department can improve techniques to enhance employees satisfaction. There is a broad consensus and evidence that shows qualified,accessible and responsive human resources for health (HRH) can make a major impact on the health of the populations improve access to health care and conserve scarce health resources, some countries have trained mid-level providers and other cadre of health workers to deliver health care services (Motkuri & Mishra, 2020) .

The knowledge, skills and personal attributes needed to plan guide support and facilitate a certain set of skills is required for the development of an effective nursing staff and a healthy work environment, the development of an efficient nursing workforce and a positive work environment represent a particular set of competencies, unlike many other professions, nurses will often be performing management and planning tasks. In addition to, an ongoing role in providing direct care (Reid & Weller, 2014).

In order to confirm a more responsible use of the financial and human resource investments,public health professionals are increasingly expected to engage in evidence-informed decision making, which is critically dependent on the timely availability of sound and accurate data and information. This information not only

is required for health policy makers to make more effective decisions, but also it can be used by health front-line providers to improve the quality and efficiency of health initiatives, data and information, of course give knowledge and creating and managing that knowledge provides the capacity to design successful solutions (Feyzabadi,2018).

Multiple elements influence the performance of the public health system, with human resources (HR) being one of the most significant. The public health staff requires up-to-date knowledge and skills, to address the training and education demands of an ever-changing workforce. Nursing performance can be introduced as the effectiveness of the nurse in carrying out roles and responsibilities related to direct patient care. Therefore,each country employed peculiar strategies to understand and address the shortages in human resources for primary healthcare. Researchers from each of the institutions assessed the scope of the deficit of healthcare workers in its country and this led to individual and consortium-wide publications (Nkomazana, 2017) .

In hospital building, it is difficult to conceive the link and benefit of sustainability in contributing to the patients' health outcomes.The physical aspects to be considered in hospital buildings.The physical aspects (i.e. day lighting, window design, thermal conditions and others) should be cleverly designed to achieve the balance and the principles of economic, social and ecological sustainability without compromising the functionality of hospital building.The design and construction of healthcare buildings are much more important, conventional buildings are

characterized by excessive use of natural resources. The quality of a healthcare building is determined by its capacity to meet the expectations of the user, which means the patient, patient relatives and healthcare personnel (Güner, 2018) .

Assessment of value usually focuses on technical concerns as well as the process through which care is delivered.This assessment becomes more authentic and legitimate if based on the application of professional standards integrating the patients' views experiences and perceptions. However, an effective system can only function properly, it operates on a regular assessment of people's perceptions and monitors it self based on their feedback (Došen, 2020) .

2.3. A. Documentation

Documentation is a record of the care, the clinical assessment, professional judgment and critical thinking used by a health professional in relation to theprovision of patient care. This documentation may include written and electronic health records observation charts actions outcomes checklists communication books, shift / management reports and clinical anecdotal notes or personal reflections (held by the clinicians personally or any other form of documentation pertaining tothe care provided (Belay, 2016)

Health care records must provide an accurate description of each patient/client’s episodes of care or contact with health care personnel. The system documentation is a product/result of the performance of a project, the purpose of which is to communicate the project and system information to all the interested parties from sponsors, users, specialists and up to the management of the

organization where the new system will be implemented (Oprea, 2014) .

High quality documentation is an integral aspect of the work of registered nurses in all roles and settings. This requires sufficient time and resources to support documentation activities at a time when accessing generating, sharing information in health care is rapidly changing, it is particularly important to articulate and reinforce principles that are basic to effective documentation. A health care record is the primary repository of information including medical and therapeutic treatment and intervention for the health and well being of the patient / client during an episode of care and informs care in future episodes (Terry, 2019) .

2.3. B. Infrastructure and support

Due to decades of conflict and economic restrictions, Iraq's population's health has deteriorated significantly. As a result Iraq's gross domestic product has plummeted, as has the country's public health spending. Health-care services have worsened, and the industry has been plagued by medication and supply shortages,furthermore, the country's health infrastructure has been significantly harmed by the continuous conflict and inadequate security environment.Many health professionals have gone to neighboring countries and overseas in search of safety and the population's access to essential health care has deteriorated (Al-Hasnaw, 2010) .

The role of supplies and staff in the quantity and quality of health care services has been the subject of much research and management in the field of health care. It goes without saying that competent and motivated professionals are critical for preventative and curative medical services and vaccinations and medications are critical for people's health. The importance of health-care facility infrastructure as a fundamental component of a health-care system, however, should not be overlooked. Health-care infrastructure is an important part of a health-care system's structural quality, the term 'infrastructure' is used to describe the structural aspects of systems in a variety of ways. Same holds true in the context of a health-care system and in relation to health-care facilities (Scholz, 2015) .

Staffing should be focused on providing high-quality patient care regardless of professional designation, as well as ensuring cost-effective and resource-efficient utilization of all personnel infrastructure is a critical component in achieving the core goal of improving the quality of treatment and welfare for all patients, as well as, a positive experience with the health-care system. Simultaneously, the healthcare system and its personnel must promote population-wide health promotion, prevention and self-care. Furthermore, a secondary goal must be to increase employee well-being, as this is directly tied to providing better patient care. A modern quality infrastructure serves the needs of governments, businesses and consumers. It indicates that the trust in institutions both firms and international and national quality infrastructure institutions, presents a basis for establishment and development of quality infrastructure (Luxon, 2015) .

Infrastructure is the foundation for planning, delivering and evaluating public health services. State health agencies require effective and efficient systems for preventing infectious disease morbidity and mortality ensuring control of outbreaks and vigilance against diminishing diseases,preventing and responding to reemerging and emerging infectious disease threats, the infrastructure, along with health reform and national strategies, can improve surveillance and programs. Infrastructure is a key pillar supporting the fundamental aim of promoting improved standards of care and wellbeing for all patients together with a good experience of the health care system. In parallel, the healthcare system and staff must support effective health promotion, prevention and self-care of the whole population (Nagarajan, 2018) .

2.4 . Surveillance

Surveillance is the continuous systematic collection, analysis and interpretation for actions starting from health planning, implementing interventions and assessing policies and practices in public health , the cornerstone of any prevention and control measures is the epidemiological surveillance. Surveillance is the ongoing systematic collection, analysis, interpretation and dissemination of data regarding a health-related event; for doing actions . Surveillance is an important aspect of public health. Real-time epidemiological data analysis is critical for improving public awareness of the problem and rapid response (Dureab, 2020).

An infectious diseases surveillance system is a component of public health monitoring, which in turn supports a comprehensive health information system. It is a tool for defining rational priorities in health care. Surveillance data provide information which can be used for

priority setting, policy decisions, planning, implementation, resource mobilization and allocation and prediction and early detection of epidemics. A surveillance system can also be used for monitoring evaluation and improvement of disease prevention and control programmes. Disease surveillance is thus a critical compo nent of the health system since it provides essential information for optimal health care delivery and a cost-effective health strategy (Đurić, 2012) .

Surveillance for communicable diseases is a part of public health surveillance which in turn is a part of the wider health information system, the objective of the surveillance system and the use of information determines of the collected and the speed of information flow within the system.Many countries have developed surveillance capabilities to monitor diseases with high burden,to detect outbreaks of epidemic prone disease and monitor progress towards national or international control or eradication targets. In this sense, surveillance of communicable diseases is a national function. Pathogens may originate from both outside and within the food, using antibiotics safely is another way to help limit the development of infectious illnesses. Antibiotics are only used when they are absolutely essential which reduces antibiotic efficiency against common illnesses allowing infectious diseases to wreak havoc on the community (Moore, 2021) .

Infectious disease surveillance is an important epidemiological tool to monitor disease burden and epidemiology of disease and identify outbreaks and new pathogens. Infectious disease surveillance can have different approaches based on the epidemiology and clinical presentation of the disease,including

many traditional forms of surveillance, as well as innovative approaches, surveillance also monitors the control, elimination and eradication of diseases. Disease control refers to reducing the incidence of disease to a desired level (Murray& Cohen, 2017).

The attributes of a surveillance system affect the ability of the system to meet its objectives and the usefulness of the resulting information, for example; if a surveillance system has a high sensitivity it will be more likely to detect outbreaks of the disease under surveillance,thereby promoting their investigation.If a system is timely,it will allow quicker initiation of control and prevention measures, limiting the spread of disease in a community (Groseclose, 2017) .

The capacity of surveillance systems to accurately describe patterns of diseases is of public health importance. Therefore, regular and relevant evaluations of these systems are critical in order to improve their performance,efficiency depending on epi-demiological, sociological and economic factors, disease surveillance systems can be complex,meaning that multiple attributes are required to assess their performance and many different methods and tools are needed to evaluate them (Calba, 2015) .

Epidemiological surveillance is the foundation for immediate and long-term strategies for combating infectious diseases. Such monitoring is usually the responsibility of national authorities and includes assessing individual cases, identifying the causative organisms and compiling population-based data that inform public health policy effective diseases surveillance remains an important operational tool in countries with recurrent epidemic prone diseases (EPDs). In addition, it is

considered one of the pillars of effective communicable disease control programme in most low and middle income countries (Jinadu, 2018) .

The scope of a surveillance system is broad, from early warning systems for rapid response to communicable diseases, to planned response to chronic diseases, which generally have a longer lag time between exposure and disease. Epidemiologic surveillance is the on going systemic collection, analysis and interpretation of health data essential to the planning, implementation and evaluation of public health practice. A surveillance system includes a functional capacity for data collection, analysis, and dissemination linked to public health programs . Present day surveillance systems chase moving targets in terms of both evolving pathogens and adapting hosts in the backdrop of rapidly changing social and economic human environments. Surveillance systems should promote the best use of public health resources by ensuring that only important problems are under surveillance and that surveillance systems operate efficiently. Insofar as possible the evaluation of surveillance systems should include recommendations for improving quality and efficiency (Phalkey, 2013) .

Epidemiology is a recent discipline which has evolved with the changes taking place in society and the emergence of new diseases this evolution has allowed epidemiology to remain a useul relevant tool in bringing to light and understanding diseases and health events, since its origins, more than a century ago, many definitions of epidemiology have been suggested. Epidemiology is a method of reasoning about disease that deals with biological inference derived from observations of disease phenomena in population groups (Fre´rot, 2018) .

Healthcare-associated infections can exacerbate existing or underlying conditions, delay recovery and adversely affect quality of life the entire spectrum of microbes from bacteria to viruses, fungi, and protozoa has been incriminated in hospital infection, nearly 25 to 50 % of all hospital infections have been found to be due to gram negative organisms and 10 % of infections are due to staphylococci, these are often carried by the patients themselves. Healthcare-Associated Infections (HAIs) are spread by numerous routes including surfaces (especially hands) air water intravenous routes, oral routes and through surgery (Jissir, 2017) .

Healthcare-associated infections (HAIs) is caused by a number of variables, including healthcare-related factors, environmental factors, and patient-related factors. Invasive technologies, surgical procedures, and selection pressure from antibiotic overuse are all healthcare-related problems. Polluted air-conditioning systems and the physical structure of the facility are examples of environmental issues (e.g., open units with beds close together), multiple variables, such as staffing (e.g.,nurse-to-patient ratio) and the lack of effective intervention programs designed to reduce prevent HAI, may interact in any particular healthcare system. The severity of the underlying disease, the usage of immuno suppressive medications, and lengthy hospital stays are all variables that affect patients (Al-Tawfiq & Tambyah, 2014).

An epidemic or outbreak, can occur when several aspects of the agent (Pathogen), population (Hosts) and the (environment) combine to produce an optimal setting for transmission, an epidemic, or outbreak, can develop infectious pathogens are abundant, change quickly and can develop medication resistance if not totally eradicated. Infectious risk is increased by low vaccination rates, poor diet, age (young and old) and immune suppression overcrowding poor regional planning and hygiene as a result of poverty contaminated drinking water fast climate change and natural disasters can all contribute to conditions that facilitate disease transmission can be defined as an ill-ness caused by another living agent, or its products, communicable diseases are illnesses caused by viruses or bacteria that people spread to one another through contact with contaminated surfaces bodily fluids blood products insect bites or through the air . In emergencies particularly complex situations communicable illnesses are a major source of mortality and morbidity. Diarrheal illnesses, acute respiratory infections and measles in endemic regions as well as malaria, are the leading causes of morbidity and death in emergency situations other contagious illnesses include epidemic meningococcal disease(AmelI, 2015)

2.5. Infection Control standard Precautions

According to the Centers for Disease Control and Prevention (CDC) and the Bureau of Labor Statistics (BLS), about (26 million), employees in the United States of America (USA) were infected with H1N1 during the peak of the pandemic in 2009. Eight million took sick leave, while (18 million) did not. Because each person with influenza who comes to work infects an extra 0.9 coworkers an estimated seven million H1N1 infections occurred as

a result of presenteeism. It is believed that the workplace accounts for around (16%) of all influenza transmission (Hansen, 2018) .

Health-care workers (HCWs) are defined as all paid and unpaid individuals who work in health-care environments who may come into contact with patients or infectious materials such as bodily fluids, contaminated medical supplies and equipment, contaminated ambient surfaces, or polluted air. Physicians, nurses, and nursing assistants are examples of HCWs. Therapists, technicians,emergency medical service personnel, dental personnel, pharmacists, laboratory personnel, autopsy personnel, students and trainees, contractual staff not employed by the healthcare facility. Although performing their duties, healthcare workers (HCWs) are frequently exposed to dangerous infectious agents. The risk of transmission of vaccine-preventable infections, both from patients to (HCWs) and from personnel to patients, other HCW, visitors is substantial (Assiri, 2013) .

Prevention and Control Programmes based on these tools must consider a number of factors, including: (1) disease risk; (2) the disease impact (as assessed by death, disability, morbidity, and economic expenses); (3) control strategy possibility; (4) control measure cost; (5) control measure efficacy (on present illness levels and influence on future cases or outbreaks); and (6) adverse effects or complications of the controversy, in order to establish effective, evidence-based control and preventive programs, public health planning for infectious disease control must take these factors into account (Roth, 2020) .

Control of communicable diseases should focus on controlling the factors that contribute to the spread of communicable diseases in order to break the chain of infection. Disease surveillance tools for recognizing and evaluating disease patterns can provide information on the risk and magnitude of disease burden to individuals, people in institutions, subgroups of populations, and the community at large. The establishment and maintenance of surveillance infrastructure, including a mechanism for reporting notifiable infectious illnesses and odd events must be a top priority a distinction was made between interventions that avert the occurrence of disease (primary prevention) and interventions that halt or slow the progression of a disease or its sequelae at any point after its inception (secondary prevention). Public health officials may decide on control measures based on strong epidemiological evidence of the disease's origin, spread and development. Control activities focus on primary prevention or secondary prevention but most programs combine both (Kim-Farley, 2021) .

Infectious agent exposure by hospital personnel, patients and visitors standard precautions presuppose that all patients' blood and bodily fluids are potential sources of infection, regardless of diagnosis or suspected infectious state. Hand hygiene injection safety, the use of personal protective equipment and ambient cleanliness are all components of standard precautions, as well as waste management, respiratory hygiene and cough etiquette (Ogoina, 2015) .

The most effective and simple way to prevent infection in the hospital is to follow standard precautions, which are a set of recommendations designed to prevent or minimise,additionally, there is an efective infection prevention and control standard precautions were created by the Centers for Disease Control and Prevention (CDC) and specify the steps that must be taken to prevent the spread of disease-causing substances as a result. HAIs standard infection control measures necessitate a consistent strategy that must be followed at all times for all patients in all settings. The guiding concept is that all patients, including those who are asymptomatic, harbor infectious agents. Hand hygiene, gown use, cleaning and disinfection of equipment,facial protection (e.g., masks and goggles) disposal of sharp items, medical waste management and coughing etiquette are all routine precautions (Abalkhail, 2021) .

Health-care workers (HCWs) are potentially exposed to blood and body fluids (BBF) in the course of their work and therefore are at risk of infection with blood-borne pathogens, worldwide, three million (HCWs) experience percutaneous exposure to blood-borne viruses each year. Knowledge of the risk of infection, routes of transmission, and possible prevention is an important aspect in the development of appropriate behavior of HCWs in response to exposure to infectious material (Pakowska, 2019) .

To prevent the spread of COVID-19 the Centers for Disease Control and Prevention(CDC),advising the general public including those without symptoms, to consider wearing face coverings in public places where social-distancing interventions are difficult to

maintain. The CDC has also issued recommendations for persons who are at high risk, such as the elderly and those with serious underlying health conditions (e.g.heart disease, diabetes, lung disease), these individuals should take the following precautions: Having the necessary equipment on hand, avoiding direct contact with ill persons and cleaning your hands on a frequent basis stay at home as much as you need to (Mohammed & Ahmed, 2020) **.**

2.5. 1. Many steps can be taken to reduce the risk of infectious diseases, including:

According to current evidence,the main routes of COVID-19 virus transmission are through respiratory droplets and contact. Hence, in order to prevent and control infection. The Centers for Disease Control and Prevention (CDCP) recommend the following**:**

2.5.1.a . Hand Washing and Antisepesis

Hand washing is an important approach for reducing infectious illness transmission. It is especially vital before, during, and after cooking, as well as after going to the bathroom, it prevents hazardous germs from spreading from sources that are prone to host them to other regions and foods, hand hygiene products such as soaps and detergents are a cause of irritant dermatitis in health professionals (Batalla, 2012) **.**

Hand Hygiene includes cleaning hands with alcohol-based hand rub (ABHR) or soap and water in order to remove germs, also known as microorganisms is recognized as the leading measure to prevent cross transmission microorganisms and to reduce the incidence of health care associated infections despite the relative

simplicity of this procedure, compliance with hand hygiene among health care providers is as low as (40 %), to addresses this problem; continuous efforts are being made to identify effective and sustainable strategies (Majeed, 2020) .

Healthcare-associated infection (HAIs) represents a serious disease burden and has a significant economic effect on patients and healthcare systems throughout the world. Healthcare-associated infection (HAIs) are among the most common preventable medical complications among patient, yet good quality hand hygiene (HH), the easy task of cleaning hands at the correct time and in the appropriate way can save lives hand hygiene (HH) has been known to reduce HAIs (Mahfouz, 2017) .

Promotion of hand hygiene is a key public health intervention in preventing the spread of infectious diseases. In the hospital setting, hand hygiene has played a major role in successfully controlling hospital-acquired infections, especially those caused by methicillin-resistant. Staphylococcus aureus, when the hands do not appear to be unclean, alcohol-based hand sanitizers are the ideal technique for healthcare practitioners.These alcohol-based hand sanitizers (with at least 60 % alcohol) are also, recommended for the general public during a pandemic.The importance of hand hygiene in reducing cross-infection and the choice of the optimal hand hygiene solution is often overlooked. Factors that can limit compliance with hand hygiene, for example; allergies to soap products, need to be considered as well as the use of appropriate equipment and training (Hillier, 2020) .

Hand washing with plain soap and rubbing for (15 seconds), then rinsing with water and drying with a disposable towel is effective and safe in reducing bacterial counts, while cleaning with an antimicrobial agent is far superior and hand rubs with alcohol covering the entire hand while still dry are the best of all. These crucial practical considerations will help HCWs improve their hand hygiene practices and reduce the spread of hazardous bacteria to patients and hospital employees (Mousa, 2019) .

This is because there is sufficient scientific data to suggest that, when correctly implemented, hand cleanliness alone can greatly lower the risk of infection cross-transmission in healthcare facilities (HCFs). Hand washing with non-antimicrobial soap was recommended before and after invasive operations, as well as throughout care for high-risk patients, according to the CDC's guidelines. Only in cases where sinks were unavailable were alcohol-based remedies suggested (Mathur, 2011) .

RespiratoryHygiene : Health organizations recommended that people cover their mouth and nose with a bent elbow or a tissue when coughing or sneezing (the tissue should then be disposed of immediately).

Physical Distancing: (also commonly referred to as social distancing). Methods include quarantines; travel restrictions; and the closing of schools, workplaces, stadiums, theatres or shopping centers (Kassim, 2020) .

2.6. Personal Protective Equipment (PPE): Is a vital tool in health care setting. So these tools are barrier between the nurses and disease that may be present during nursing care for the clients a specialized clothes that worn by nurses staff for defense against infectious materials is a Personal Protective Equipment (PPE) that defined by Occupational Safety and Health Act. (OSHA). It is seen

as a physical barrier between the organism and the health-care worker. Preventing microbes from infecting hands, eyes, clothes, hair, and shoes protects human health. Gloves, masks, eye goggles, gowns, head covers and boots/shoe covers are examples of personal protective equipment (PPE). Every health care worker should wear personal protective equipment (PPE) whenever they come into contact with blood or bodily fluids to safeguard themselves and their patients (Sharif, 2019) .

Healthcare workers' awareness should include issues related to hand hygiene, wearing personal protective equipment (PPE), immunization for prevention of communicable diseases, modes of infection transmission, assessment of patients for infection, medical instru-ment decontamination, healthcare waste handling, and needle stick and sharp safety policy, even more importantly HCWs should be compliant to these IPC precautions, methods and strategies to ensure HAIs reduction in the health care settings (Alhumaid, 2021).

The choice of personal protective equipment (PPE) used by HCW when caring for patients with suspected High Consequence Infectious Diseases (HCID) at the time of the outbreak there was no systematic,evidence-based assessment that existing PPE ensembles and safe removal procedures were effective (Hall, 2019) .

Fig. (2.1). PPE Worn for Enhanced Precautions (Adopted by Woolley, 2020)

In addition, while doing their tasks, Health Care Workers (HCWs) may be exposed to diseases. HCWs, patients and the general public are all protected by standard measures, which helps to reduce hospital acquired infections,standard precautions are aimed to protect health care personnel from potentially infected blood and bodily fluid by implementing, infection control techniques such as hand washing and the wearing appropriate safety barriers such as gloves, masks, gowns and eyeglasses. Standard precautions are also intended to protect patients by ensuring that healthcare professionals do not transmit infectious organisms, to patients via their hands or equipment while giving care (Okechukwu & Modteshi, 2015) .

Occupational health is a neglected public health issue among health-care workers in developing countries. In spite of this knowledge, the healthcare work environment continues to be neglected by governments and organizations, is has exposed healthcare workers in developing countries to various forms of hazards, which have had negative consequences on their wellbeing and performance at work (Ghouth, 2021) .

Exposure to infectious agents by hospital staff, patients and their visitors. Standard precautions assume that all patients' blood and bodily fluids are potential sources of infection, regardless of diagnosis or suspected infectious state. Hand hygiene, injection safety, the use of personal protective equipment, environmental cleanliness, waste management and respiratory hygiene and cough etiquette are all components of standard precautions. Regarding the community level, people are required to keep social and physical

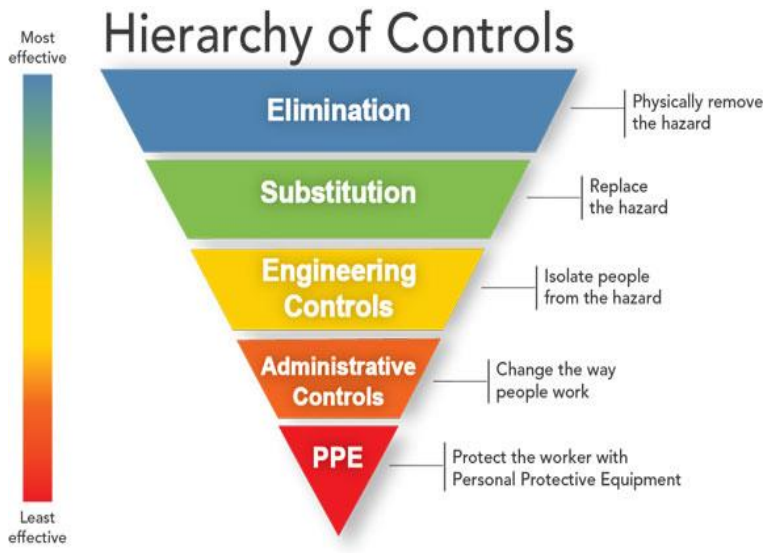
distancing, avoid swarming places and delay or cancel the unnecessary trips.They must also practice cough hygiene via coughing in sleeves / tissues instead of hands. In addition to practicing hand cleaning every (15-20) min, furthermore, surgical masks should be used for patients with respiratory symptoms (Hadi, 2020) .

The term Standard Precautions is replacing universal precautions since it recognizes that any bodily fluid may include dangerous and hazardous bacteria, broadening the scope of universal precautions, the degree of practice of universal precautions by HCWs may change depending on the kind of HCW differences in knowledge of universal precautions by HCWs may be impacted by their differing type of training. The absence of an enabling environment at the health institution, such as a lack of continuous flowing water or a scarcity of personal protective equipment (PPE), would result in poor adherence to universal precautions. As a result, it is becoming increasingly important to assess the level of compliance with universal precautions by various types of HCWs (doctors, trained nurses, pharmacists, laboratory scientist other health workers and domestic staff) who have direct contact with patients, as well as the level of compliance by HCWs in various types of health facilities (Amoran & Onwube, 2013) .

Standard precautions are the basic level of infection control precautions which are to be used regardless of their anticipated infection status, as a measure of precaution and suggested while providing care to all patients. As a result, nurses should be well-versed on basic precautions and follow them. The following are the

goals of standard precautions: prevention and/or decrease of HAI transmission while also protecting nurses from sharp injuries, some of the SP measures that may be employed to achieve these aims include hand cleanliness, Personal protective equipment (gloves, gowns, gaggles, face-masks, head protection, foot protection and wearing face shields), and the prevention of sharp injuries (Ayed, 2015) .

Figure. (2.2) : Hierarchy of Controls



Source: CDC stands for Centers for Disease Control and Prevention. (https://www.cdc.gov/niosh/topics/hierarchy/)

The idea behind this hierarchy is that the control methods at the top of graphic are potentially more effective and protective than those at the bottom.The application of the hierarchy of hazard controls is a recognized approach to containment of hazards and is fundamental to an occupational health and safety framework. An understanding of the strengths and limitations of each of the

controls enables health care organizations, to determine how the health care environment (e.g., infrastructure, equipment, processes and practices), increases or decreases a HCWs risk of infection from exposure to a pathogen within the health care setting (NIOSH, 2021) .

Fundamental to the use of personal protective equipment (PPE) to protect the wearer from hazards is selection of the correct PPE and competence training, all suspected case PPE ensembles either had post-doffing contamination events or other significant disadvantages in their use .This identified the need to design a unified PPE ensemble and doffing procedure, incorporating the most protective PPE considered for each body area (Poller, 2018) .

The International Labor Organization estimates that yearly, approximately 270 million work- related accidents occur worldwide, the use of PPE generally implies working in a potentially hazardous working environment. Active cooperation and compliance of the workers are necessary for maximum benefits to be derived from PPE utilization.Personal protective equipment includes items such as gloves, overalls, helmets, boots, ear muffs and goggles (Johnson, 2016) .

In the hospital setting, the nurse educators and infectious disease, nurses play an important role in training physicians and nurses on how to avoid the transmission of infectious diseases. Furthermore, the infectious disease nurse aids in recognizing difficulties and reporting them to the multidisciplinary team in charge of a patient's care this frequently includes more strict infection prevention procedures and advising the interprofessional

team caring for the patient to minimize additional illness spread and achieve the optimal outcome (Edemekong, & Huang, 2021) .

2.6.1. Gloves

Health care personnel should wear gloves to avoid microorganism contamination of their hands, to protect themselves from blood borne diseases, and to reduce the danger of microorganism transmission from the health care worker's hands to the patient. When making contact with any of the following, gloves should be worn: blood, all bodily fluids, secretions and excretions, save sweat, regardless of whether they are obviously bleeding, non intact skin, and mucous membranes, according to standard procedures . While caring for a patient, it should be replaced when moving from a contaminated body area (e.g., wound or perineal care) to a clean body site , on the other hand, do not take the place of good hand hygiene. Sleeves should consequently be viewed as a supplement to, rather than a replacement for, hand hygiene which should be performed as soon as gloves are removed (Edmond & Wenzel, 2015) .

It must be worn as single-use items, and changed between different patients and between different care/treatment activities on the same patient to prevent cross-contamination of body sites. Nevertheless, inappropriate use of gloves is observed regularly worldwide, unnecessary and inappropriate use of gloves results in a waste of resources and may increase the risk of cross transmission. Inappropriate use also increases the wearer's exposure to chemicals and accelerants in the glove material, which can result in skin sensitization or inability to work (Preece, 2020) .

2.6.2. Injection Safety

Today Injection is one of the most common health care procedures in both the formal and informal heath care sector injection safety practices are fair because of provision of injection equipment and training of health workers but in most of the developing countries injection use have exceeded the normal rate (Bolarinwa, 2012) .

2.6.3. Bare Below the Elbows

Bare Below the Elbows (BBE) is an approach to healthcare worker (HCW) attire that limits patient contact with contaminated HCW clothing, while supported by biological plausibility, the practice is controversial. Critics cite limited evidence that bare skin is less contaminated in comparison to sleeved garments such as white coats (Assi, 2019) .

The authors focus on the absence of clothing around the wrists facilitating more effective hand hygiene. However, the potential of disease transmission from clothes and jewelry to patients and hence the admonition that these'should not accidentally come into touch with patients' during ordinary clinical treatment, may be the most important reason for the regulation (Griffin, 2011) .

This policy project aims to promote hand and wrist washing as a means of improving hygiene. In general, the policy prohibits the wearing of white jackets or outerwear with cuffs, as well as the rolling up of shirtsleeves which might potentially become contaminated, posing a risk to patients, despite there being limited evidence that being bare below the elbows reduces the spread of infection (Malik,2019) .

In terms of healthcare workers' dress, the so-called 'bare below the elbows' (BBE) policy is in effect (short sleeves, no wrist watch, no jewellery and no ties when carrying out clinical activity). After our hands the wrist/cuff areas are the most heavily contaminated hand hygiene remains the single most effective means in preventing health care acquired infections including to staff (Canning, 2020) .

2.6.4. Gowns

Gowns made of waterproof material uaually are worn by the health care workers to protect their uniform from contamination specially when exposure to blood or body fluids, secretions and excretions. Long sleeved gowns do not need to be sterile (clean) used during patient care as general, while sterile one used during sterile proceding steps perform like operating theatre procedures intravenous line insertion. Against this background, personal protective equipment (PPE) of healthcare workers should include face masks, eye protection and long-sleeved gowns(Aumeran, 2021) .

2.6.5. Masks:

Face masks are a one-time use, affordable means to form a mechanical barrier from irritants and contagious diseases like airborne infections hence protecting from respiratory illnesses, the best way to wear a surgical mask is to wear the colored side facing out, independently of your health status one of the benefits of face shields is that they protect the entire face, including the eyes which along with the nose and mouth can be a gateway for the coronavirus and other germs to enter the body. The plastic panel that hangs from the top of the forehead and extends below the chin prevents large

respiratory droplets that are thought to carry the virus from reaching these areas of potential infection (Furnaz, 2022).

2.6.6 . Eye Protection:

This includes face shields as well as goggles. They can protect the mucous membranes of your eyes from bodily fluids. If the fluids make contact with the eyes microbes within the fluid can enter the body through the mucous membranes.

2.6.7. Clothing:

Includes gowns, aprons, head covering, and shoe covers. It is in this context that the barriers that are part of the reality of health institutions stand out, such as the lack of personal protective equipment (PPE) and supplies, as well as the lack of training for the correct use of PPE in health care. The exposure of professionals to biological risks may be fatal, either due to the lack of equipment or knowledge based on scientific evidence (Moura,2021) .

2.7. Medical Waste Management

Medical wastes contain infectious waste containing 10–25% of the waste and non-infectious waste which accounts for 75–95% of the entire waste. Infectious waste and sharp objects represent the greatest risk to the health of medical center workers and visitors, putting them at risk of illnesses such as AIDS, hepatitis B and C. It's astonishing that health-care practitioners, whose goal is to give medical treatment and safeguard people from sickness have suddenly become a source of infection (Tabrizi, 2019) .

Hazardous waste poses a major hazard to the environment and needs special management before final disposal to minimize environmental and public health issues, such as the spread of infectious illnesses including typhoid, proper and safe care of acquired immunodeficiency syndrome (AIDS), cholera and hepatitis B is necessary (Al-Khatib, 2015) .

The risks include occupational exposure of health workers and waste-handlers and environmental exposure of the public caused directly by illegal or careless management and disposal practices or indirectly through emissions and handling from medical waste incinerators (Al-Emad, 2011)

Burning and incineration of medical and municipal waste have resulted in the release of toxic dioxin as well as mercury and other toxic substances. These substances create a remarkable variety of adverse effects in Human at extremely low doses (Joshua, 2014) .

Waste management is regarded as one of Iraq's most complicated difficulties, and the Iraqi waste management industry is plagued by several issues. Iraq generates 31,000 tons of solid garbage every day, with the governorate of Babylon, Iraq's capital, producing 483,221 tons annually. There is a general lack of interest in / awareness of health and environmental concerns, as well as a lack of modern, effective waste management and disposal infrastructure. Groundwater contamination, surface water pollution, spontaneous fires, large-scale greenhouse gas emissions, and an increase in the number of insects and rodents in/around dump sites are all features of land fill sites in Iraq (Chabuk, 2015) .

Individuals who are exposed to hazardous health-care waste, both inside and outside of health-ware organizations that create hazardous waste, are possibly at danger, those who either handle or are exposed to hazardous waste as a result of poor management, medical doctors nurses, health-care auxiliaries, patients in health-care establishments or receiving home care, visitors to health-care establishments, workers in support services allied to health-care establishments,such as laundries,waste handling, and transportation, and workers in waste disposal facilities (such as landfills or incinerates) are among the main groups at risk (Ferronato& Torretta, 2019) .

Medical waste treatment is determined by the type of medical waste to be handled as well as the waste's final disposal. If there is a chance that the medical waste may come into contact with humans following treatment, it should be thoroughly disinfected so that any garbage workers or scavengers who come into touch with it are not exposed to potentially infectious qualities,the pace of infectious waste formation is usually determined by the size of the hospital, the number of patients who visit the facility,the number of beds available, the segregation processes, and the type of treatment offered to the patients. Inadequate health worker training leads to poor infectious waste treatment and disposal, segregation collection and transportation, storage, and disposal are the four processes in the handling of infectious waste (Kumar, 2015) .

It's worth noting that, if not properly handled, healthcare wastes might offer an even larger concern and hazard than the illnesses themselves. Hospitals and healthcare institutes are responsible for public health concerns such as MW. Patient care and education are

examples of specific ways that might be used, as well as ensuring a clean and healthy environment for workers and the community staff, patients, and the environment are all impacted by careless handling and disposal of MW. This is due to the fact that hospitals are a unique setting in which to provide healthcare to patients as well as a work environment for doctors and other personnel (Awodele, 2016) .

2.6. A. Types of Waste

2.6.A.1. Hazardous Waste Management

Infectious waste is defined as material suspected of having pathogens (bacteria, viruses, parasites and fungi) in sufficient concentrations or numbers to induce illness in sensitive hosts. This group includes:

1. Waste that has been contaminated with blood or other bodily fluids
2. Laboratory-derived infectious agent cultures and stocks
3. Infected patient waste in isolation wards.

Contaminated waste from blood or other bodily fluids includes free-flowing blood, blood components and other body fluids; dressings, bandages, swabs, gloves, masks, gowns, drapes and other material contaminated with blood or other body fluids; and waste that has been in contact with the blood of patients,undergoing haemodialysis (e.g. dialysis equipment : such as tubing and filters, disposable towels, gowns, aprons, gloves and laboratory coats) (Emmanuel, 2014) .

2.6.A.2 Sharps Waste Management

Sharps waste is part of infectious waste generated in health facilities, management of which is critical, a mong the infectious waste category, sharps waste are the most hazardous because of the ability to puncture skin and cause infection. Sharps waste contain items that could cause puncture wound, cuts which include needles, syringes with needles, broken glass ampoules, scalpel and blades, infusion sets, etc (Matee, 2016) .

Sharps waste management requires more attention because to the threats to both human health and the environment posed by poor waste management procedures includes sharps non-sharps blood body parts chemicals pharmaceuticals medical devices and other materials in many countries, the disposal of used injection equipment and reuse of contaminated syringes pose public health threat, also there is environmental pollution caused by sharp waste lack of motivation and motivation of health care workers are to blame for high levels of needle waste. Hospital administration should plan and apply the finest methods sharps waste may be controlled to reduce unnecessary disease transmission and contamination of the environment (Ramadhan, 2016) .

2.6.A.3. Solid Medical Waste

Solid medical waste will be autoclaved and disposed of in the municipal trash, the waste will remain in the red bag when autoclaved and discarded. Solid Medical Wasts (SMW) in households is perceived to pose minimal risks to the public compared to SMW generated from healthcare facilities, hospitals as health service providers are a source of solid medical waste generation, the current COVID-19 pandemic can

potentially increase the number of medical waste generation in health care facilities (Himayati, 2021) .

2.6..A.4. Liquid Medical Waste

If it is not a mixed waste containing radioactive, toxic, or untreated medical waste, treated medical waste in liquid or semi-liquid form can be released to the sanitary sewer. Medical waste that can be handled chemically includes, but is not limited to the following :

1. Infectious agent cultures and stocks from research and industrial laboratories
2. Wastes resulting from the manufacturing of germs, viruses and spores, as well as discarded live and attenuated vaccines used in human health care or research, as well as wasted animal vaccinations. CDC and EPA recognize that medical waste that harbors pathogens, blood and blood products,contaminated human or animal tissue or body parts and sharps, as infectious (Udofia, 2017) .

2.6..A.5. Segregation

Health care workers should segregate HCW immediately at the point of generation according to the type of waste. The national HCW segregation chart has the following categories(Kasschoon, 2015) .

Figure 2.3 : HCW Bins, Safety Box, and Segregation Poster (A dopted by Ibrahim, 2023)

1. Segregation reduces the amount of waste that requires specific treatment and management .
2. Medical waste, such as sharps, is kept separate from normal municipal garbage by effective segregation .
3. Prevents the illegal reuse of medical waste components such as old syringes, needles, and other plastics.
4. After adequate and complete cleaning, certain components of medical waste, such as : plastics, can be recycled**.**

Segregation of waste should be started from the point of generation of waste (bedside of patient, operating theatre research centers, laboratories, etc.). It is very vital to know the types and amount of waste generated in a healthcare service centers as it is the initial phase towards harmless disposal (Zahid, 2018)**.**

Performance assessment can be defined as a coherent evaluation system which assessesthe whole occupational functioning including its constituent parts. Evaluating public and community health programs covers the methodologies and methods for evaluating community health programs and policy initiatives and proposes a model for assessment. The Centers for Disease Control and Prevention's (CDC) six-step framework for program evaluation in Public Health. This relevant and well-written work is geared for

public health and community health students as well as practitioners who are new to program evaluation, and it presents readers with a methodical, step-by-step procedure to program assessment,making no assumptions about prior knowledge about evaluation (Hou- Su, 2014) .

Ideally, the CDC's assessment of national, regional, state, and community programs is a top priority, and they employ a variety of specific program evaluation initiatives to match the requirements and capacities of their stakeholders. In addition, demand is increasing for:-

1) A formal evaluation infrastructure for regularly assessing the effectiveness of public health programs

2) The creation and maintenance of assessment monitoring systems to collect analyze and interpret public health intervention findings

3) The capacity to monitor progress toward improving the health of vulnerable populations

4) Evidence that program adjustments are based on findings about changes in health outcomes (whether favorable or bad) CDC and its partners will be better positioned to make essential judgments about program success and the use of federal funding if they undertake program evaluation activities that encompass all four of these important elements (Jack,2021) .

Several CDC directives and reports have also advanced program evaluation at CDC by compelling program leaders to focus on applied evaluation and providing them with the support needed to do it. Improving the use of program evaluation for maximum health

impact: Guidelines and Recommendations was released by then-CDC Director Thomas Frieden in December 2012 this report was based on CDC expert discussions and included recommendations from the advisory committee to the CDC director. It outlined the monitoring and evaluation expectations for CDC-funded centers big programs and recipients (Kidder, 2018) .

Assessment is the collection, analysis and interpretation of information about any aspect of a programme of education or training, as part of a recognised proceses of judging its effectiveness, efficiency and any other outcomes it may have , process of evaluation uses observed data to assess the delivery of programs (Khatun, 2017) .

2. 8. Previous Studies

Tan, *et al.*, 2013 Submitted a thesis about Infectious Diseases of influenza A H1N1 in Guangdong Province China . A sample size (N=157) laboratory-confirmed cases were included in this study, it was serological survey, found that surveys provided useful information about key epidemiological factors in relation to the influenza . Most research passes on this topic focus on sero surveys rather than cross-sectional nationwide surveys. The data were obtained from the integrated public health information, to achive the aims of this study, the researcher uesd accurate estimation of epidemiological parameters is of vital significance in decision-making for coping with pandemic influenza.

Al Salahy, 2016. The study touched upon to evaluate the primary health care (PHC) services performance in National Tuberculosis Control Program (NTP) in Menofya Governorate. In all of the health units/centers studied. Rsearcher did a sputum analysis. Collected data were analyzed using SPSS and given as numbers and percentages. Chi square test, or Fisher's exact test, spearman's correlation coefficient,the accepted level of, significance in this work was stated at 0.05 ($P < 0.05$ was considered significant). *P* value>0.05 insignificant, $P < 0.05$ significant and $P < 0.001$ highly significant.

Mansur, 2020. Submitted a thesis about evaluation of a health promotion program for epidemic prevention in primary health care centers, a study is being conducted to evaluate a health promotion program for epidemic prevention at primary health care clinics in Baghdad City. Iraq utilizing evaluation and comparison methodologies, a non-probability, non-purposive non-probability

the number of people in the sample (42) data is gathered through the employment of a research, instrument and the interview methodology as a data collection method data were evaluated using the descriptive statistical data analysis strategy of frequency percentage total scores ranges and mean as well as the inferential statistical data analysis approach of analysis of variance the aim of this study was to examine and compare the health promotion program for epidemic prevention at primary health care centers level of significance at $p \leq 0.05$ finding of this computation indicates that the correlation coefficient ($R= 0.85$) is approving that the instrument is highly and adequately reliable . Measure for the phenomenon underlying the present study. Rsearcher conducted a for likert scale - scored as always = 3, sometimes = 2 and never = 1. scale where questions based on this scale are used in a survey.

Zenbaba, *et al*., 2020. Proposed use of infection prevention to protect patients, healthcare workers, In Ethiopia.The goal of this research was to evaluate healthcare professionals' infection prevention practices and their related costs.The sample size determined for healthcare professionals' infection prevention practices was (382), the study is ultimate sample size was (402) healthcare professionals, and it was conducted using simple random sampling and SPSS Version 20 software for analysis,descriptive statistics (mean (SD), median, mode, and frequency tables) were computed to check normal distribution of data and describe practice of healthcare workers, regarding infection prevention, from total study participants the study included 202 (51.3%) men and 192 (48.7%) females ranging in age from 18 to 43 years old, a mean age

of 28.8 years (SD 5.2) the simple random sampling method was used to selected study participants by the lottery method .

Khan, *et al*., 2021 . Address the topic of the study about an assessment of the quality of care provided at primary health care centres. This study used a longitudinal design, the sample size was (N=102), it was also used to evaluate care quality by awarding a quality-of-care index score as well as the number of patient consultations health-care provider and patient departures observations and interviews were used as part of the data gathering technique. During patient encounters observations included a 13-items facility checklist as well as clinical care checklists for various health professionals .The interviews were divided into two sections ; one for all health personnel which asked the identical questions and another for patients which asked (22) questions. Both the observation and interview sets had closed questions that were either Yes /No or a three-level Likert scale, a multi-center prospective study's findings (descriptive and statistical analyses) were compared. The data was gathered by teams of two trained enumerators from the Iraqi Red Crescent Society (IRCS) using questionnaires delivered face-to-face for the interviews, as well as interviews with health workers and patients , in a static PHCC at active IDP camps in Iraq during two phases, the goals of this research were to assess the quality of health care, services provided at primary health care centers (PHCCs) and health care facilities in Iraq, as well as the Directorate of Health (DoH).

Sekab, *et al.*, 2021. the study carried out in Al Hilla Teaching Hospitals / Iraq the questionnaire includes a total of 20 knowledge objects and 25 practice items data were gathered using the self-report questionnaire and analyzed through the used the descriptive and inferential statistical method, rsearcher conducted a for a descriptive study (sample size=200) health workers subjects participating in this study, collected data were analyzed using SPSS, were presented as numbers and percentages, data were analyzed; Frequencies and Percentages, mean of score (Mean) and Chi. Square test. This study aims to assess knowledge related to use of PPE during communicable diseases among health care provides.

Chapter Three

Methodology :

The present chapter shows the study methodology and is presented as follows.

3. 1. The Study Design :

A descriptive study was carried–out in order to achieve the early stated objectives, to assess nurses knowledege communicable disease control precuations and to know the applicability of the (CDC's) Program in AL- Hilla Teaching Hospitals . The study was conducted from the period 17th March, 2021 to 15th May 2022.

3.2. Administrative Arrangements :

The start point to obtain formal administrative approvals to perform the study were begain from the community health department after presentation of the study project. Adminstriative obtained from the ethical committee. University of Babylon/ College of Nursing, after fulling special ethical from a copy from the study questionnaire , the english and arabic version from with protocal (Appendice A). The researcher gets permission an official administrative arrangement permission was obtained from/Babil Governorate Health Department /Training and Human Development Center, another official permission was sought from the Office of Health,Babylon Health Directorate/ Development and Training Center to implement the study in AL-Hilla City Hospitals, to facilate data collections appendice (B).

3.3. The Study Setting:

The current study was conducted in hospitals affiliated to the AL-Hilla City according to the General Directorate of the Ministry of Health. The study was conducted in (3) Government Teaching Hospitals epidemiological wards in AL-Hilla City (Table 3.1) .

Table (3.1): Distribution of the study sample related to the setting

	Name of Hospital	Number of nurse
Babylon Health Department	Murjan Teaching Hospital	570
	Imam Al-Sadiq Hospital	1150
	Babylon for Maternity and Pediatric Teaching Hospital	600

3. 4. Sample and Sampling of the Study:

The target population was composed of (2320 nurses) for the communicable disease control program. (steven thompsons equation). A non-probability convenience sampling is performed convenient sample, which consists of (200) health workers' (nurses) who provide care to patients with suspected or confirmed infection, selected from three randomly choosen hospitals, the distribution of the sample is as follows: (50) nurses from Imam Al-Sadiq Hospital, (50) nurses from. Maternity and Pediatric Teaching Hospital and (100) nurses from Marjan Teaching Hospital.

3.5. The Study Questionnaire :

Through a comprehensive review of relevant literature and previous studies, the questionnaire consists of (3) main parts including personal information sheet hand washing practices, quality assurance, health worker performance items and overall management assessment. The questionnaire was developed and approved to measure the quality assurance of infectious diseases, and it has been modified (Alalawe, 2020) and (AL- Kerity, 2017), using the Arabic version of communicable and infectious diseases (Appendix B).

The questionnaire included three parts:

Part I : -(A)

Socio-demographic characteristics: This parts consist of (8) items which are concerned with the information about socio-demographic features of the staff from epidemic wards of the subjects including (age, ,gender, marital status, residence, level of educational,training for CDC program year's of employment at the CDC unit).

Part I :- (B)

This part is comprised of (11) items about nurses knowledge of communicable disease control precautions related to the daily hygiene (Practice of Hands Washing),[Hand washing before caring for the patient . To hand washing after caring for the patient] .

Part II :- Oraganization Structure Questionnaire

Part II (A): This part consists of (11) items about nurses knowledge related to their overall management evaluation . (Staff have the ability to gain experience by participating in group work. To program evaluation) .

Part II (B): This part consists of (5) items about knowledge related to their overall human resources management. (Provides efficient human resources to provide its services with high quality. To financial management).

Part II (C): This part is composed of (8) items about knowledge level related to their evaluations of communicable diseases control precautions (The presence of the record of transitional diseases. To workshops in coordination with health promotion units).

Part II (D) : This part composed of (9) items about nurse knowledge related to their evaluation of communicable diseases CD prevention services (Prevention of communicable diseases through use of health education, immunization and safety environment. To documentation).

Part II (E) : This part composed of (10) items about Nurse knowledge related to their practice of disposal of medical waste management (MWM) (Dispose of all waste by placing it in plastic containers designated for it . To adequate number of workers in waste collection) .

Part III :- Structure and Design of Buildings

Part III (A) : This part is composed of (12) items about Nurses knowledge related to their evaluation of structure and design of buildings (Quality in physical layout & infrastructure of hospital. To funding for the institution unite commensurate with the requirements of the unite).

Part III (B) : This part is made up of (8) items about Knowledge related to their design of the building (Buildings labels are clear for the purposes of emergencies. To All health service units are appropriately organized).

These parts are based on a two-level abinomial Likert scale (Yes/No) and are rated as (1, 2) respectively

3.6. Validity of the Questionnaire :

Validity is the attempt to explain the reality of study findings, where truth is based on quantitative analysis using statistical tools (Kubai,2019), by examining the questionnaire and evaluating the validity of the content of the questionnaire, a team of thirteen the experts with more than five years of experience in their field,were selected for the appropriateness and relevance of the content.The recommended changes were made in accordance with experts' opinions and feedback, which included **:**

(4) Experts of the Nursing of college / Babylon University.

(٤) Experts of the Medicine of college/ Babylon University.

(١) Eperts of the University of Al-Warith Al-Anbiya.

(٢) Experts of the Nursing of college / Baghdad university.

(١) Experts of the Nursing college/ Karbla University .

(1) Experts of the Nursing college/ AL- Kufa University.

3.7. Pilot Study.:

An preminalary study was conducted in order to locate, the reliability of the study tools which were used for measuring the variables of the study, data were collected from (20) nurses numbers from the original sample of the study in epidemic wards. Communicable Diseases Control Program at AL- Hilla Teaching Hospital (amount of time),a pilot study was conducted to determine the reliability of the study instrument that was utilized to measure the study's variables(Junyong, 2017).

The study was conducted (from the period 25th January to 4th February 2021).

The objectives of the study of the pilot were

(1) An empirical study can also identify practical troubles with the research procedure

(2) Identifies if suggested procedures or instruments are ineffective or overly complicated

(3) It helps to estimate how much time each interview will take

(4) It may be used to test the feasibility of the new intervention's recruitment, randomization, retention, and evaluation.

The basic goal of the pilot study is to offer information that will aid in the overall effectiveness of the research project which supports the following quotations about the value and purpose of empirical studies:

3.7.1. Reliability of the Questionnaire :-

Reliability is defined as the probability that a product, system or service will perform (Alpha Cronbach's) it will achieve intended purpose properly for a certain amount of time or will operate without failure in a defined environment, it is used to assess the consistency of measurements given to the same people at various periods; as well as the equivalency of groupings of items from the same test is to make sure that the data is reliable and repeatable the results are correct. Psychology assess three types of consistency: Over time (test-retest reliability) between items (internal consistency), as well as between researchers (inter-rater reliability).

Reliability: The questionnaire assess the same thing every time.

The concept of reliability in relation to a research instrument has a similar meaning: If the same result can be consistently achieved by using the same methods under the same circumstances, the measurement is considered reliable,it indicates the consistency and repeatability of data generated by a certain method or experiment.

The concept of reliability can be looked at from two sides:

1. What is the level of trustworthiness of an instrument ?
2. How unreliable is it ?

Table (3.2) : Reliability Coefficient of the Studied Questionnaire

LIST	Scales	Methods of Alpha Cronbach's	Number of Items	Accepted Value
1-	Hands Washing	0.827	74	0.1 -0.7
2-	Nurses Knowledge Questionnaire	0.967		
3-	Structure	0.823		

- Cronbach's alpha (α)-tests are performed to assess the dependability of multiple- surveys with Likert Scale questions (Internal Consistency).
- These findings in this Table (3.2) demonstrate that reliability of infectious disease according to hand washing were (α= 0.827), and overall management evaluation α= 0.967, as well as α= 0.823 about the structure through this testing show

The following formula was used to obtain the reliability coefficient for the pilot study:

$$\propto = \frac{k}{k-1}\left(1 - \frac{\sum_{i=1}^{k} \sigma^2 Yi}{\sigma^2 xi}\right)$$

K = The number of elements (questions)

σY = The standard deviation of the answers to the question i

σ = The standard deviation of all of the replies to the questions

$$r = \frac{N\Sigma xy-(\Sigma x)(\Sigma y)}{\sqrt{[N\Sigma x^2-(\Sigma x)^2][N\Sigma y^2-(\Sigma y)^2]}}$$

Whereas:

N = Represents the number of possible score combinations

Σxy = The average of the matched scores' products

Σx = The total number of x- markers

Σy = The sum of y- values

Σx^2 = The calculation of the squared x scores

Σy^2 = A mount of y squared points

3.8. Ethical Considerations

Ethical obligations are one of the most important things that the researcher must follow and abide it when doing the study. Before the starting data collection from the target population that has been identified for the study, the researcher should clarify the main purpose and desired goal of conducting this study for the sample to be including in the study, as well as adhere to the strict confidentiality of the data taken from the study sample and pledge to use it for scientific purposes related to the study only, before beginning to collect data from the

sample of nurses who are going to participate in the research the researcher provided a brief explanation of the scientific background of the research, the purpose of conducting it and the role of the nurses who are going to participate in this study, in order to provide them with a clear and complete picture of the study to be conducted, on the other hand, the researcher emphasized that all nurses who are participating in the study had the right to not complete their participation and withdraw from this study in the event that they felt uncomfortable or annoyed with some of the items in the questionnaire that was prepared as a research tool or the researcher's method of collecting data or anything else (Appendices B) .

3.9. Data Collection Methods:

After obtaining approval from all institutions data were gathered using the study questionnaire from the period 17th March, 2021 to 15th May 2022. Self-report method was constructed, all of the nurses in the research were given a pre-test to measure their knowledge took approximately (15-20) minutes, data were collected through the arabic version .

3.10 . Statistical for Data-Analysis

Statistical Package for Social Sciences (SPSS) version 20 and microsoft excel (2019).The respondents were calculated in overall sample and then compared between different groups .

Comparison was done using Chi–squared (χ^2) investigation. *P-value* (0.05) was considered as statistically significant .

These Methods are Presented as Follows :

3.10 .a. Descriptive Data Analysis Approach

Descriptive analytics is the first step in data analysis. The goal of descriptive analytics is to figure out what happened ?

The measurement of the following:

1. Frequency (F)
2. Percentage (%) as $\frac{part}{whole} \times 100$
3. Grahical Presentation

   Summary-Statistics Tables Including: Mean Mean of score
4. Mean of Score (M.S)

The predictable value is denoted through the lowercase Greek letter mu (μ).

M.S = Mean of score

F= Frequency

S= Score

N= Size of the sample

$$M.S = \frac{\sum_{i=1}^{r} fixi}{\sum_{i=1}^{r} fi}$$

5. **Range**

The disparity in data values between the greatest and lowest.

Range = Maximum – Minimum

6. **Mode :** The most often occurring, recurring or common number in the data **.**

3.10 .b . Inferential Statistical Data Analysis Approach

An inferential statistic is computed from the data as a means of inferring more general features that go beyond observable information. Statistics is one of the important subject matters in data science, because it gives tools and strategies for gaining a deeper understanding of data.

3.10.b.1. Chi-Square Analysis is basically a data analysis based on observations of a random collection of variables.

$$\chi_c^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

Where Oi is the perceived value of group i and Ei is the anticipated rate of recurrence **.**

Used the following abbreviations for the comparison significant (C.S.)**:**

N.S = Non- significant at P>0.05

S. = Significant at P< 0.05

H.S = Highly significant at P< 0.01

Correlation: correlation is a statistical technique that can shows whether and how strongly pairs of variables are related.

Chapter Four

Results :

This chapter presents the descriptive analysis and data analysis in scientific tables that correspond to the study objectives as following :

Table(4-1); Distribution of the study sample related to their socio demographical characteristics :

Age (Years)		
Group	**Frequency**	**(%)**
-29	76	**38**
30-39	43	21.5
40-49	35	17.5
50 above	46	23
Total	**200**	**100 %**
Gender		
Male	160	**80**
Female	40	20
Total	**200**	**100 %**
Training for CDC Program		
Group	**Frequency**	**(%)**
Yes	88	44
No	112	**56**
Total	**200**	**100 %**
Marital status		
Single	53	26.5
Married	127	**63.5**
Widowed	5	2.5
Divorced	11	5.5
Separated	4	2
Total	**200**	**100 %**

Continue.....

Residence		
Urban	153	**76.5**
Rural	47	23.5
Total	**200**	**100%**
Level of Education		
Group	**Frequency**	**(%)**
Secondary Nursing School	55	27.5
Institute (Diploma)	70	35
College & above	75	**37.5**
Total	**200**	**100 %**
Empolyment at the CDC unit (Years)		
Group	**Frequency**	**(%)**
1-5	28	14
6-10	70	35
11-15	71	**35.5**
16 above	31	15.5
Total	**200**	**100 %**

F:Frequency, % : Percentage, M: Mean

Table (4-1): Revealed descriptive statistics the study participant distribution of socio-demographic characteristics in variable of frequencies and percentages of nurses, out of (200) subjects, participated in the study. The table above shows that the highest percentage of the sample represented (38%) of the health workers they were between the age group of (-29) years, for this sample males make up about two-thirds of the study group which represented (80%) while (44%) of the participants have training courses on the infectious disease control program precautions, where most of the participants are male, with the respect to training for CDC program the highest percentage of the sample represented (112 %) most of their answers were [NO] training for commnicable disease program regarding marital status, the highest value who are married, it reached [127 (63.5%)], concerning the place of residence the greader number of subjects were (urban residence staff), which represented [153 (76.5%)] additionally, most of the study sample in regarding to their marital status are married. In regard to their level of educational, the highest percentage of participants the greater number of them were college & above which represented (37.55%),finally the years of empolyment at the CDC unit the highest percentage of the sample represented (35.5%) were subject within a groups from (11-15) number**.**

Table (4-2): Nurses Knowledge of The Study Sample Related to Communicable Disease Control Precautions (Practice of Hands Washing)

List	Standards	Yes		No		Chi-Square χ^2	*P-value*	M.S	Sig.
		F.	%	F.	%				
a1	Hand washing before caring for the patient	103	51.5	97	48.5	0.180	0.671	1.48	N.S
a2	The routine hands washing before & after interaction with the patient is a standard procedure	70	35	130	65	18.000	<0.0001	1.65	**S****
a3	I taking the necessary precautions for prevention and control of infection	180	90	20	10	130.25	< 0.0001	1. 09	**S****
a4	I following the protocols laid down for prevention and control of infections	90	45	110	55	2.000	0.157	1.5	N.S
a5	Scrubbing hub with antiseptic	112	56	88	44	2.880	0.090	1.44	N.S
a6	Sleeves above the elbow	55	27.5	145	72.5	40. 500	< 0.0001	1.72	**S****
a7	Hands free of jewelry and other accessories	185	92. 5	15	7.5	144.500	< 0.0001	1.07	**S****
a8	Avoid recontaminating of hands at when the tap is turned on	163	81.5	37	18.5	81.05	< 0.0001	1.18	**S****
a9	The liquid soap is applied	93	46.5	107	53.5	0.98	0.322	1.53	N.S
a10	Hands should be washed for at least 40-60 seconds.	113	56.5	87	43.5	3.380	0.066	1.43	N.S
a11	Hand washing after caring for the patient	180	90	20	10	130.25	< 0.0001	1. 09	**S****
Total Chi-Square (χ^2) =387.552 Total (*P-value*) = < 0.0001									

Sig. Significant, M.S Mean of Scores , F. Frequency, N. S . Non- Significant

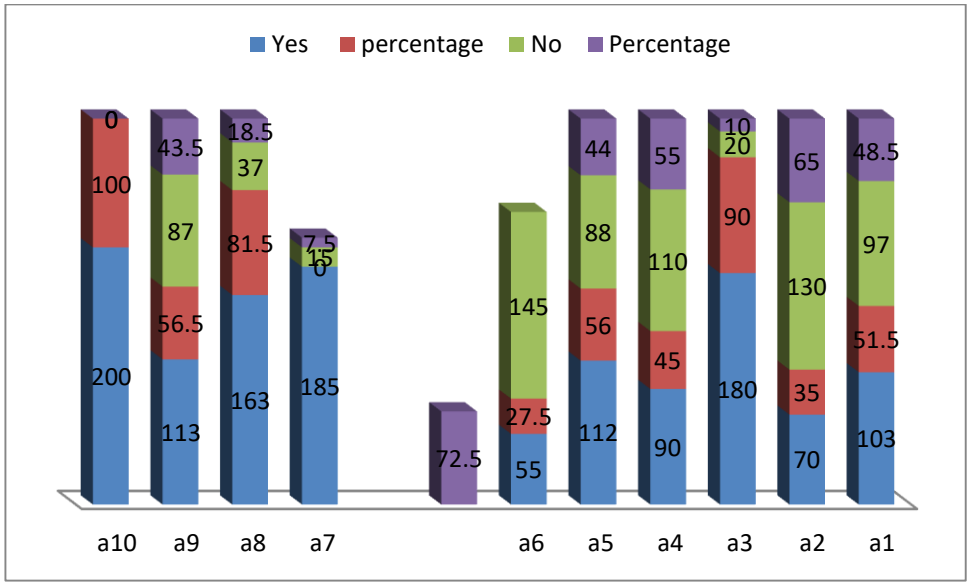


Fig. (4-8). Hand Washing Practices

Figure (4.8): This figure shows the health model distribution of nurses' knowledge about preventive of communicable diseases, an illustration of potential infections that arise from hands, and protocols that follow participant assignment and hand-washing practice before and after patient care to communicable disease control workers according to the CDC program applicable in hospitals. *P -value* ≤ 0.05

Table (4-2) : Hand washing is one of the simplest ways to protect yourself and others. Note in the above table that the total sum of the chi-square value and the probability ratio amounted to [(χ^2) =387.552] total (*P-value*) = < 0.0001,from this sample. This meaning, the independent variable is a good estimator and has high influence on hand washing habits, the current table (4-2) demonstrated the practice of hands washing about of communicable diseases control, how the individuals' responses to their hand washing habits in different categories in highlighting of the paragraph [Hand washing after

caring for the patient] as more than half of the nurses answered (Yes) and while less than a quarter of the number was their answer (No) of this sample, the reason is due to the health situation and fear of disease outbreaks, the reporting assessment result was highly significant.

In additional the results revealed that the sample responses to items [Hand washing before caring for the patient, I following the protocols laid down for prevention and control of infections scrubbing hub with antiseptic,Sleeves above the elbow, A void recontaminating of hands at when the tap is turned on,The liquid soap is applied, Hands should be washed for at least 40-60 seconds] were reported [No Siginficant] at a level of significance greater than (*P -value* ≤ 0.05). While finding out of this table reveal that of scores is highly significant of items such as : (The routine hands washing before & after interaction with the patient is a standard procedure, I taking the necessary precautions for prevention and control of infection, sleeves above the elbow, Hands free of jewelry and other accessories, A void-recontaminating of hands at when the tap is turned on, hand washing after caring for the patient) for practice of hands washing about of communicable disease control program .

Table (4-3): Nurses Knowledge Related to Their Study Sample and Their Overall Management

List	Standards	Yes		No		χ^2	*P-value*		Sig.
		F.	%	F.	%			M.S	
A1	Staff have the ability to gain experience by participating in group work	42	21	158	79	67.28	< 0.0001	1.79	**S****
A2	The institution seeks to establish an information system for staff training and development	61	30.5	139	69.5	30.42	< 0.0001	1.69	**S****
A3	Supervision of quality staff	47	23.5	153	67.5	56.10	< 0.0001	1.76	**S****
A4	A dministration monitors the quality of service provision continuously	32	16	168	84	92.48	< 0.0001	1.84	**S****
A5	A dministration works to address errors as soon as they occur	118	59	82	41	6.48	0.011	1.41	N.S
A6	Training programs aim to emphasize the importance of quality in health institutions	15	7.5	185	92.5	144.500	<0.0001	1.92	**S****
A7	The administration maintains continuous communication with employees and facilitates access staff to him	196	98	4	2	184.320	<0.0001	1.02	N.S
A8	Continuously training staff on development processes	22	11	178	89	121.680	<0.0001	1.89	**S****
A9	Provide all vaccines in the institution	91	45.5	109	54.5	1.620	0.203	1.54	N.S.

Continue.....

List	Standards	Yes		No		χ^2	*p-value*	M.S	Sig.
		F.	%	F.	%				
A10	Get the necessary vaccinations for all employees	137	68.5	63	31.5	27.380	<0.0001	1.31	N.S.
A11	Program evaluation	43	21.5	157	78.5	64.980	<0.0001	1.78	**S****
Total Chi-Square (χ^2) =387.552 Total (*P*-value) =0.0001									
Sig. Significant M.S . Mean of Scores, F. Frequency, N.S. Non- Significant									

Table (4-3) : Show represents findings out of this study sample in respect to their respond to reveal that of scores is highly significant on items such as : (1, 2, 3, 4, 6, 8, 11) and (5, 7, 9, 10) were non- significant for items for their overall management evaluation (*P*>0.05). This table Displays the distribution of study sample by their overall management evaluation. It might be observed in relation to the (other practices) of health workers as evaluation managment, some of items has reported (Highly Siginfcant) for instance: [Staff have the ability to gain experience by participating in group work, The institution seeks to establish an information system for staff training and development, Supervision of quality staff, a dministration monitors the quality of service provision continuously, Training programs aim to emphasize the importance of quality in health institutions. Continuously training staff on development processes Program evaluation]. Regarding the findings , the results indicate of the (Non-Siginficant) was found in the items such as : [Administration

works to address errors as soon as they occur, The administration maintains continuous communication with employees and facilitates access staff to him, Provide all vaccines in the institution, Get the necessary vaccinations for all employees] for their overall management evaluation. (P>0.05) and the total Chi-Square (χ^2) =387.552 .

Table (4-4): Knowledge Related to Study Sample and their overall human resources management

List	Standards	Yes		No		Chi-square	*P-value*	M. S	Sig.
		F.	%	F.	%	χ^2			
B1	Provides efficient human resources to provide its services with high quality	53	26.5	147	73.5	44.180	< 0.0001	1.73	**S****
B2	Sufficient financial resources allocated to implement total quality management	79	39.5	121	60.5	8.820	0.003	1.60	N.S
B3	There are sufficient staff in this center	43	21.5	157	78.5	64.980	< 0.0001	1.78	**S****
B 4	Cleaners they wear their own equipment	53	26.5	147	73.5	44.180	< 0.0001	1.73	**S****
B5	Financial management	46	23	154	77	58.320	< 0.0001	1.77	**S****
Total Chi-Square (χ^2) =16.293 Total (P-value) =0.0003									
Sig. Significant M.S . Mean of Scores, F. Frequency, N.S. Non- Significant									

Table (4-4): Displays the domain of human resources management questionnaire.The responses to item of domain, shows their financial management is largest accounted that of score in the light of (1.7700), finding out of this table reveal that of scores is (High Significant) of items such as: [Provides efficient human resources to provide its services with high quality, There are sufficient staff in this center,Cleaners they wear their own equipment, Financial management] and (Non-Significant) for human resources management about of communicable disease control, below probability level (P=0.003) and, Chi-Square (χ^2= 16.293) **.**

It was found that more than fifty percent of the human resources are not available, as well as more than half of the cleaners are not committed to wearing special equipment and there is an insufficient number of medical staff in the infectious diseases unit due to the large number of patients and the lack of financial management **.**

Table(4-5): Knowledge level of the study sample related to their communicable diseases control precautions

List	Standards	Yes		No		Chi-square	*p-value*	M.S.	Sig.
		F.	%	F.	%	χ^2			
C1	The presence of the record of transitional diseases	58	29	142	71	35.280	< 0.0001	1.71	S**
C2	Instant news forms are available and applicable	52	26	148	74	46.08	< 0.0001	1.74	S**
C3	The monthly report form is available and implemented	120	60	80	40	8.000	0.005	1.40	N.S.
C4	The presence of reports on preventive measures against transitional diseases	61	30.5	139	69.5	30.420	< 0.0001	1.69	S**
C5	Name a medical staff to follow up on transitional diseases	177	88.5	23	11.5	118.580	< 0.0001	1.11	S**
C6	The presence of a form for intestinal parasites in the health centers included by the risk	21	10.5	179	89.5	124.820	< 0.0001	1.89	S**
C7	The presence of a local plan in light of the central plan	93	46.5	107	53.5	0.980	0.322	1.53	N.S.
C8	Workshops in coordination with health promotion units	183	91.5	17	8.5	1.377	< 0.0001	1.08	S**
Total Chi-Square (χ^2) =128.149 *P*=0.0001									
Sig. Significant M.S . Mean of Scores, F. Frequency , N.S. Non- Significant									

Findings out of this table reveal that of score is Highly Significant on items such as: (1, 2, 4, 5, 6, 8) and Non-Significant (3, 7), for items for CDC Unit . Table (4-5) : Indications the items of CDC unit of staff practices with respect to standards program that was found among the applicable standard such as : [The presence of a form for intestinal parasites in the health centers included by the risk]. The results shows (Highly Significant),the table shows that some of the other assessments of the centers for disease control unite report different results that can be observed in light of communicable diseases while ensuring the quality of which is reported (Highly significant) such as: [The presence of the record of transitional diseases, Instant news forms are available and applicable.The presence of reports on preventive measures against transitional diseases, Name a medical staff to follow up on transitional diseases, the presence of a form for intestinal parasites in the health centers included by the risk, Workshops in coordination with health promotion units], in addition some evaluation gain Non-significant such as : [The monthly report form is available and implemented,the presence of a local plan in light of the central plan] .

Table (4-6) : Nurse knowledge related to the study sample and their communicable diseases prevention services

List	Standards	Yes		No		Chi-square χ^2	*p-value*	M.S	Sig.
		F.	%	F.	%				
D1	Prevention of communicable diseases through use of health education, immunization and safety environment	138	69	62	31	28.880	< 0.0001	1.3100	S**
D2	Early detection of acute respiratory infection and pneumonia	66	33	134	67	23.120	< 0.0001	1.6700	S**
D3	Management of acute respiratory infection and pneumonia referral of severe cases	41	20.5	159	79.5	69.620	< 0.0001	1.7950	S**
D4	Disease surveillance and reporting of cases	54	27	146	73	42.320	< 0.0001	1.7300	S**
D5	Overall Quality of care in hospital or primary health care centers	60	30	140	70	32.000	< 0.0001	1.70	S**
D6	Procedures for communicable disease control are followed according to the context	149	74.5	51	25.5	48.020	< 0.0001	1.2550	S*
D7	Adopting protocols for the prevention and treatment of communicable diseases	118	59	82	41	6.4	0.011	1.4100	N.S.
D8	Apply the protocols for the epidemiological monitoring system	161	80.5	39	19.5	74.4	< 0.0001	1.1950	S**
D9	Documentation	166	83	34	17	87.1	< 0.0001	1.1700	S**.
Total Chi-Square (χ^2)=608.907 P=0.0001									
Sig. Significant M.S . Mean of Scores, F. Frequency, N.S. Non- Significant									

Table (4-6) : Shows the items of the subjects in nurses knowledge related to communicable diseases prevention services among staff nurse, results shows that the some items were reported assessment of Highly Significant such as :

[Prevention of communicable diseases through use of health education, immunization and safety environment, early detection of acute respiratory infection and pneumonia, management of acute respiratory infection and pneumonia referral of severe cases, disease surveillance and reporting of cases, overall quality of care in hospital or primary health care centers, procedures for communicable disease control are followed according to the context, apply the protocols for the epidemiological monitoring system , documentation] **.**

Regarding the results that reported Non-Significant they entail the following items such as: [Adopting protocols for the prevention and treatment of communicable diseases] there is 1negative attitude of 118 (59 %) at level (*P-value*=0.011),(χ^2 = 6.4) .

Table (4-7): Nurse knowledge related to the study sample and their practice of disposal of medical waste management (MWM)

List	Standards	Yes		No		Chi-square χ^2	*P-value*	M.S	Sig.
		F.	%	F.	%				
E1	Dispose of all waste by placing it in plastic containers designated for it.	166	83	34	17	87.120	< 0.0001	1.170	**S****
E2	Separation of waste at the generation site (according to colors)	34	17	166	83	87.120	< 0.0001	1.83	**S****
E3	Collection in a puncture -resistant container	66	33	134	67	23.120	< 0.0001	1.67	**S***
E4	Collection in a water - resistant container	39	19.5	161	80.5	74.420	< 0.0001	1.80	**S****
E5	Sharps waste is disposed of in plastic containers made of sharps-resistant materials	67	33.5	133	66.5	21.780	< 0.0001	34.83	**S****
E6	Swabs and other contaminated items are discarded in a red contaminated materials receptacle.	49	24.5	151	75.5	52.020	< 0.0001	26.01	**S**.**
E7	Procedures Proper disposal of expired medicines	40	20	160	80	72.000	< 0.0001	1.80	**S****
E8	Workers sort medical waste as it is collected	149	74.5	51	25.5	48.020	< 0.0001	1.25	**S****

Continue.....

List	Standards	Yes		No		Chi-square		M.S	Sig.
		F.	%	F.	%	χ^2	*p-value*		
E9	Workers use personal protective equipment	158	79	42	21	67.280	< 0.0001	1.21	**S****
E10	Adequate number of workers in waste collection	78	39	122	61	9.680	0.002	1.61	N.S
Total (χ^2) =134.087 P=0.0001									
Sig. Significant M.S . Mean of Scores, F. Frequency, N.S. Non- Significant									

Table (4-7) : Finding out of this table make known that means of scores is Highly Significant on items such as : (1, 2, 3, 4, 5, 6, 7, 8, 9) while were Non-Significant items such as : (Adequate number of workers in waste collection), where the probability ratio was (*P-value* = 0.002) **.**

Table (4-8): Nurses knowledge of the study sample related to their structure and design of buildings items :-

List	Standards	Yes		No		Chi-square χ^2	*p-value*	M.S.	Sig.
		F.	%	F.	%				
F1	Quality in physical layout & infrastructure of hospital	44	22	156	78	62.72	< 0.0001	23.56	**S****
F2	Adequacy of physical facilities provided for public & staff in the institute	57	28.5	143	71.5	36.98	< 0.0001	29.93	**S****
F3	Adequacy of supportive services in institution	44	22	156	78	62.72	< 0.0001	23.56	**S****
F4	Adequacy of treatment facilities in institution.	34	17.0	166	83	87.12	< 0.0001	18.66	**S****
F5	Sufficiency of supportive facilities for treatment in institution	40	20.0	160	80	72.00	< 0.0001	21.60	**S****
F6	Well defined documentation policy followed in institute	39	19.5	161	80.5	74.42	< 0.0001	21.10	**S****
F7	Appropriateness of documents	149	74.5	51	25.5	48.02	< 0.0001	75.01	**S****
F8	Policies and procedures a ccording to quality assurance	174	87	26	13	109.52	< 0.0001	87.26	**S****
F9	Quality is integrated in all areas.	149	74.5	51	25.5	48.02	< 0.0001	75.01	**S****

Continue.....

List	Standards	Yes		No		Chi-square χ^2	*p-value*	M.S	Sig.
		F.	%	F.	%				
F10	The building has good ventilation and lighting	49	24.5	151	75.5	52.02	< 0.0001	26.01	**S****
F11	Rules against excess work load of staff in direct contact with patients	56	28	144	72	38.72	< 0.0001	29.44	**S****
F12	Funding for the institution unit commensurate with the requirements of the unit	45	22.5	155	77.5	60.50	< 0.0001	41.02	**S****
Total (χ^2)=626.656 , P=0.0001									
Sig. Significant M.S . Mean of Scores, F. Frequency, N.S. Non- Significant									

Table (4-8) : Finding out of this table make known that means of scores is highly significant on all items such as : (quality in physical layout & infrastructure of hospital, adequacy of physical facilities provided for public & staff in the institute, adequacy of supportive services in institution, adequacy of treatment facilities in institution, sufficiency of supportive facilities for treatment in institution, well defined documentation policy followed in institute, appropriateness of documents, policies and procedures a ccording to standared, the building has good ventilation and lighting, rules against excess work load of staff in direct contact with patients, funding for the institution unite commensurate with the requirements of the unit) the reporting evaluation about the result was highly significant **.**

Table (4-9): Knowledge related to the study sample and their design of the building :-

List	Standards	Yes		No		Chi-square χ^2	*p-value*	M.S.	Sig.
		F.	%	F.	%				
G1	Buildings labels are clear for the purposes of emergencies	189	94.5	11	5.5	158.42	< 0.0001	94.61	**S****
G2	Toilets and wash basins maintained and available for all workers	48	24	152	76	54.08	< 0.0001	25.52	**S****
G3	Emergency exits are clear and accessible	167	83.5	33	16.5	89.78	< 0.0001	83.83	**S****
G4	The quality of the building materials for the building is adequate	174	87	26	13	109.52	< 0.0001	87.26	**S****
G5	The walls are clean and whitewashed	179	89.5	21	10.5	124.82	< 0.0001	89.71	**S****
G6	The center is well furnished	177	88.5	23	11.5	118.58	< 0.0001	88.73	**S****
G7	The building materials quality is appropriate	65	32.5	135	67.5	24.50	< 0.0001	33.85	**S****
G8	All health service units are appropriately organized	59	29.5	141	70.5	33.6	< 0.0001	30.91	**S****
Total (χ^2)=106.099 P=0.0001									
Sig. Significant M.S . Mean of Scores, F. Frequency, N.S. Non- Significant									

Table (4-9) : This table findings that there that means of scores is a Highly Significant a ssociation between their design of the buildings items such as: [buildings labels are clear for the purposes of emergencies, toilets and wash basins maintained and available for all workers, emergency exits are clear and accessible, the quality of the building materials for the building is adequate,the walls are clean and whitewashed, the center is well furnished, the building materials quality is appropriate, all health service units are appropriately organized], the reporting evaluation about the result was highly significant that presented in this table at *P≤ 0.05, the total chi-squre was* [χ^2=106.099]

Table (4-10): This table shows the correlation coefficient between overall all the study sample related indicators Parmeters :-

Parmeter s		OME	HR	CDC unit	DPS	MWM	SD	DB
HW	r	.018**	-.085	.112**	.555**	-.454	.378**	-.595-
	Sig.	.960**	.816**	.758**	.096**	.187**	.281**	.070**
OME	r	1	.239**	-.179-	.397**	.459**	.478**	.374**
	Sig.		.507**	.620**	.256**	.182**	.163**	.286**
HR	r		1	.228**	0.066**	-.261-	.282**	.450**
	Sig.			.526**	.856**	.466**	.430**	.192**
CDC unit	r			1	-.173-	-.503-	-.195-	-.017-
	Sig.				.633**	.138**	.590**	.963**
DPS	r				1	-.028-	.568**	.068**
	Sig.					.939**	.087**	.851**
MWM	r					1	.021**	.356**
	Sig.						.953**	.312**
SD	r						1	.375**
	Sig.							.286**

at the 0.01 level, every correlated was significant (2-tailed)

Note : HW (Hand Washing), OME (Overall Management Evaluation), HR (Human Resources Management), CDC unit (Communicable Diseases Control Unit), DPS (Diseases Prevention Services), MWM (Medical Waste Management), SD (Structure and Design of Buildings), Sig. (Significant), R(Pearson coefficient)

.

Table (4-10): Findings demonstrated there were (Non-Significant) relationship between hand washing and human resources where the correlation coefficient was at a significant degree (R= - 0.085) weak inverse relationship at a significant degree was (0.816), there is highly significant relationship between hand washing and CDC unit

The above table shows that most of these parameters have a strong positive relationship (Highly Significant) between the practice of hand washing and both : [overal managment evaluation (R=0,018), (Sig = 0.96), communicable diseases control unit, (R=0.112), (Sig= 0.758),disease prevention services,(R= 0.5), (Sig=0.96), structure and design of buildings (R=0.378), (Sig=0.281)]

However the inverse relationship appears weak between the practice of hand washing and both (HRM (R = -0.085), (Sig = 0.816), Medical Waste Management (R=-0.454),(Sig=0.187), Building design (R = -0.595), (Sig = 0.070) .

Findings demonstrated there a strong positive relationship between the overall management evaluation and both [human resources managment, (R=0.23), (Sig=0.5) disease prevention services, (R=0.39), (Sig=0.256), medical waste management, (R=0.459), (Sig=0.182), structure design (R=0.478), (Sig=0.163), design of the buildings (R=0.286) , (Sig=0.450)] .

There was a substantial positive association between human resource management (communicable disease control unit, (R=0.228), (Sig=0.5), disease prevention (R=0.066), (Sig=0.8), building structure and design, (R=0.282), (Sig=0.4), building design, (R=0.450), (Sig=0.192)].

Whereas the association between human resources and medical waste management was inverse or weak (R=-0.26), (Sig=0.4)

The axis of the communicable disease control unit and disease prevention have an inverse connection. (R=-0.173), (Sig= 0.63), medical waste management, (R=-0.503), (Sig=0.138), structure design (R=-0.195),(Sig=0.5) design of the buildings (R=-0.17), (Sig=0.9)] .

Moreover, there is a sturdy correlation association between the disease prevention services and structure and design of buildings (R=0.568), (Sig=0.087), design of buildings (R=0.068), (Sig=0.851), while the correlation was inverse or weak between diseases prevention services and medical waste management (R=-0.028),(Sig= 0.9) .

The relation between medical waste management and building structure and design (R=0.021), (Sig= 0.9) and building design was substantial. (R=0.356), (Sig=0.3)

Finally, there is a strong positive relationship between structure and design of building and design of building (R= 0.375), (Sig=0.286) .

Chapter Five

Discussion of the Results

This chapter discusses the research findings will be in detail under the following healings:

5.1. Explain the research sample essential socia- demographic characteristics. : Table (4-1) .

Various research have discovered that socio-demographic variables and data play a significant role. Staff health behaviors affect not only their own health but also their provision of health promotion services to their patients. Although different occupational groups work in hospitals, few studies have compared health behaviors among them (Chiang, *et al.,* 2014) .

Regarding to socio-demographic characteristics in Table (4.1) indicated that less than half of age (-29) years with mean (2.25) and SD (± 1.19). It has been found from a number of, studies that the socio–demographic features and information play important role to be as reason of parcticing the behavior among health workers, as a result, male health workers were found to be substantially more prevalent than female health workers socio-economic status has a profound impact on many diseases and disorders, including an array of pain conditions an important finding is that socio-economic inequalities are not confined to people who live in poverty. Instead, they manifest as a gradient in disease risk that increases among progressively lower rungs of the socioeconomic ladder (Slade, 2013) .

Age :-

The study finding demonstrations (38%) of the participants were within age group (-29) years old, with mean and standard deviation (2.25 ≠ 1.19). Table (4-1), where the total number of the sample amounted to (200) participants, most of whom were graduates of nursing colleges and others from medical institutes the current study agreees with (Munyae,2020) this study was conducted in Africa. The target group consisted of 7533 participants; 7005 students and 528 employees, who found that the the lowest age group used was (16-20) years in order to accommodate students for the employees, their ages ranged from the (26-30) age group to (46-50) age group this finding shows that on average, the employees are in the most productive stage of their careers. The average age of the participants was 31 years with (85.2 %) having a bachelor's degree (30.7%) were nurses. Furthermore, the average age of primary health care participants was (37.14 6.17) and more than (79 percent) of all participants were female (85.2%), the sudy current dis agree with (Picakciefe,2015) this research was carried-out in Mugla City .

The goal of this research was to look at the correlation between Turkish primary health care employees' also, this finding supported by an Iraq study conducted by (AL-Taee,2021), they found that the majority was 67 (33.5 %) of the study sample in the age group between (-29) years.

Gender:

The results of gender current study show most participants were male (staff) aged greater than 25 years old, the results display that more than half of the sample were males and their percentage reached were (80%) from male staff and (40%) from female staff. This result might be explain by the study's low male participation rate because hiring men to do nursing work that requires a lot of muscle effort, this results agrees with the study of Al-Zubaid, 2007 indicates that more than half of the sample (66.2%) were male while (33.8%) were female, that there is a shortage of female nurses who are working in the epidemic wards]. These findings are consistent with the results of study done by AL-Kerity,2017 conducted in Iraq, which amounted to (85.7 %) of the sample were males and (14.3%) of the were female.also consistent with the results of reseach done by (Shawon, 2020), which found to control 81 (80.2%), and HCC 64 (80.0%)of sample were males and 20 (19.8), HCC 16 (20.0%), *P-value* 0.974 were female. It is evident that food habits may play an important role in HCC development.

Marital Status :-

According to the findings of the current study, the majority of the study sample (63. 5 %) most from married Table (4-1), these findings coincide with the findings of (Yasir,2018) who has (73.3%), a study who conducted in AL- Hilla City . Iraq and found that the majority of teachers (73.3%) were married. In addition, this result agreed with Kassim, 2020 who found the majority of sample (308(75%) were married, the study conducted in AL- Mosul,Iraq, the sample size was (N=412), the questionnaire was composed of

two parts, the first included demographic information, and the second covered IPC measures. according to 4-point Likert-type scale (1= strongly agree, 2= agree, 3= disagree, and 4= strongly disagree),for the purpose of data analysis, answers [1] and [2] were grouped as a positive answer (Yes) and expressed in tables, while responses [3] and [4] were considered as (No) and analyzed accordingly. Comparison was done using Chi–squared (χ^2) test. A *P-value* of < 0.05 was considered as statistically significant.

Training for CDC Program:-

found that participants applied what they learned from the program, and highest percentage was among staff (56 %), most of them were colloge of the nurse.This result is consistent with findings from the in Cambodia (Horváth, *et al.,* 2021), they found conducted a mixed methods evaluation of the program's outcomes and impact on the graduates and health centers.The majority of health workers 112 (56%) they did not receive any training courses at the hospital and whereas 88 (44%) received at least one course. The study findings agree with study of Al-Ghamdi in (2011) that show (57.8%) of health care workers did not participanted in training course, about communicable diseases control. This study revealed that the level of knowledge among HCWs was widely varied according to job categories, this finding was also in agreement with another study (Mousa,2019), conducted in Iraq in Basra Governorate, about 222 (55.4%) were participated in training courses in the hospital or anywhere else, whether inside or outside the governorate. Regarding these results the 222(55.4%)were concerned in training courses in hospital or outside and 179(44.6%)

received at least single course reveals that most health workers have a moderate level of knowledge, as well as practices associated to hand washing hygiene regarding the infection control precautions, as regards of training courses, the results of the study showed that most of the 88 (44%) subjects did not have a training course as shown in table (4-1). This results approve with the judgments of the research that conducted in Nigeria, the study prepared by (Onadeko, 2011) which offered that the (65.5%), of the studied healthcare workers lack infection control training; and that periodic education programs are urgently needed especially for health workers with many years of experience to help them maintain clinical skills and refresh their knowledge.They study also agreement with the findings of the study the study done by (Amoran,2013),which indicated that insufficient health professional training programs have been systematically evaluated.

Residence :-

The results of current study show most participants were most of them are from urban areas, where their percentage has reached 153(67.5%),as for the rural areas, the percentage 47 (23.5%),the majority of the participants in this study were rural residents,according to the findings, this might be related to the fact that the trial was conducted in a tertiary hospital that provides specialized health care. In addition, a supporting research was undertaken by (Al-Ali, 2021), who found a great majority (99.5%) were living in urban area, while only 0.5 % lived in rural area. this was similar to that reported in Kerbala City.

Level of Education :-

Table (4.1) : Reveals that most of these health workers (37.5%) are graduates from college of nurse , while (27.5 %) are graduated from secondary school of nursing and the (35 %) graduated from institute of nursing. These findings agree with the findings study of (Taha, 2021) who found that (the socioeconomic variable indicates that those consumers are associated moderate socio-economic status) of the participants in his study were from medical institution group.

Year's of Empolyment at the CDC Unit :-

The present study revealed that high percent of the study group age (11-15),where their percentage has reached (35.5%). It is consistent with the current study (Yasir,2018) who has reported (11–15) years that most common years of for employment in teaching sector, for his study are (50%) of teachers , also it is consistent with the current study by done (Hassan,2018), the questionnaire included two axes: the first axis respondents which included the following (gender, age, social status, educational attainment, job title, years of service, number of training courses participated in), furthermore it the study results revealed indicates that (71%) of participant they were in the age group (11-15) years. The current study is consistent with by (Sharif, 2019), conducted in Sulaimani, Iraq. Which shows that (39%) they were in the age group (> 10) years, from years of employment, they discovered that approximately quarter of the participants were graduated from institute, and they have a working less than 10 years of ten employment in unit .

Chapter Five: Discussion of the Results

Part I : Nurses Knowledge Related to Communicable Disease Control Precautions . Table (4-2)

The present study revealed that high percent of the study (Hand washing after caring for the patient). Where it reached (100%) out of a total of (200) employees.Hand hygiene is the most important means of preventing HAI and other diseases. This indicates the routine of hand washing is essential before and after patient care, the current study agree (Onyedibe,2020). This study also revealed that availability of hand washing stations was high (98%). However, only 28% of the sinks were fully functional with water flowing from their taps all day. Also it is agrees with the current study by (Beale, 2020), the purpose of this study was to look at the link between hand hygiene and the risk of contracting seasonal coronavirus infection, for each of the following items (sleeves above the elbow, hands free of jewelry and other accessories, hands should be washed for at least (40-60) seconds to avoid recontamination while turning on the tap, the research on the other hand, supported the next part (Routine hand washing before and after interaction with the patient). In addition, the study current disagree with the study done by (Nasution,2019), for each of the following items (I taking the necessary precautions for prevention and control of infection)whose found a lack of conventional safety precautions in surgery wards nurses were assigned to surgical wards for the following reasons: There is a lack of an infection control committee and an infection control team both of which have a significant impact on nurses' performance. Unavailability of most of tools in the surgical wards, affected nurses' performance towards standard-precautions. Furthermore, healthcare professionals must

be educated and trained in order to ensure that standard precautions policies and procedures are understood and followed. The number of subjects in the sample volume was (N=37) subject (Nurses, both male and female), show that majority of nurses (91.9%) have not attended training sessions regarding infection control $P \leq 0.05$, a ccording to research done by (Khalil,2018) study in Egypt. Stated that; the expected key health-care workers who interact with patients may become carriers of infectious diseases. The study used a sample size of (N=700) working nurses starting by evaluation of injection practice were studied, the consequences revealed moderate grade hand hygiene soap and alcohol rub was available in hospitals sitting recorded in 80%, 85% of opinion and after intervention increased up to 95% and 98% with a significant difference, safety boxes were available for sharp disposal before intervention and become 100% available after intervention was statistically significant after training sessions.The finding of this study indicated that the nurse's (staff) had a low performance when using the CDC Program; this result is practically identical to the study's findings. The study current agrees with the study done by (Sharif, 2019), who noticed that a lot of them cleansed their hands after every surgery was (72%) revealed hand washing or disinfectant of nurses' before commencing the procedures,but no nurses did so before the procedures, before beginning the procedures nurses were seen washing their hands or disinfecting them, but no nurses were seen doing so.

5.2.: Nurses Knowledge Related to Their Overall Management : Table (4-3)

This evaluation has shown that the organizational structure has suffered from a lack of funding, with a mechanism in place to ensure the treatment of all cases diagnosed by the medical and health staff starting from the health staff, and the lack of the information system for staff training and development. Table (4-3) Reveals that most of these items reveal that of scores is highly significant among the (200) participants . several studies show the diffenent items in relation to adminstration and performance of health workers during management evaluation, some of these items obtained the high significant of (1,2,3,4,6, 8,11) , the study indicated that the strong relationships between the overall management and other parameters. The study finding shows that the quality management structures are in place in all of the pilot departments and that they are working concretely toward, analyzing and solving the problems of the department, there is a weakness in quality management, weakness of the staff information system (especially the training and development system) in health programs and seminars related to communicable diseases, this study agrees with study done by (GRAZ,1996) who found study in Switzerland, a questionnaire included 49 questions divided into four sections, three of them labelled according to Donabedian's classification of constituents of quality of care (structure, process and outcome, most respondents (69 %) favoured the use of outcome indicators for quality control only (13%) favoured indicators pertaining to process or structure of care, a ccording to the health

care financing administration (70%) of health care workers believed statistics on death rates were poor for improving quality of health care, while (30%) thought they were fair or better. In order for physicians to make good use of mortality statistics, crucial information must be provided to them, allowing for interpretation and constructive criticism. These results agrees with (AL-Kerity, 2017) who has reported to evaluate the practices of healthcare professionals in primary health care institutions in terms of infection control. The results of this study indicated that items number(1,2,3,4,6,8,11)were investigated in the overall management assessment of quality assurance in Table No.(5-2), a ccording to the findings, there was a strong correlation between the overall management evaluation and the CDC program, except with items number (5,7,9,10) were No-Significant.This finding was supported by (Welay *et al*, 2017), a resarch in Ethiopia, they found the overall evaluation of HMIS was (75.2 %) which showed as a judgment parameter of "Good" Particularly, a vailability (83%), compliance (70%), information utilization (71.2%) and data quality (76.0%) dimension are categorized as judgment parameter of all as [Good]**.**

5.3. Knowledge Related to Their Overall Human Resources Management

Table (4-4): Analysis of this assessment depicts that provides efficient human resources to provide its services with high quality, the results obtained 53 (26.5%), same table revealed that most of the participant, some of theses items obtained the high score of (1,3,4,5), a strong positive relationship between the human resources management table (4-10) the study indicated that the strong relationships between the quality assuance and human resources. This outcome agree with the study done in Turkey by (Şendoğdu, *et al.* 2013), they detected that by (100%) of top tier-management, 65.1% with mid tier management was found to have a high correlation with organizational obligation, researcher' applied the questionnaires included (169) participants from top tier management personnel. Other HRM characteristics and organizational commitment were shown to have a substantial and statistically significant positive association. A statistically significant difference was find out (P=0.035;2=6.693). Furthermore, training in multiple function participation was shown to have a significant association with gender (2=5.322, P= 0.021), but no significant link with other characteristics (p>0.05) in human resources management practices. The study reveals that (79(39.5%) the highest percentage was (Sufficient financial resources allocated to implement total quality management), of the participants in the study answered (Yes) on the other hand were statistically no significant they, reached (χ^2 8.820,*P-value* 0.003) sxufficient financial resources allocated to implement total quality management, the present study results revealed that a percentage

more than fifty of the sample work as a medical assistant. *In addition,* there is insufficient human resources in the health institution this results was consistent with (Djibuti, *et al,* 2008), study in Georgia. They refined the majority of sample (N=277) there was an unequal distribution of public health workers across selected institutions,with lack of professionals in remote rural district centers and overstaffing in urban centers.

5.4. Knowledge related to Their Communicable Diseases Control Precautions

By investigating the activities of the infectious disease control unit in table No.(5), the consequences of the current study discovered that items number (1,2,4,5,6,8) were high significant and item number, except with items number (3,7) were no-significant for CDC unit it is observed that the total chi-squre and *p-value*during. The present study is found to be. (χ^2=128.149, *P*=< 0.0001), indicated that there was a significant association at the level of *P*=< 0.0001, the present study agreement with (Mansoor, 2016), a study with small sample size was done (N=70) participants from the health control and laboratory units to assess the actions of the health control and laboratory personnel in the control of the cholera outbreak, this study was conducted in the State of Iraq. AL-Hilla City, study found (83.3%) are males, indications that the majority (93.3%) of the health control staff are reasonable active in the direction control of cholera .

5.5. Nurse Knowledge Related to Their Communicable Diseases Prevention Services Table (4-6)

Analysis of this assessment depicts the majority most of their answers were highly significant the items of (1,2,3,4,5,6,8,9) and *P-value* < 0.0001, the quality assurance is determined through assessment of its components as being statistically examined. This result is agrees using the outcome of a study prepared in Iraq (AL-Jebore, 2021), who indicated that most of the primary health-care centers failed to meet the passing score in prevention through use of health education with great variation between PHC centers. A dditional analysis of this assessment represents that agree with anthor study was done in Ethiopia (Bayleyegn, 2020)that showed that the majority of the level of education and work experience were significantly associated with safe-infection prevention attitude and practice (*P value* <0.005), it was discovered to have a statistically significant strong and favorable relationship, found that the majority of the HCWs (90.2%) had good knowledge regarding infection prevention.The findings also revealed that when one's educational level progressed from diploma to master's, the trend of excellent infection prevention practice improved.

5.6. Nurse Knowledge Related to The Study Sample and Their Practice of Disposal of Medical Waste Management (MWM) [Table 4-7]

Analysis for such determination has depicted that the quality assurance for CDC program and practice of disposal of medical waste management has experienced good assessment in hospitals (Table 4-7), the study indications are supported by (Hamid,2018), who submitted a thesis titled assistant evaluation quality assurance of medical waste disposal. The dissertation included (150) interviewees from hospital. The goal of this dissertation is to give information on the use of quality assurance in medical waste disposal in order to uncover weaknesses. The significance of the chi-square was 33.2 with a probability of 0.000 and the mean value of the median was highly agreed up on showing a significant difference between the responses at a significance level of 0.05 the chi-square value was 33.2 with a probability of 0.000, and the median mean value was strongly agree indicating that the protective tools were available and strongly agree as the value of the majority and have a significant effect, the present study showed that 100 % of waste disposal method by (incineration) were about medical waste management.The study disagree with (Elhamadi,2015), study in Libya, the thesis included about assessment of health care waste management at primary health care centers,questionnaire was concerning about waste collection, transport, storage and disposal version 16 of the Statistical Package for the Social Sciences (SPSS), was used for data analysis, they found (35.5%) disposed the generated waste on daily basis (87%) of wastes collected in puncture proof, containers (56.5%) collected in water proof containers where the highest percentage of waste disposal was

reached by the municipality where it was (82.3%) with municipal waste, (17.7 %) with Incineration, while the same study was consistent with the method of waste disposal daily,medical personnel collected the waste first then cleaners delivered it, and all waste types were mixed together. Regarding the precautions that must be followed, particularly Personal Protective Equipment (PPE), it was found that about (79 %) workers use personal protective equipment and approximately (21 %) no one of waste handlers wore the mask, them worn gloves during cleaning, where is the reason behind this was that protective materials, supplies and facilities were not always available. The assessment of the items represented (Highly significant) as in (1,2,3,4,5,6,7,8,9) items the results supported by the study (Amoran, 2013) study in Nigeria, who submitted a thesis on infection prevention and conventional precautions among healthcare professionals, a total of nearly (421) communicable disease health unit workers were interviewed, where it was found 284 (67.5%) were male and 137 (32.5%) were female, who concluded that almost (70.1%) usually wear gloves before touching patients or patients' belongings. Interest products, (12.6%) reported wash their hand before putting on the gloves, (10.7%) washed hands after removal of gloves and (72.4%) changed gloves after every patient. The deficiency of equipment is cited as the primary cause for noncompliance with universal precautions by nearly (98.6 percent) of respondents, that the lack of equipment is the primary reason for noncompliance with universal precautions, on the other hand, (39.7%) of respondents that they do not have a functioning autoclave while, agree with the findings of the study was done in Pakistan, by (Zahid, 2018), who display a dissertation

titled conducting research at Burjeel Hospital in Abu Dhabi on waste management strategies, a questionnaire was utilized to gather information from (107) Burjeel Hospital Abu Dhabi healthcare waste handlers from various departments. The *P-value* is 0.000 (less than 0.01), showing that it is a good estimator for improving waste management effectiveness. The research is also applicable to other hospitals in the healthcare business. Because the Sig-value is less than (0.05), the data is significant, and all three independent variables are suitable for examining their influence on the dependent variable. The study indications are supported by (Okechukwu,2015). In Nigeria, research the understanding and use of standard precautions in public health institutions. It has been demonstrated that health care workers (HCWs) are at risk of catching infections while doing their duties was calculated. A structured questionnaire was used to conduct, a cross-sectional survey of (277) health care employees, the association concerning the knowledge of the potential sources of occupational exposures and profession was significant (*P*=0.011), a large majority of doctors (97.59 percent) and nurses (89.19 percent) stated that sharp disposal containers were situated as near as feasible to the usage area, revealing that (77.5 percent) of respondents were aware but only (24 percent) had proper understanding of the universal precautions. Which demonstrates that (sharp waste management) of disposal of medical waste management (MWM). The findings revealed that some of these things are classified as (Leak) in items (10). Table (4-7)**,** the results of the current study, with the supported of (Ramadan,2014),showed that sharp waste management is poorly practiced and under the required standards.A ccording to the

findings, health staff patients and community members who reside near a hospital are at a high risk of contracting infectious illnesses such as HIV and hepatitis as a result of injuries caused by discarded needles.

5.7. Nurses Knowledge Related to Their Evaluation of Structure and Design of Buildings :-

Table (4-8): The study's findings reflect the research sample's distributions based on the their evaluation of the structure lack of in physical layout & infrastructure, as it represented (78%) more than fifty percent due to the poor quality and infrastructure of the hospital due to the lack of medical staff and the lack of adequate services, they study done (Güner,2018), agrees with the present study. He had chosen sample of the evaluation was made in terms of thermal comfort and indoor temperature; it has been determined that (21%) of the users felt discomfort from cold in winter, (20%) from heat despite the winter season, and (34%) from over-temperature in summer season such assessment has revealed that the organization structure has experienced service lack of fund, physical layout & infrastructure physical facilities, a dequacy of supportive service treatment facilities documentation policy, ventilated number of staff on the other hand, the remaining items of the oraganizational structure have experienced better status than other items (Table 4-8). All items which are comprised in the evaluation of organizational structure, have means of scores that represent the high significance for each one, a nalysis of this assessment depicts that the majority were those who adhered to the policies and procedures according to the quality program, ratio formed (87%), while, it constituted the lowest percentage of

answers (No) (13%), this result agrees with a study done (Abd-Alabass, 2021) who founded, health-care personnel had a modest degree of expertise in all categories relevant to health promotion, according to the study were occupation and education level (*P-value* =0.00). These items are examined and reactions of members through dichotomous Likert scale(Yes/No). Inverse questions were used in this survey; some of the things used to answer (Yes) are valid answers, while the answer (No) is incorrect this result also agrees with a study prepared in AL-Najaf (AL-Jebore, 2017), who found organization structure's items has revealed that items are failure that have negative impact on the quality of organization structure to determine the quality assurance for essential primary health care services on sample number (504) subjects, another result indicates that the study agreement with another research in Iraq / Baghdad City, these study done by (Baktash, 2016), who found they results reveal that one of the factors in the organizational structure of the system that need to strengthen is training (N=50) health worker how are involved in the AFP surveillance system.

5.8. The Correlation Coefficient Between The Study Indicators Table (4-10)

The current study's findings show that there was a statistically significant association between the research measures. This conclusion is consistent with the findings of the study done in Iran. By done of (Moghaddam,2019) which found that there is positive highly significant correlation ($P \leq 0.01$) between the positive perception of service quality and purpose for admission. A research was done in Tehran in 2017, (400) patients were randomly recruited from four hospitals.

The results on quality of service dimen-sions, indicated the highest mean score related to physician's deliberation(4.17), as well as the lowest wait period for patients(2.64), the majority of patients stated their clinic visits were enjoyable and that service delivery was satisfactory. In reality, the most significant predictors of service quality in clinics are patients' impressions of physician consultation patient information and the setting in which services are delivered.

Chapter Six

6.1. Conclusions

According to the findings of this study and their interpretations, the study can appropriately derive conclusions related to the study findings and suggest recommendations based on these conclusions

1. Deficit of knowledge about CD training for both genders, which is measured as a major disaster to avoid infection in hospitals
2. The majority of staff do not adhere to the axis of the hand washing program in addition to the protocols laid down for the prevention and control of infection
3. Shortage human resources(staff and medical paws) In additional most health workers are not obligated to wear their own equipment
4. Lack of material and medical supplies like liquid soap, disinfectants
5. Deficiency number of workers in waste management
6. The mechanism for sorting and collecting waste is unhealthy at the generation site, in addition to the colors are not available
7. Most aspects of the institution’s building have poor lighting and ventilation

6.2. Recommendations:

According to the results of the study the recommendations are:

1. The study recommended that further studies should be conducted at ministry of health to application and training for national program commmunicable disease control for nurses in demand to progress their knowledge .
2. Provide newly nurses with training courses based on standard precautions at regular intervals
3. Encouraging nurses to improve their knowledge and update their information through health education, to adhere to infection prevention and control guidelines
4. Providing cleaning and sterilization supplies to prevent infection
5. Provision of materials and resources needed to surveillance at all levels.