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& Scientific Research
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College of Nursing



***Impact of Polycystic Ovary Syndrome upon
Health Related Quality of Life for
Reproductive Age Women Attending Al-
Hilla City Hospitals***

A Dissertation Submitted To

**The Council of the College of Nursing, University of
Babylon in Partial Fulfillment of the Requirements for the
Degree of Doctorate of Philosophy in Nursing Science**

By

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القرآن الكريم

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

مَنْ عَمِلَ صَالِحًا مِّنْ ذَكَرٍ أَوْ أُنْثَىٰ وَهُوَ مُؤْمِنٌ فَلَنُحْيِيَنَّهٗ حَيَاةً طَيِّبَةً
وَلَنَجْزِيَنَّهُمْ أَجْرَهُمْ بِأَحْسَنِ مَا كَانُوا يَعْمَلُونَ (97)

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سورة النحل

آية (٩٧)

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Dedication

To the one who encouraged me to persevere all my life, to the most prominent man in my life (dear father)

To the one in whom I rise, and upon whom I rest, to the giving heart (My beloved mother)

To those who made an effort to help me and were the best support
(My brothers and sisters)

To my support and companion, my husband... To the buds of my heart my children

To my second family... you were the best support

To a pure soul and a big heart....To the one who left us in his body, but his soul remains among us

To the father and the honorable educator Dr. Hussein Jassim Al-Ibrahemi, may God have mercy on him

To my friends and colleagues....

To all the women of Iraq...

To everyone who contributed even a letter to my academic life.....

To all of them: I dedicate this work, which I ask Allah Almighty to accept sincerely....



" Rana "

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Researcher

Rana Razag



Abstract

Background: Among reproductive-aged women, polycystic ovarian syndrome is the most frequent endocrine condition and the most common cause of infertility owing to anovulation. It affects up to (8%–10%) of women in reproductive age all over the world.

Aim of the study : to measure impact of polycystic ovary syndrome on the women's quality of life domains.

Methodology : a descriptive study included one hundred fifty women. Information collected by questionnaire during the period from first of March until first of May , 2020.

Results : (48 %) with age group (24-30) year, the majority of women were married in percent of (88%) of the studied sample, the majority with secondary education and bachelor (76.7%). Regarding occupation (54.7%) was employed. Regarding reproductive health, (61.4%) was trying to conceive and (24.7%) of women had fertility problems, and (32.7%) had irregular cycle. Regarding the chronic diseases, (67.3%) not have any chronic disease. While (14%) of women hypertensive. Regarding symptoms reported, (22.7%) of women reported excess weight and (11.3%) reported excess hair. Regarding the level of quality of life according to each domain of quality of life. Results showed that the poor level was related to (hirsutism domain 65.3% , obesity domain 55.3% and infertility domain 49.3%) , fair level related to (psychological domain 68%, menstrual irregularity domain 46% and sexual satisfaction domain 43.3%).

Conclusion & Recommendations :

In conclusion, hirsutism, irregular menstruation, ovulation difficulties (infertility), obesity, and metabolic disorders all have a poor impact on HRQOL in PCOS women. This study recommended that this result should act as a wake-up call for us to set goals and adopt solutions that can help women with this syndrome improve their HRQOL.

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List Of Abbreviations

Term	Meaning
11BHS	11 B-Hydroxysteroid Dehydrogenase
ACTH	Adrenocorticotrophic hormone
AES	Androgen Excess Society
AMH	Anti-Müllerian hormone
ASD	Autism Spectrum Disorder
BED	Binge Eating Disorder
BMI	Body Mass Index
BSI	Brief Symptom Inventory
CVD	Cardiovascular disease
COMT	Catechol-O-methyltransferase
CC	Clomiphene Citrate
CSM	Common-Sense Model
CAM	Complementary and Alternative Medicine.
CAH	Congenital adrenal hyperplasia
CG	Control Gathering
CRP	C-Receptive Protein
CINAHL, SID	Cumulative Index to Nursing and Allied Health Literature, Society for Information Display
COX	Cyclooxygenase
CYP17A1	Cytochrome P450 17A1, also called steroid 17α-monooxygenase.

CYP1B1	cytochrome P450 family 1 subfamily B member 1
CYP11A	Cytochrome P450, Family 11, Subfamily A,
DHEA-S, DHT	Dehydroepiandrosterone Sulfate/ Dihydrotestosterone
DASS-21	Depression, Anxiety and Stress Scale-21.
DSM-IV-TR	Diagnostic and Statistical Manual of Mental Disorders, fourth edition. Text revision.
DHT	Dihydrotestosterone
EEDS	Environmental Endocrine Disruptors
ESHRE/ASRM	European Society For Human Reproduction And Embryology/American Society For Reproductive Medicine
ESHRE/ASRM	European Society of Human Reproduction and Embryology/ American Society for Reproductive Medicine
FUSS	Feelings of Inadequacy in Social and Sexual Situations
F	Frequency
FOH	Functional Ovarian Hyperandrogenism
GI	Gastro-Intestinal
XX	Genetic Code of a Female, Sex chromosomes found in female of the species.

GWASS	Genome-Wide Association Studies
GLUT-4	Glucose transporter type 4
GnRHR	Gonadotropin-releasing hormone receptor
HRQOL	Health Related Quality Of Life
HDL	High Density Lipoprotein.
Hs	Highly Significant
HOMA	homeostasis model assessment of insulin resistance.
HOMA-IR	Homeostatic Model Assessment for Insulin Resistance
HPO	Hypothalamic Pituitary Ovarian
HPA	hypothalamic-pituitary-adrenal (axis).
IVF	In vitro fertilization
IR	Insulin Resistance
IGF	insulin-like growth factors
LDL	Low-density lipoprotein.
LH/FSH	Luteinizing Hormones / Follicle Stimulating Hormones
M	Mean
M.S	Mean of Score
MIH	Melanotropin release-inhibiting hormone.
MS	Metabolic syndrome
MPCOSQ	modified version polycystic ovary syndrome health-related quality of life questionnaire
MSPSS	Multidimensional Scale of Perceived Social Support
NIH/NICHD	National Institutes Of Health/National Institute Of Child Health And Human Disease
Ns	Non- significant

NAFLD	Non-Alcoholic Fatty Liver Disease
NF-kb	Nuclear factor-kappaB
RET	obstruction practice preparing (RET) programs
%	Percentage
PCP	Phencyclidine or phenylcyclohexyl piperidine
PI3	Phosphoinositide 3-kinases (PI3Ks), also called phosphatidylinositol 3-kinases
PCOD	Polycystic Ovarian Disorder
PCOM	Polycystic ovarian morphology
PCOSQ	Polycystic Ovary Syndrome Questionnaire
PCOS	Polycystic Ovary Syndromes
E2	Prostaglandin E2 (PGE2)
QOL	Quality of life
RET	Ret Proto-Oncogene (Multiple Endocrine Neoplasia And Medullary Thyroid Carcinoma, Hirschsprung Disease)
RES	Rosenberg Self-Esteem Scale
SSRIs	Selective serotonin reuptake inhibitors
1,25(OH)2D	Serum 1,25-dihydroxyvitamin D
SHBG	Sex hormone binding globulin
SF-36	Short Form Health Survey -36
S	Significant
Std	Standard Deviation
SPSS	Statistical Package for the Social Sciences
MIF	test migration inhibitory factor test.

TFEQ-R18, UE, CR, EE	Three-Factor Eating Questionnaire· Uncontrolled Eating, Subjective Restriction And Enthusiastic Eating
TG	Thyroglobulin
TSH	thyroid stimulating hormone
T2D	Type 2 Diabetes Mellitus
UK	United Kingdom
VAS	Visual analogue scale
WHR	Waist-Hip Ratio
WHO	World Health Organization
Xy	xylose, Sex chromosomes found in the male of the species.

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Chapter One

Introduction

1.1. Introduction

In the developing world, the polycystic ovarian syndrome considered the most common disorder for endocrine system of childbearing age women. According to a World Health Organization estimate, PCOS affects 116 million women (3.4 percent) worldwide. The global prevalence of PCOS varies by geographical region, ranging from 2.2 percent to 26 percent. It has long-term consequences on patient. It affects (5% to 10%) of people of reproductive age, and its prevalence ranges from (5% to 10%). (Israel, N. B., & Shamdeen, M. Y, 2019)

Progress has been made in the concept of polycystic ovary syndrome primarily by reproductive disorder to a large extent metabolic disorder. It has also been expanded from a disorder that displays menstruation at both ends of menopause to the disorder that may exist in the form of birth to old age. Disturbance properties are high levels of the male sex hormone of the ovary, an ovulatory cycles and ovarian cysts on ultrasound. Insulin resistance, obesity, and syndrome are often associated. (Pu, 2015)

Women with PCOS have a low fertility rate, and when they become pregnant either through a natural process or through assisted reproductive techniques, they are more vulnerable to pregnancy complications including pre-eclampsia and gestational diabetes that get worse in diagnosing their health and the health of the fetus. It is not known whether or how the environment in the womb affects the fetus. In women with PCOS, the potential impact on the fetus can be theoretically driven by direct exposure to high maternal androgen on the fetus or by fluctuations of the placenta function. (*Capital*, 2017)

The (PCOS) prevalence can range from 3% to 10%, but is not widely known for a specific subpopulation depending on ethnicity/geographical location and race. When determining the prevalence of (PCOS) syndrome, a unique challenge exists based on the high degree of contrast and inconsistency between different diagnostic criteria. Even after visiting many health care providers there is a large proportion of women who have not been diagnosed. (Wolf et al., 2018)

For women during the menstrual cycle, before menopause the thickness of the endometrium may be changeable within the range of 3-15 mm. The main or overall cause of endometrial thickness is the chronic ovulation associated with prolonged exposure to the estrogen hormone among women. PCOS is accompanied by a long-term expression of the androgen receptors stimulated by estrogen and inhibited by progesterone. Insulin resistance in combination with multiple risk factors is consider the main cause of PCOS. PCOS leads to multiple clinical risks such as high blood pressure, abnormal fat profile, non-insulin dependent diabetes, heart disease, and cerebrovascular disease in addition to infertility. (A. Hussein et al., 2018)

The body mass index (BMI) has an inverse relationship with androgen levels in men while it appears to have a synergistic effect in women. The increase in adipose tissue and body weight is associated with a change in the balance of sexual steroid in premenopausal and postmenopausal women. For the most part, these changes include androgen and estrogen. Evidence for a direct relationship between BMI and androgen is not entirely clear. Androgen levels in the blood increase in both blood circulation and ovaries, which can inhibit follicular maturation and ovarian growth, lead to increased hair growth, acne, and

other clinical signs and can produce female infertility and affect a woman's quality of life .(Faraj et al., 2019)

In up to (50%) of polycystic cases, obesity is strongly associated with. Anovulation more likely to present in obese women with PCOS than thin women with PCOS. (A. K.Khazaal et al., 2009)

Approximately (75%) of patients who are overweight, obesity consider a factor that cause poor quality of life associated with hirsutism,. However, the high waist to hip ratio (WHR) shows an increase in abdominal fat even in normal weight with PCOS. (Faraj et al., 2019)

In an examined through Kerchner et al, depression, tension issues and binge eating disease (BED) have been better amongst women with PCO in comparison to control. Bipolar disease is a psychiatric disease that is described as a big alternate in mood, behavior, mind and strength level. Bipolar instances be afflicted by intellectual and bodily issues than healthful women. (D.Tanha et al., 2014)

Two main components for the diagnosis of this syndrome are menstrual dysfunction and clinical and laboratory hyperandrogenism that use these elements in a clinical diagnosis. Most women with PCOS may show only one or two clinical symptoms. The most common clinical outcome is menstrual disturbances that are usually triggered by menstruation, or immediately after that and may appear in the form of amenorrhea or oligo menorrhea or poly menorrhea and even the menstrual cycle may be normal. Clinical symptoms of hyperandrogenism include symptoms such as hirsutism, acne, and androgenic alopecia, and

the occurrence of male characteristics that occur in (66%) of adolescents with PCOS. (Article, 2015)

The PCOS is represented by organic process due to a formative imperfectness of follicles past ten millimeter in size. The clinical signs, including infertility, are known with the secretion of gonadotrophic hormone (70%) present in girls with hyperandrogenism anovulatory women, (the proportion of LH/FSH proportion and high increment in sex gland sex hormone creation). The vast majority of the cycles are anovulatory, creating it basic to initiate ovulation. infertility has been considered by the globe Health Organization (WHO) as a general medical issue. One of the focal objectives of the global organization Conference Program of Action on Population and Development in 2015 was to confirm, for all folks, access to quality regenerative well-being administrations. The agency characterised infertility because the absence of maternity following 2 years of regular intercourse, while not utilizing any contraceptive method strategy.(Barbosa et al., 2016)

The predominance of PCOS can be as high as 30% in women with optional amenorrhea, 40% in women with fruitlessness, 75% in women with oligomenorrhea and 90% in women with hirsutism. (Hussein & Alalaf, 2013)

PCOS is one in every of the foremost well-known endocrine issue in women of reproductive age that has vital mental, social, and financial outcomes. Diminished personal satisfaction pictured by facet effects of despondence, diminished sexual fulfillment, and problems with feminine confidence and mental self portrait are accounted for. (Petkova et al., 2018)

the PCOS has been linked to emotional distress. Many recent systematic investigations and meta-analyses support this viewpoint. Barry et al. analyzed a number of studies that looked at the psychological burden of women with PCOS versus those who didn't have it. Women with PCOS appeared to have higher levels of anxiety and depression than non-PCOS women, according to the authors. (Sulaiman, M. A. et al, 2017).

The psychological impact of PCOS has become a prominent worry in the healthcare industry for teenagers and women who have long-term difficulties from the illness. Clinical psychological problems like depression, social isolation, anxiety, and mood disorders are the result of many psychological changes that adversely affect adolescents' and female's psychosocial state. (F. Marsh, 2018) .

Obesity has been linked to a decrease in sexuality in women with PCOS, but the results are mixed. Hirsutism is known to have negative impacts on sexuality by producing negative body image and interfering with women's feminine self-perception. Infertility is a stressor that can lead to marital problems and sexual dysfunction. Following weight issues and menstruation irregularities, Infertility was the third most distressing symptom of PCOS, according to Barnard et al. As a result, it appears that a negative relationship exists between a child's desire and sexual well-being in women with PCOS. (Goodman N F. et al 2015)

Sexual function, like PCOS, is a continuous bio - psychosocial issue. Several factors may impair sexual function in women with PCOS. Androgen levels, obesity, metabolic syndrome, subfertility, mental health, self-image, and self-esteem have all been linked to decreased

sexual function. Women with PCOS are more likely to have these factors, which can lead to sexual dysfunction. (Pastoor, H. et al ,2018)

Although sexual function is only partially reduced in women with PCOS, negative emotions are common and highly correlated with the severity of hirsutism in social and sexual circumstances, and are a key concern in their sexual quality of life. (Fliegner, M. et al, 2019)

Health related quality of life (HRQoL) is a multidimensional concept used to portray physical, passionate and social parts of specific sicknesses or its treatment. HRQoL is generally considered as a significant boundary for assessing the quality and result of social insurance, particularly in constant issue, for example, PCOS. (Moghadam, Z.B et al, 2018)

There is not any single that means of Quality of Life, however, there are various endeavors to characterize it. Like their meaning of eudaemonia, the globe Health Organization (WHO) definition is among the a lot of thoroughgoing meanings of non-public satisfaction. The WHO characterizes personal satisfaction as: 'people' impression their situation in the life in relation to the means of life , value frame-works within which they live and comparable to their measures, desires, objectives, and issues. it's a good running idea affect in an unpredictable way by the individual's physical welfare, condition, level of self-sufficiency, social influences, individual beliefs and their bond to outstanding focuses of their environment'.(Organisation et al., 2016)

There likewise are expanded social insurance costs because of treatment and related entanglements of PCOS. These intricacies incorporate conceptive medical problems, corpulence, insulin opposition,

hypertension, cardiovascular infection and state of mind issue. These wide scope of potential entanglements can bring about women feeling troubled by PCOS, adding to a decreased personal satisfaction .(Varanasi et al., 2018)

To date, there's very little examination that investigates adapting in girls to PCOS. Carron and Alvero (2014) report that PCOS women who were encountering mental pain were sure to utilize dysfunctional adapting methodologies. additionally, Özenli et al. (2009) discovered that women with PCOS in (Turkey) were sure to utilize uninvolved, feeling concentrated adapting methodologies in distinction with powers. According to(Benson et al., 2010) , the examination that is accessible proposes that girls with PCOS could utilize maladaptive adapting techniques, that are connected with diminished personal satisfaction in girls with PCOS. (Type, 2019)

The common Model of self-guideline (Leventhal et al., 1984), otherwise called Leventhal's self-administrative model of malady perception and conduct, is one such typical which may be practical to healthiness and sickness expressly. Leventhal's self-administrative model of ailment conduct recommends that people manage their malady facet effects similarly as they might completely different problems, therefore endeavor to require care of the issue and are available back to quality. There are 3 main phases in Leventhal's model, these contain: translation, adapting and examination. Inside the translation stage, there are 5 parts of sickness portrayal that ought to be deciphered by the personal: temperament (the complaint name or determination), reason (the elements accepted to possess produced the disease), course of events (anticipated span of ailment), results (impacts of the ailment: physical,

societal and mental) and controller /fix (the degree to that the ailment is fixed or controlled).These 3 phases, understanding, adapting and analysis, between relate in a very powerful approach, therefore taking care of typicality, or because it were guiding oneself.(Type, 2019)

Medical attendants can utilize undivided attention abilities to give sympathy, backing, and consolation to PCOS women. Additionally, medical caretakers can be touchy to the way that extraordinary disarranged eating and exercise are pervasive in the PCOS populace and are regularly utilized as inadequate intends to manage weight battles and helpless mental self-view. Medical caretakers will think that its accommodating to approach psychological wellness referral data as a piece of a compelling interdisciplinary methodology. (Bergh et al., 2016)

1.2. Importance of the Study

Nurses are very much situated to create and actualize PCOS care designs that are best introduced as multifaceted, long lasting, instructive ways to deal with wellbeing. A decent arrangement will address sustenance training, dinner arranging, physical movement, mental and passionate wellbeing, and weight and stress decrease techniques. (Bergh et al., 2016)

In Iraq about 69.8% of women with PCOS were overweight. Pervasiveness of PCOS was more in more youthful women ≤ 35 years old than more seasoned. Higher level of PCOS was found with fat women

42.28% (with BMI 30 - 34.9 kg/m²). In this classification, stoutness and the variation from the norm of lipid profile boundaries in women were intriguing for the expanded danger of creating metabolic outcomes and cardio vascular illnesses. PCOS the executives should concentrate on help and instruction, and necessities to emphatically accentuation sound way of life, with focused clinical treatment as required. (Ali, B.M. et al, 2018)

Polycystic ovary syndrome (PCOS) speaks to the most widely recognized endocrine brokenness in fruitful women and it's viewed as a heterogeneous and many-sided issue, with numerous regenerative and metabolic phenotypes which distinctively influence the early-and long haul disorder's dangers. women with PCOS gift AN antagonistic fertile profile, including a high danger of pregnancy-incited cardiovascular disease, toxemia, and physiological condition diabetes mellitus. Patients with PCOS gift not simply a better commonness of great vessel hazard factors, let's say, cardiovascular disease, dyslipidemia, and type-2 diabetes, however to boot of non-exemplary vessel hazard factors, as well as mind-set issue, let's say, ill-being and uneasiness. At last, women with PCOS show AN dilated danger of endome-trial malignancy contrasted with non-PCOS solid women, particularly throughout premenopausal period. (Palomba et al., 2015)

It is regular for practically all females determined to have PCOS to have negative feelings of disappointment, nervousness, and less significantly, bitterness. Be that as it may, a few issue, for example, changes in appearance, unpredictable or missing menstrual periods, and perhaps unsettling influences in sexual mentalities and conduct can prompt mental trouble and disabled passionate prosperity . These can

affect the patients' ladylike personality and make mental issues, for example, uneasiness, wretchedness, just as conjugal and social maladjustment. Practically the entirety of the females determined to have PCOS had encountered noteworthy degrees of mental issue in all components of their life contrasted with everyone. (Azizi & Elyasi, 2017)

Gloom, as per past exploration, had the most elevated commonness, from 28% to 64%, among patients with PCOS. Different indications of PCOS included inclination badly, discouraged disposition, despairing, and trouble. Be that as it may, the reason for these disarranges was not satisfactory. Effect of high androgen levels on mind-set unsettling influences can be one reason for the high predominance of depression. (Voorhis et al., 2007)

The commonness of infertility in women with PCOS differs somewhere in the range of 70 and 80%. As per the American Society for Reproductive Medicine, the assessment of infertility in women with PCOS or different reasons for subfertility should begin following a half year of endeavoring pregnancy without progress if the couple has customary sex (2 to multiple times/week) without utilizing preventative techniques. (Melo et al., 2015)

Furthermore, there is a need logical sound information and just scarcely any investigations are worried about this subject in Iraq and in this area specifically. As needs be, the maternity and general clinics are the best spot to examine and evaluate issue among the patients and spread wellbeing knowldge identified with them.

in Al-Hilla city will help in foundation of preventive and instructive projects and workshops about the issue, that subsequent being developed of their wellbeing and their knowledge with entomb decrease in danger of intricacies and improve lifesaving and living hitter personal satisfaction for conceptive age women.

1.3.Statement of The Problem

The present study attempts to determine the "Impact of Polycystic Ovary Syndrome upon Health Related Quality of Life for Reproductive Age Women Attending Al-Hilla City Hospitals"

1.4.Objectives of the Study

1.4.1- To identify the socio- demographic and personal characteristics of participants .

1.4.2- To measure the impact of polycystic ovary syndrome on quality of life domains.

1.4.3- To find out the association between the quality of life domains with certain socio- demographic variables of participants .

1.5.Hypothesis

1.5.1.H0: There is no negative impact of polycystic ovarian syndrome on the women quality of life domains .

1.5.2.H1: There is a negative impact of polycystic ovarian syndrome on the women quality of life domains .

1.6. Research Question

How does this disease affect the quality of women's life, as well as the degree of its psychological and physical impact on women's health related quality of life ?

1.7. Definition of key terms**1.7.1. Impact****A. Theoretical Definition :**

An incredible influence that something, particularly something new, has on a circumstance or individual.
(<https://dictionary.cambridge.org/dictionary/english/impact>)

B. Operational Definition :

The level of effect that a polycystic ovary syndrome has left, negatively on reproductive age women health in the long term and for a long time who are attending Al- Hilla city hospitals .

1.7.2. Polycystic Ovarian Syndrome (PCOS)**A. Theoretical Definition:**

Polycystic ovary syndrome (PCOS) is one of the most common endocrine and metabolic disorders in premenopausal women. Heterogeneous by nature, PCOS is defined by a combination of signs and symptoms of androgen excess and ovarian dysfunction in the absence of other specific diagnoses. (Escobar-Morreale, H. F. 2018)

B. Operational Definition :

polycystic ovary syndrome (PCOS): This event is once-in-a-lifetime of the foremost communal endocrine glands disorders in girls of childbearing age. It is a reason behind physiological state in girls and happens because of a disturbance in feminine sex hormones. And lead to generative issues and fertility in girls, and changes within the cycle, and others.

1.7.3. Health Related Quality Of Life**A. Theoretical Definition:**

HRQoL can be defined as “how well a person functions in their life and his or her perceived wellbeing in physical, mental, and social domains of health”. (Killewo, J., Heggenhougen, K., & Quah, S. R. (Eds.). 2010)

B. Operational Definition :

It is the way to live and enjoy in every day and by the extent of life satisfaction way among reproductive age women.

1.7.4.Reproductive Age**A. Theoretical Definition:**

In women, those long periods of life among menarche and menopause, roughly from ages 12 to 49year. (<https://medical-dictionary.thefreedictionary.com/reproductive+age>).

B. Operational Definition :

It is the age at which the study participants are in a period of fertility and usually begin from puberty until the age of approximately 45 years.

Chapter Two

Review of Literature



Review of literature

This section an outline relative to the concepts fundamental the current study. Such an outline is systematically ordered as follows:

2.1. An Overview(Historical Overview Of Polycystic Ovarian Syndrome)

2.2. Concept of Polycystic Ovarian Syndrome

2.3. Classification of Polycystic Ovarian Syndrome

2.4. Causes of Polycystic Ovarian Syndrome

2.5. Common Conditions Mimicking Polycystic Ovarian Syndrome

2.6. Symptoms of Polycystic Ovarian Syndrome

2.7. Complications of Polycystic Ovarian Syndrome

2.8. Diagnostic Criteria of Polycystic Ovarian Syndrome

2.9. Differential Diagnosis

2.10. Epidemiology of Polycystic Ovarian Syndrome

2.11. Pathophysiology of Polycystic Ovarian Syndrome

2.12. Advances And Challenges In Polycystic Ovarian Syndrome Management

2.13. Indicators Supporting A Lifestyle-Based Approach

2.14. Myths About Polycystic Ovarian Syndrome

2.15. Quality of Life

2.16. Polycystic Ovary Syndrome And Women Quality Of Life

2.17. Theory

2.18. Nursing Role

2.19. New Issues About Polycystic Ovarian Syndrome

2.20. Previous Studies Related

2.1. An Overview (Historical Overview of Polycystic Ovarian Syndrome) :

Despite the fact that Stein and Leventhal are widely regarded as the pioneers of polycystic ovary disorder (PCOS), Vallisneri, an Italian clinical researcher, doctor, and naturalist, was the primary to delineate a hitched, incapable lady with glossy "ovaries with a white surface and the measure of pigeon eggs" in 1721. (Insler V and Lunenfeld B. 1990)

Chereau and Rokitansky in 1844 delineate crimped and "sclerotic" sores in the ovaries of a chronic character with hydrops cyst. (Chéreau, D.A., 1844.)

The detection of cystic ovaries in conjunction with specific anatomic improvements known as "hyperthecosis" is often considered to be pathognomonic of the disorder. These progressions were depicted by Bulius and Kretschmar as early as 1897. (Kretschmar). Lawson Tait established the reciprocal oophorectomy criterion in 1879 for the treatment of suggestive cystic degeneration of the ovaries. (Tait, L., 1879.)

Ovary fractional surgery had been planned for a long time. Von Kahlden published a study on the pathophysiology and clinical consequences of those ovaries in 1902. In 1915, in response to a variety of basic voices on sex gland surgery, John A. McGlenn proposed puncturing "those lesions which are upon the surface" rather than relying on ovarian surgery. In 1935, Stein and Leventhal presented a group of seven women with recurring features such as monthly cycle disturbances, hirsutism, and swollen ovaries with the spacing of several very small follicles. They were also the first to describe the lack of a

monthly cycle in girls with large ovaries and to recommend sex gland wedge surgery as a treatment option.(Szydlarska, D., Machaj, M. and Jakimiuk, A., 2017.)

Analysts were looking for a demonstration device that could replace X-ray photography or observation sections, which had previously been used to study polycystic ovaries. The laparoscopic approach proposed by Gjoanness H. has revived the careful treatment of safe anovulation. (Gjönnaess, H., 1984)

An investigation conducted by Fox in 1991, with the goal of observing the use of transvaginal and transabdominal ultrasound, incontestably demonstrated the closeness of deceptively negative outcomes on account of assessment through the abdomen lining if there ought to be a similar number of as 30 percent of analyzed women.(Fox, R., Corrigan, E., Thomas, P.A. and Hull, M.G., 1991)

The 2004 measures built up by a gather of specialists at a assembly in a city beneath the European country locale in 2003 (the city ESHRE/ASRM – Supported PCOS understanding Workshop Gather) are required. The coming about "Rotterdam models" joined the ovary's measure and morphology as decided by ultrasonography into the symptomatic rules. (Pages, E.S.H.R.E., 2012)

In 2006, the Androgen Excess Society (AES) published an Associate in Nursing announcement - the models attempted to align hyperandrogenism as a circular functions qua non demonstrated condition in conjunction with various symptoms of the sickness. The goal of focusing on hyperandrogenism was to eliminate milder forms (without inessential androgens, with woman cycle issues, and a standard

ultrasound image PCOS) and was fixated on proving that hyperandrogenism is linked to both fertile (such as acne scars, hirsutism, and steroid alopecia) and metabolic (such as insulin blockage, dyslipidemia, and increased vessel risk) adverse effects of the disorder. (Azziz, R. et al, 2006.)

The following is a list of the different names of a similar topic that may be found even within written form: polycystic ovary problem, polycystic ovary condition, sensible ovary androgenism, hyperandrogenic, continuous organic process, polycystic female internal reproductive organ ailment, ovarian dysmetabolic condition, sclerotic polycystic ovary condition, polycystic ovary condition. (Szydlarska, D., Machaj, M. and Jakimiuk, A., 2017)

2.2. Concept of Polycystic Ovarian Syndrome :

Polycystic ovarian disease is a widespread heterogeneous endocrine disorder with unknown cause that affects up to 18 percent of fully matured women. The syndrome is frequently linked to obesity, insulin resistance, and metabolic disease. In most cases, it is characterized by persistent anovulation, abundant androgen production, and the presence of polycystic ovaries on ultrasound. (Mohammed, M.B., AL-Awadi, S.J. and Omran, M.A., 2015.)

PCOS is among the most well-known causes of female infertility, affecting 6 percent to 12 percent of women of reproductive age. This underlying health problem lasts far beyond the childbearing years. On a constant basis, women with PCOS are insulin-safe; their bodies can produce insulin, but they can't use it well, increasing their risk of developing diabetes. Furthermore, they have higher amounts of

androgens (male hormones that females also have), which can block eggs from being released (ovulation) and cause irregular periods, skin breakdowns, hair loss on the scalp, and excessive hair growth on the body and face. (Priya, M., Nanthini, A. and Bini, K., 2019.)

PCOS, or polycystic ovarian syndrome, is a medical condition that affects one out of every ten women of reproductive age. PCOS affects the general well-being and appearance of girls by causing secretory irregularities and digestion issues. PCOS is another common and treatable cause of infertility. The ovaries have complications because of the erratic secretion. The ovary contains the egg that is released monthly as part of a healthy menstruation. With PCOS, the egg may not release because it must be forced to, or it may not be expelled during the natural process because it must be forced. Incomprehensible or sporadic catamenial periods are a symptom of PCOS. (De Leo, et al, 2016)

2.3. Classification of PCOS

2.3.A. Primary PCOS: The most prevalent type of PCOS is primary PCOS, which has no identified cause. According to the proposed idea, functional ovarian hyperandrogenism (FOH) occurs when the hypothalamo-pituitary–ovarian axis is disrupted.

2.3.B. Secondary PCOS: Secondary PCOS is characterized as PCOS that develops owing to well-established factors other than HPO axis malfunction. (Khadilkar, S. S. 2019)

2.4. Causes of Polycystic Ovarian Syndrome :

PCOS is recognized as a complex condition with various genetic, metabolic, endocrine, and natural anomalies, regardless of the fact that

the etiology of PCOS is yet unknown. There is mounting evidence that PCOS affects a woman's entire life, that it can begin in utero in hereditarily inclined individuals, that it manifests clinically at pubescence, and that it persists throughout her reproductive years. (Diamanti-Kandarakis, E., Kandarakis, H. and Legro, R.S., 2006.)

The environment, as well as the two qualities, contribute to PCOS. PCOS in powerless persons is increased by corpulence, which is aggravated by impotent dietary habits and physical inactivity. Other natural modifiers, such as irresistible operators or poisons, have only a theoretical role to play. Hereditary PCOS research have been described as phenotype disarray. Despite the fact that a few loci, such as CYP11A, insulin quality, follistatin quality, and a location near the insulin receptor, have been proposed as PCOS attributes, the evidence suggesting association isn't overwhelming. (Hart, R., Hickey, M. and Franks, S., 2004)

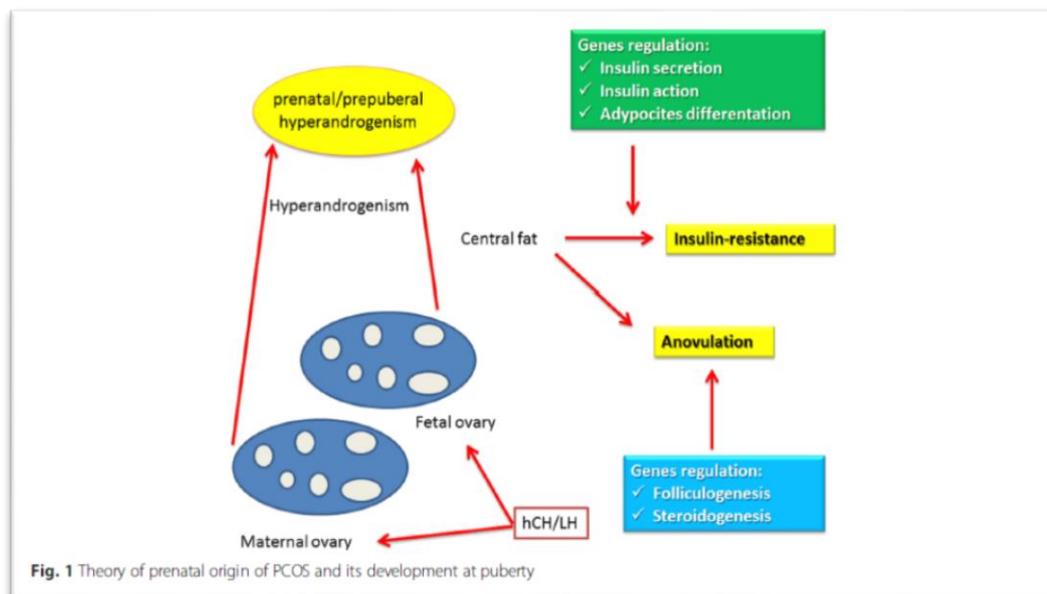


Figure (1) : theory of potential origin of PCOS and its development at puberty

Although it is believed that PCOS may be related both inherited traits and with lifestyle factors, it may be genetic. Other relatives may have similar symptoms and polycystic ovary syndrome can also be purchased on the male side, where symptoms are not always obvious. For example, guardians and family members can share the metabolic features of PCOS. Insulin resistance occurs when the body struggles to perform normal functions of insulin, such as controlling blood sugar levels in many women with PCOS. High levels of insulin can cause ovaries to produce more male hormones such as testosterone, which causes side effects such as excessive hair growth and skin abnormalities. Insulin resistance can be caused by inherited factors or lifestyle factors (such as being overweight), and is frequently a combination of both. (Dennard, K.M., 2019)

2.5. Common Conditions Mimicking PCOS:

2.5.1.Obesity

Obesity isn't always apparent if it's a cause, an effect, or an unintentional comorbidity. It has been found that when women with extreme obesity lose a significant amount of weight, their PCOS-like symptoms disappear completely in a substantial majority of women. PCOS-like symptoms can sometimes cause by significant weight gain during or after puberty. Diet, exercise, and lifestyle modifications can result in weight loss, while bariatric surgery can result in extreme weight loss. Whatever the reason of weight reduction, many women experience complete remission as long as they maintain a healthy weight. (Pasquali R, Gambineri A, Cavazza C, et al. 2011)

According to one study, weight loss resulted in a 36.9% complete healing from all PCOS symptoms, with only 15.4% having persisting PCOS symptoms. (Moggetti P, Castello R, Negri C, et al. 2000)

Bariatric surgery has a very significant impact on weight loss. Also considered very reliable, a recent meta-analysis showed that the rate of PCOS decreased before surgery (45.6%) to 6.8% (p 0.001), as did menstrual disorders and excessive hair, many of whom were fully recovered at 12 months of follow-up After obesity surgery treatment. As a result, obesity can be a separate secondary cause of PCOS. (Skubleny D, Switzer NJ, Gill RS, et al. 2016)

2.5.2. Thyroid Disorders and PCOS

Women who are more vulnerable to have hypothyroidism and Hashimoto thyroiditis is PCOS women. It is unquestionably more common than in the overall population. General gynecologists are perplexed as to whether such individuals should be diagnosed with PCOS or not, because this goes against the suggestion that thyroid diseases be ruled out before diagnosing PCOS. Thyroid diseases, particularly hypothyroidism, frequently result in prolonged anovulation or ovulatory failure, according to the most reasonable explanation. The effects of anovulation is more long-lasting the longer the dysfunction lasts. This, however, does not occur in all women with thyroid problems. It occurs more frequently in people who are genetically predisposed to it. For the development of both disorders, there is a common genetic tendency. FBN3, GnRHR, and CYP1B1 are three genetic variants that play a role in both disorders. (Kosova G, Urbanek M. 2013)

High levels of oestrogen during pregnancy can affect the functioning of the thymus, resulting in hypothyroidism and PCOS. Women with PCOS have an unbalanced sex steroid profile. In the context of excessive androgens, unopposed oestrogen induces autoimmunity. As a result, PCOS may result in autoimmune thyroiditis. To summarize, long-term thyroid issues cause ovulatory failure and PCOS, while PCOS can cause autoimmune thyroid disease. Vitamin D deficiency has also been suggested as a common predisposing factor in both illnesses. (Choi YM, Kim WG, Kim TY, et al. 2014)

2.5.3.Hyperprolactinaemia

Prolactin levels are observed to be elevated in 6% of women with hirsutism. The exact rationale for the link between high prolactin levels and androgen excess is unknown. Prolactin is thought to have a direct effect on the adrenal cortex. Hyperprolactinaemia, in my opinion, causes chronic persistent ovulatory dysfunction and a prolonged shortage of progesterone, which can lead to PCOS and hyperandrogenism. However, medications like cabergoline and dopamine agonists are quite effective in treating this illness. PCOS phenotypic reversal following treatment is extremely prevalent. (Hagag P, Hertzianu I, Ben-Shlomo A, et al. 2001)

2.5.4.Adrenal Hyperandrogenic Disorders

2.5.4. a. Congenital Adrenal Hyperplasia:

Classic 21-hydroxylase lack is appeared in female neonates with vague genitalia who have a more unsafe frame of salt squandering sort and less hazardous virilising variations of CAH, in spite of the fact that this shape is as a rule identified in earliest stages. The “non-classical”

frame of 21-hydroxylase lack isn't seen until youthful a long time, when unreasonably tall androgen levels initiate hirsutism, month to month inconsistencies, untimely pubarche, and a phenotype that takes after polycystic ovary disorder (PCOS). In common, non-classic 21-hydroxylase lack is found in 1 to 3% of the populace. In any case, tertiary referral rates may be more prominent. (Azziz R, Sanchez LA, Knochenhauer ES, et al. 2004)

2.5.4.b. Cushing's Syndrome

Cushing's disease is considered hypercortisolism that caused by primary disease of adrenal gland, which is frequently linked to obesity, hypertension, and type 2 diabetes. Cushing's disease occurs when the pituitary gland secretes too much ACTH as a result of a fundamental abnormality in the pituitary gland. It causes the PCOS phenotype. In fact, they are frequently misdiagnosed as PCOS patients who are resistant to normal treatment. PCOS is a highly frequent symptom, although Cushing's disease is uncommon. Cushing's disease , unlike PCOS, can be totally treated if detected early. As a result, it's critical to suspect a diagnosis.

Clinical characteristics such as plethoric circular faces, supraclavicular fat cushions, and stomach purple striae, in expansion to classic PCOS characteristics such as central corpulence, hirsutism, skin break out, alopecia, and sporadic monthly cycle, may raise doubt. These clinical signs bolster symptomatic tests such as the low-dose dexamethasone concealment test, Cushing's disorder is analyzed by measuring urinary free cortisol for 24 hours and salivary cortisol at midnight. Concurring to one study, fair 6% of gynecologists screened

PCOS referrals for Cushing's disorder. (Cussons AJ, Stuckey BG, Walsh JP, et al. 2005)

2.5.5.Syndrome of Severe Insulin Resistance (SSIR)

"SSIR (severe insulin resistance syndrome)" is a collection of illnesses characterized by significant insulin resistance, regardless of whether the patient is fat or not. SSIR is divided into subgroups based on the type of malfunction that causes severe insulin resistance. Autoantibodies, mutations, and faults in insulin receptor signaling pathways are examples of deficiencies. Different forms of lipodystrophies are caused by a deficiency in adipose tissue function. (Semple RK, Savage DB, Cochran EK, et al. 2011)

Acanthosis nigricans as a result of SSIR yellow and volcanic tumors as a result of severe high blood lipids and PCOS are two further metabolic symptoms. PCOS as a result of SSIR states is not rare. It has been estimated that 1.5 percent of all PCOS phenotypes are present. (Pasquali R, Diamanti-Kandarakis E, Gambineri A. 2016)

Because of both central and peripheral pathways, severe insulin resistance contributes to a PCOS-like phenotype. Compensatory hyperinsulinemia impacts LH pulsatility by acting directly on the pituitary. Excess androgen synthesis from theca cells is caused by increased LH synthesis (CYP45017 activity). Non-LH-mediated processes can also produce excess androgens. High insulin levels cause the liver to secrete less SHBG, resulting in a higher amount of free active androgens. Granulosa cell FSH response is also changed. Antral follicular arrest and PCOM are the result of all of these metabolic alterations. (Pasquali R, Diamanti-Kandarakis E, Gambineri A. 2016)

2.5.6. "Androgen-Secreting Tumours"

Classical PCOS is more unobtrusive in its begin and shows as milder hirsutism with negligible virilizing impacts. In the event that the introduction is sudden, with noteworthy hyperandrogenism side effects, virilization, and month to month abnormality, an androgen-secreting tumor must be suspected. Serum testosterone levels are as a rule more noteworthy than 200 ng/ml. This affliction will exceptionally likely be a PCOS differential determination. This picture is recognized to be caused by Sertoli Leydig cell tumors, in any case any ovarian tumor might show with signs of hyperandrogenism. (Khadilkar, S.S., 2019)

2.5.7. Drug-Induced PCOS

When epilepsy in youthful young women is treated with valproic acid, they are more likely to create PCOS. This antiepileptic pharmaceutical fortifies the translation of P450c17 and other steroidogenesis-related chemicals. Concurring to one meta-analysis, the frequency of PCOS is 1.95 times higher in women treated with valproic acid for epilepsy than in women treated with other medications. Since valproic corrosive causes weight pick up, it may have an impact on the improvement of the PCOS phenotype. The PCOS-like appearance ought to coherently withdraw in case these drugs are ceased. In addition to the effects of valproic acid,, PCOS phenotype may also be caused by intrinsic neuroendocrine abnormalities in certain forms of epilepsy. Some androgenic medication therapy has been linked to hirsutism and PCOS-like menstrual abnormalities. Because the exact etiology of epilepsy is unknown, PCOS related with it may not be totally cured. (Hu X, Wang J, Dong W, et al. 2011)

2.6. Symptoms of Polycystic Ovarian Syndrome :

Hormones are messengers for the body's chemistry. Two hormones – insulin and androgens (male-type hormones) – are produced at higher amounts in women with PCOS. This unevenness will produce a variety of indications and aspects, including:

1. Irregular periods :

Up to 75% of women have oligomenorrhoea/amenorrhoea, which is almost always associated with unending anovulation. Because ovulation isn't happening the way it should, the regular hormonal action becomes erratic. The menstrual cycle is disrupted, and the body is sent mixed signals. Periods differ greatly from one lady to the next. They might be unpredictable, rare (oligomenorrhoea), significant, or absent (amenorrhoea). (Barbosa, G., de Sá, L.B.P.C., Rocha, D.R.T.W. and Arbex, A.K., 2016.)

2- Hirsutism.

Hirsutism is the maximum development of terminal hair in the sex hormone subservient regions of women. It is one of the clinical guidelines most commonly used to determine excess androgen, and was present in half to 80% of patients hyperandrogenic. The Ferriman-Gallwey scale is used to assess hairiness, with a score of >8 indicating that hairiness is present. Hair follicle synthesis takes place during fetal flip events, and its fixing symbolizes ethnic contrast. The hair growth rate changes within the 5 alpha-reductase compound action, which shifts to dihydrotestosterone (DHT) over androgen, which is the most persistent substance, as evidenced by the hereditary contrasts. On 5a-reductase, wire-haired girls have dilated the motion inside the hair

follicle. It's all planned out. Hyperandrogenism, endocrine growth problems (insulin-like development factor-1, IGF-1) and the endocrine itself all refresh the 5 α -reductase follicle movement. In hairiness, terminal hair grows in androgen subordinate areas. (Melo, A.S., Ferriani, R.A. and Navarro, P.A., 2015.)

3- Subfertility

This is one of the most perplexing symptoms of PCOS (affecting up to 75% of women), and it can induce anxiety and tension because ovulation can become erratic or even stop. Lack of ovulation is a symptom of PCOS, which is caused by a developmental defect in follicles larger than 10 mm in size. It is recognized hyper secretion of the hormone LH (70%) in women with excessive ovulation women with excessive androgen (ratio of LH / FSH significant increase in the development of ovarian androgen) as one of the clinical signs, which include infertility. Because the majority of the cycles are anovulatory, ovulation must be enabled. The office characterized fruitlessness as the nonattendance of pregnancy after two a long time of normal intercut without the utilize of contraception. Women with PCOS are more likely to involvement infertility and anovulation. (Franik G, Bizoń A, et al 2018)

4- Obesity

Compared to women with healthier weights, overweight women (at least 40% of patients) are more likely to experience the side effects of PCOS. Even a small weight loss (less than 5% of body weight) can cause unrestricted ovulation to occur regularly. A better lifestyle can also improve positive self-esteem and provide additional physical and

emotional benefits. Although getting healthier is challenging, the best way to do it is through healthy eating and regular exercise (40 minutes, 3 times a week). Consult your primary care physician for advice on the best diet for women, reducing your intake of carbohydrates, sugars, and fatty foods, and choosing foods with a lower GI (glycemic index) can be a good starting point.(Barbosa G, de Sá LB, Rocha DR, Arbex AK. 2016)

5- Androgenetic Alopecia

Androgenetic alopecia is characterized by hair loss in the center of the female scalp, which has significant mental consequences. The anagen arrange is compressed by more grounded androgen receptor meeting and lower sums of cytochrome p450 catalyst, and terminal follicles scale down within the nearness of androgens with expanded amounts of 5-alpha-reductase, coming about in vellus hairs. The endocrine function of most patients with androgenic alopecia is normal. The medical history and physical examination are essential to identify the different signs of hyperandrogenemia.(Kenny, L. and Bickerstaff, H. eds., 2017)

6- Acne

Acne may be a pilosebaceous unit clutter that causes injuries on the confront, neck, back, and chest. The significance of androgens in skin break out etiology is well-known and well-supported. As the vulgaris skin breaks out, androgen concentrations are regularly tall. The neighborhood transformation has been expanded in patients with skin break out in partnerships with ordinary populations, according to consensus want androgen receptor reasonability to be more prominent This could be the most important cause in the infection simulation.

Several investigations have sought to correlate hyperandrogenic-office indicators to clinical skin break out. Although some studies have shown a significant association between dehydroepiandrosterone sulfate (DHEAS), DHT, androstenedione, and testosterone with acne breakouts, others have not. (Terrie, Y.C., 2004.)

7- Acanthosis nigricans:

Acanthosis nigricans is defined as a smooth earthy palette with a bright spot in skin wrinkles (areas of smooth, expanded skin pigmentation in the armpits and various curves). Skin diseases are most common on the neck and armpits, hips, and under the breasts, accounting for 5% of PCOS patients. Regardless of the fact that hereditary infectious diseases, sedate reaction (nicotinic corrosive), and cancers may be associated with obesity, PCOS, and diabetes. The glucose resistance test reveals the presence of acanthosisnigricans. When significant, massive, and dynamic harm is possible, especially when body fluid is involved.(Balen, A.H., et al 1995)

8- May be asymptomatic.

Patients with PCOS are sometimes asymptomatic and discover it while trying to envision or seek for therapeutic help for irregular or skipped menstrual cycles. Around 5% to 30% of women have some kind of PCOS. (Palomba, S., et al 2006.)

2.7. Complications of Polycystic Ovarian Syndrome :

2.7.1.Early-Term Complication

2.7.1.A. Infertility

According to the original definition, infertility is one of the key symptoms initially attributed to PCOS. Following epidemiological evidence, it appears that PCOS is the most prevalent cause of ovulation abnormalities, and that decreased ovulation is linked to an increased risk of infertility. Among the 1,741 women diagnosed with PCOS, 50% had main infertility, while 25% have secondary infertility.(Palomba, S., et al, 2006)

Infertility appears to be caused by a number of comorbidities associated with PCOS. Insulin resistance (IR) and obesity, in particular, have been linked to a higher chance of miscarriage, as well as a lower rate of pregnancy and live births. Endometriosis has also been detected in women with endometriosis, which can impact implantation. (Palomba, S., et al 2015)

Finally, numerous categories of ovarian differences, such as ovarian/follicular/luteal vasculature, follicular fluid environment, and oocyte ability and quality, are specified.(Qin, J.Z., et al 2013)

2.7.1.B.Obstetric Complications:

Multiple factors, including PCOS function, infertility therapy, multiple pregnancy, obesity, IR and metabolic problem, inflammation, and placental alterations, are the result of the higher frequency of pregnancy difficulties in PCOS patients from a pathophysiological standpoint.(Naver KV, Grinsted J, Larsen SO, et al 2014)

It's still up for dispute whether women with PCOS have a higher likelihood of having an abnormal birth cycle than women without PCOS. Despite the fact that research reveals different conclusions, the PCOS

agreement 2012 proposes that unnatural birth cycle rates are nearly comparable across women with and without PCOS. In a meta-analysis of trials involving women with and without PCOS who were undergoing IVF, there was no difference in premature birth rates. This finding was confirmed in an ongoing massive accomplice report. Furthermore, most women with PCOS become pregnant by taking ovulation acceptance medicines, which can reduce the likelihood of an unnatural birth cycle compared to women with normal origins.(Kachhawa, G. and Singh, A., 2017)

Details on the risk of cesarean section in women with PCOS are disputed, as are those on the risk of adverse fetal outcomes, despite the fact that no significant impact of PCOS on the risk of successful vaginal delivery has been identified. Preterm delivery has recently been doubled and elevated in Women with pcos, despite of whether it is linked to hyperandrogenic individuals. For admittance to the neonatal emergency unit, neonates planned for women with PCOS had a doubled likelihood of triple fatality.(Barry, J.A., Azizia, M.M. and Hardiman, P.J., 2014)

2.7.2.Long-term complications:

2.7.2.A. Cardiovascular Risk

Females with PCOS have higher levels of both traditional and non-traditional risk of cardiovascular disease (CVD), such as high blood pressure, metabolic syndrome, diabetes, and obesity, as defined by the basic rational social orders, C-receptive protein (CRP), homocysteine, and tumor corruption factor-alpha. 50 PCOS at any age shows more prominent possibilities for elevated CVD danger markers, and these

elevated producers can exist without stoutness but are amplified with heftiness. (Dokras, A., Clifton, S., Futterweit, W. and Wild, R., 2011)

2.7.2.B. Metabolic Risk

In reality, weight is viewed as a really developing health concern in the general population, particularly during puberty and teen years. In comparison to strong women, women with PCOS speak with a group of people who are overweight (BMI.25 kg/m²) and hefty (BMI.30 kg/m²). Despite the fact that bodyweight evaluations in PCOS women vary widely among countries and ethnic groups, there is a 61 percent prevalence of women with a standard focused appropriation of fat tissue. (Dokras A, Clifton S, Futterweit W, Wild R. 2012)

2.7.2.C. Oncology Risk

Even though PCOS is viewed as a deeply rooted multi-systemic and multidimensional misinterpretation, the conceptual and metabolic changes associated with the condition may also be associated with increased risk of malignancy enhancement, such as endometrial, ovarian, and bosom disease, all of which are thought to be caused by hormonal or metabolic pathogenetic processes.(Fornes, R., 2017)

2.7.2.D. Other Disorders

Despite significant cardiovascular and metabolic impedances, patients with PCOS have a higher risk of psychiatric problems, as well as a lower quality of life (QoL) and happiness than normal and stable women.(Dokras A, Clifton S, Futterweit W, Wild R. 2011)

According to a recent meta-analysis, the prevalence of suffering in PCOS ranges from 14 percent to 67 percent, with four times the

likelihood of troublesome indications compared to age-coordinated control women.(Azziz R, Carmina E, et al 2009)

A higher frequency of generalized anxiety and an improvement in mean anxiety scores were found in PCOS women compared to control women in a series of papers.(Azziz R, Woods KS, 2004)

2.8. Diagnostic Criteria of Polycystic Ovarian Syndrome :

Contrary to popular belief, closeness of polycystic ovaries to ultrasonography is not required for PCOS diagnosis. Since 1990, several symptomatic criteria have been employed to characterize PCOS, including the 2003 Rotterdam measures, which are now in use.(Yildiz, B.O., et al., 2012) Other Hormonal or Androgen Excess Conditions Previously Excluded Criteria for Diagnosis of Polycystic Ovary Syndrome:

2.8.A.National Institutes of Health/National Institute of Child Health and Human Disease (NIH/NICHD)

Must meet both criteria includes all of the following:

- Clinical and/or biochemical hyperandrogenism
- Menstrual dysfunction

2.8.B.European Society for Human Reproduction and Embryology/American Society for Reproductive Medicine (ESHRE/ASRM)

(Rotterdam criteria) 2004 includes two of the following:

- Clinical and/or biochemical hyperandrogenism
- Oligo-ovulation or anovulation

- Polycystic ovaries

2.8.C.Androgen Excess Society 2006

Includes all of the following:

- Clinical and/or biochemical hyperandrogenism
- Ovarian dysfunction and/or polycystic ovaries (Clin Epidemiol. 2014;6:1-13).

Hyperandrogenism can be clinically or biochemically defined. Hirsutism, acne, and male pattern hair loss are all clinical features. The Ferriman-Gallwey score can be used to grade hirsutism, but it's crucial to remember that normal ethnic variances in hair distribution exist; whereas a score of 8 is considered abnormal in Caucasian women, a score of 5 may be a more reasonable cut-off for African-American women. Elevated blood total testosterone or estimated free testosterone levels are considered biochemical hyperandrogenism. Direct tests for free testosterone that are now available are of limited utility. Oligomenorrhoea (cycles of more than 35 days but less than 6 months apart) and amenorrhoea (lack of menstruation during 6–12 months after establishing a cyclic pattern) are two types of menstrual abnormalities. On ultrasonography, polycystic ovarian morphology is described as an ovary with 12 or more follicles measuring 2–9 mm in diameter and/or a volume larger than 10 mL. (Fornes, R., 2017)

2.9. Differential Diagnosis :

Related conditions with hyperandrogenism or oligomenorrhea/amenorrhea that may resemble PCOS with

hyperandrogenism or oligomenorrhea/amenorrhea must be eradicated until a PCOS diagnosis can be made. These illnesses are listed below

- Cushing's syndrome
- Hyperprolactinemia or prolactinoma
- Hypothyroidism
- Congenital adrenal hyperplasias
- Androgen secreting tumors

If clinical signs are present, many illnesses can be ruled out with sufficient laboratory testing.(Azziz R, Carmina E, et al, 2006)

2.10. Epidemiology of Polycystic Ovarian Syndrome:

According to the NIH/NICHD criteria, PCOS is a common endocrinopathy that affects 4 percent to 8 percent of reproductive-age women.(Shannon M,Wang Y., 2012)

The prevalence of PCOS varies depending on the diagnostic criteria utilized. While the NIH criteria have a prevalence of up to 6.1 percent and 8.7 percent, the Rotterdam criteria have a prevalence of up to 19.9 percent and 17.8 percent in the same populations.(Joshi B, Mukherjee S, et al., 2014)

There are few reports on the prevalence of PCOS in adolescents. Shannon M, 2012 found that the prevalence rate of this syndrome was 22.6 percent in 15-19-year-old adolescents using the Rotterdam criteria and 9.8 percent using the AE-PCOS criteria in an Indian study. (Kaewnin J, Vallibhakara O, et al., 2018)

Another research of teenagers aged 17 to 19 in Thailand found that 5.29 percent of them had this syndrome. (Esmailzadeh S, Delavar MA, Amiri M, Khafri S, Pasha NG., 2017)

According to Iranian studies, the prevalence percentage ranges from 8.3 percent to 11.4 percent.(Fornes R., 2017)

PCOS is a genetically unique endocrine disorder with a complicated pathophysiology that makes determining its cause difficult. According to a World Health Organization estimate, PCOS affects 116 million women (3.4 percent) worldwide. The global prevalence of PCOS varies by geographical region, ranging from 2.2 percent to 26 percent. It has long-term consequences on patient. It affects 5% to 10% of people of reproductive age, and its prevalence ranges from 5% to 10%. (Israel, N. B., & Shamdeen, M. Y, 2019)

Furthermore, despite the fact that the latter is becoming increasingly disputed, PCOS has been proven to be gradually prevalent in women with type 1 diabetes, T2D, gestational diabetes, and obese individuals. In either case, whether the population sample has been referred to or is an unselected population with a referral tendency in the estimation of the predominance of weight depends on the pervasiveness.(Yildiz, B.O., et al., 2012)

2.11. Pathophysiology of Polycystic Ovarian Syndrome :

When the determination is made, PCOS presents as a phenotype that mirrors a self-replicating unending loop that includes neuroendocrine, metabolic, and ovarian brokenness. Over the years, various hypotheses on the proximate physiological beginning points for

PCOS have been proposed. PC reflects the relationships between numerous proteins and properties altered by epigenetic and natural factors. The list of pathophysiology-related variables is still growing, with evidence accumulating that hyperandrogenism is a substantial component impacting a variety of tissues. GWASs have identified similarities in neuroendocrine, metabolic, and regenerative pathways that are shared by Han Chinese and Caucasian populations. Knowledge gained from creature models has reliably identified testosterone as a crucial role in the development of PCOS.(Witchel SF, Oberfield SE, Peña AS., 2019)

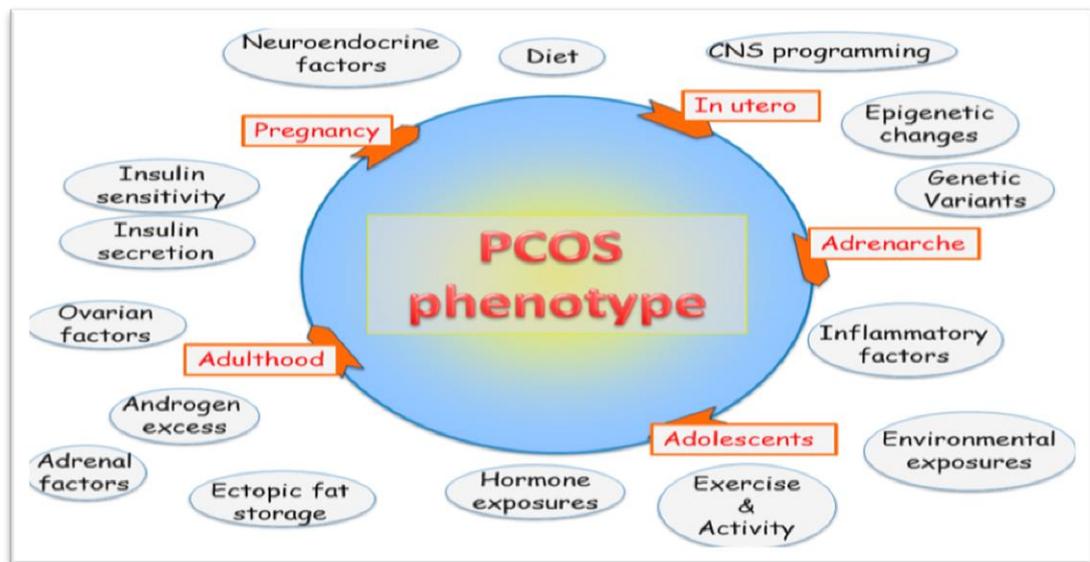


Figure (2) : Factors that influence the PCOS phenotype. PCOS affects women throughout their lives. Theoretical influences on PCOS pathogenesis are depicted as circles. Each person is influenced by a different set of circumstances. PCOS represents a complex biological network of interconnected neuroendocrine, hormonal, metabolic, genetic, and environmental variables.

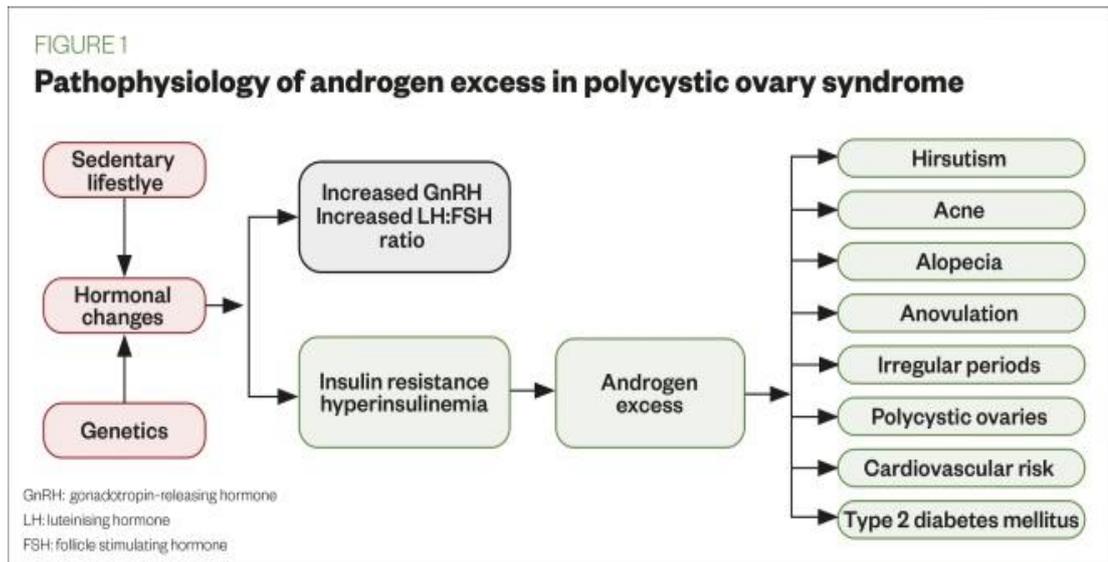


Figure (3) : Pathophysiology of androgen excess in polycystic ovary syndrome
SOURCE: MCLEAN(Chorro-Mari, V., 2020).

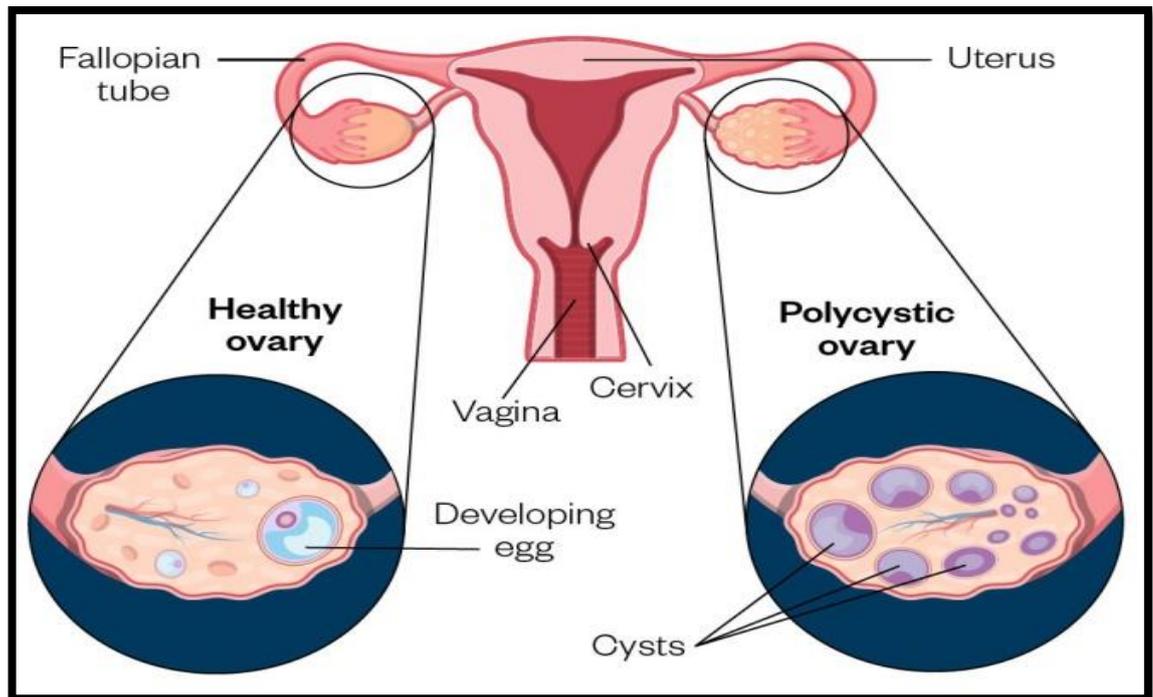


Figure (4) : A polycystic ovary vs a normal ovary. Many fluid-filled sacs (follicles) surround the eggs in the polycystic ovary.
MCLEAN/SHUTTERSTOCK.COM is the source of this image (Chorro-Mari, V., 2020)

2.12. Advances and challenges in PCOS management

PCOS treatment ought to be endorsed not as it were to ease side effects, but moreover to avoid long-term results. The commonplace treatment for decreasing androgen levels and controlling indications whereas giving endometrial assurance may be a combination of verbal contraceptives and antiandrogens. Be that as it may, depending on the patient's want to gotten to be pregnant (or not), the need for an stylish arrangement, and the nearness of concomitant metabolic changes, the treatment technique ought to be adjusted. (Luque-Ramírez M, Nattero-Chávez L, Ortiz Flores AE, et al.,2018)

Moderation of hyperandrogenic side effects, control of metabolic disarranges and lessening of chance components for sort 2 diabetes and cardiovascular infection, avoidance of endometrial hyperplasia, arranging and accomplishing a sound pregnancy in case craved, and change of common well-being and quality of life are the in general care objectives for women with PCOS. A multidisciplinary group conveying patient-centered treatment is perfect way">the most perfect way to realize these objectives. (Rocha, A. L., et al, 2019).

The primary step in treating for PCOS patients ought to be a alter in way of life. Weight misfortune caused by changes in count calories and physical work out brings down serum affront and testosterone levels, bringing down the hazard of creating glucose narrow mindedness and sort 2 diabetes in overweight and hefty individuals. Within the case of IR/glucose affectability or dyslipidemia that creates after a supper, pharmacological medicines are prompted. (Balen AH, Morley LC, Misso M, et al.,2016)

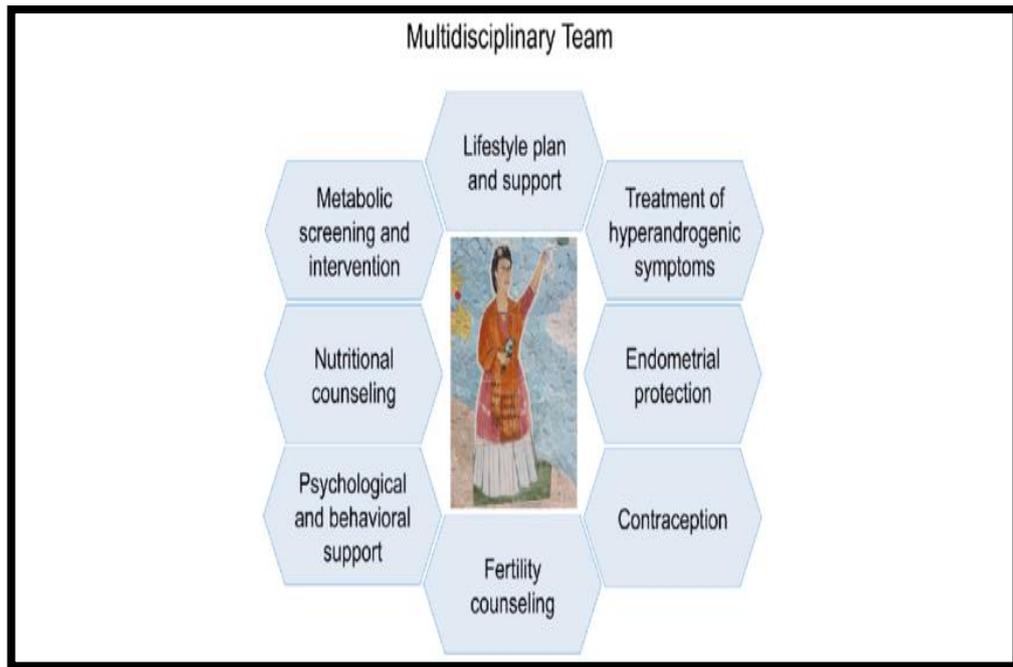


Figure (5) : A multidisciplinary team's patient-centered treatment may aid in achieving the key aims of polycystic ovary syndrome therapy. Symptom treatment, healthy fertility planning, general well-being, and long-term problems prevention are among these objectives. (Rocha AL, et al, [version 1; peer review: awaiting peer.]

Metformin is the most widely prescribed medicine for these individuals' metabolic management. Metformin's therapeutic effects as an insulin-sensitizing and hypoglycemic drug in women with PCOS have been widely studied. Despite what is frequently thought or implied by uncontrolled observational studies, there is no clear evidence that metformin reduces BMI in women with PCOS when compared to placebo, Despite what uncontrolled observational research may lead you to assume. In women on antiandrogen and combination oral contraceptive, adding metformin may have a small BMI advantage. Metformin has little or no influence on lowering abdominal circumference and serum triglyceride levels in women with PCOS,

indicating that treatment does not appear to reduce body fat mass. (Yang PK, Hsu CY, Chen MJ, *et al.*,2018)

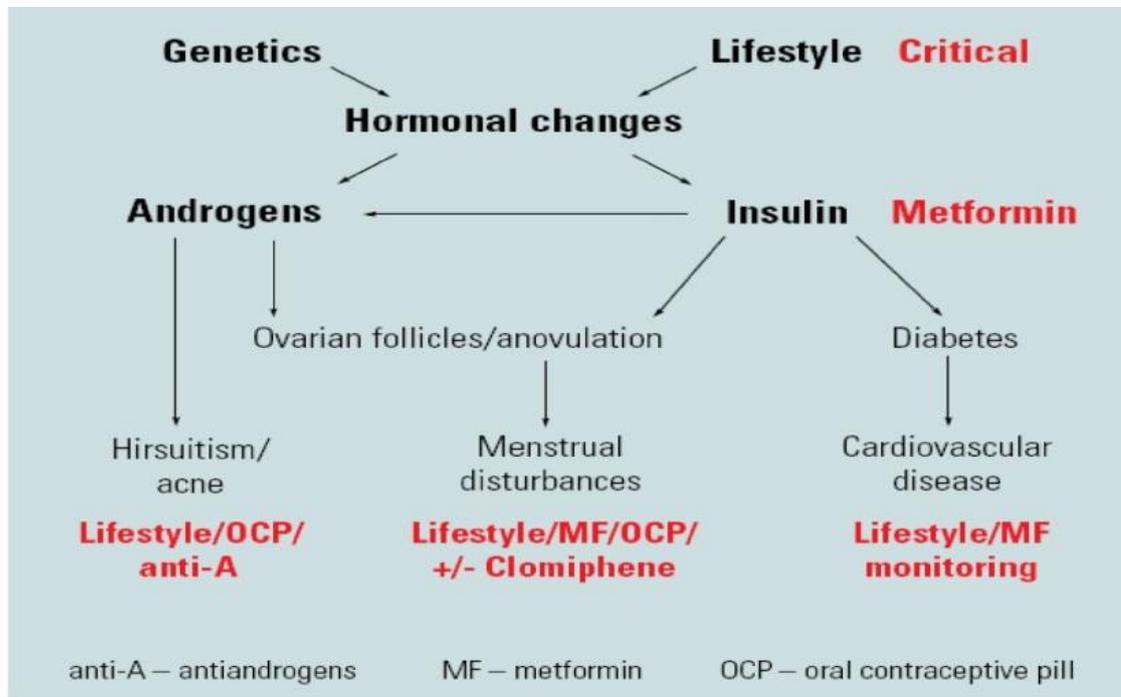


Figure (6) : A summary of a focused approach to polycystic ovarian syndrome treatment (PCOS). Reproduced with the author's permission (Teede, H., Zoungas, S., Deeks, A., Farrell, E., Moran, L. and Vollenhoven, B., 2008)

Liraglutide is a peptide receptor 1 glucagon-like agonist that has been approved for the treatment type 2 diabetes and obesity. Liraglutide has been shown to be effective in obese women with PCOS in terms of weight loss and waist circumference reduction. Orlistat is a lipase inhibitor that has been approved for the treatment of obesity. Orlistat is advantageous in causing weight misfortune and calming clinical and biochemical signs of hyperandrogenism and IR in overweight or corpulent women with PCOS. (Graff SK, Mario FM, Ziegelmann P, *et al.*,2016)

Affront sensitizing drugs such as myo- and D-chiro-inositol act as moment couriers within the affront signaling cascade. These substances have been tried in PCOS women with IR as potential metformin substitutes. Concurring to a later think about, inositol isoforms intervene affront work in different target organs, counting the ovary. In a PCOM mouse show produced by tireless light presentation, myo-inositol and D-chiro-inositol treatment brought down the thickness proportion of the theca/granulosa cell layer and the term to pregnancy to a 40:1 molar proportion. (Bevilacqua A, Dragotto J, Giuliani A, *et al.*,2019) .

After six months of inositol therapy alone or Dchiroinositolas-related therapy, there was a diminish in serum testosterone and an advancement in SHBG levels, but no distinction within the number of develop in vitro fertilization (IVF) oocytes gathered between treatment with D-chiro-inositol alone or myo-inositol-associated treatment. IVF treatment with myo-inositol did not increment oocyte or fetus generation, concurring to a later meta-analysis. (Mendoza N, Pérez L, Simoncini T, *et al.*,2017) .

At that point, based on show prove, inositol medicine in women with PCOS who deny to require metformin may be a practical choice for metabolic change, be that as it may there's still a need of great face-to-face comparative information between inositol and metformin. This issue was inspected in three brief single-center, randomized controlled trials distributed in 2017, which found that either myo-inositol or metformin had more prominent comes about, or that both medications had proportionate benefits. Inositol (in any shape) ought to be respected an exploratory treatment for PCOS, concurring to the Universal PCOS Organize. (Jamilian M, Farhat P, Foroozanfard F, *et al.*,2017).

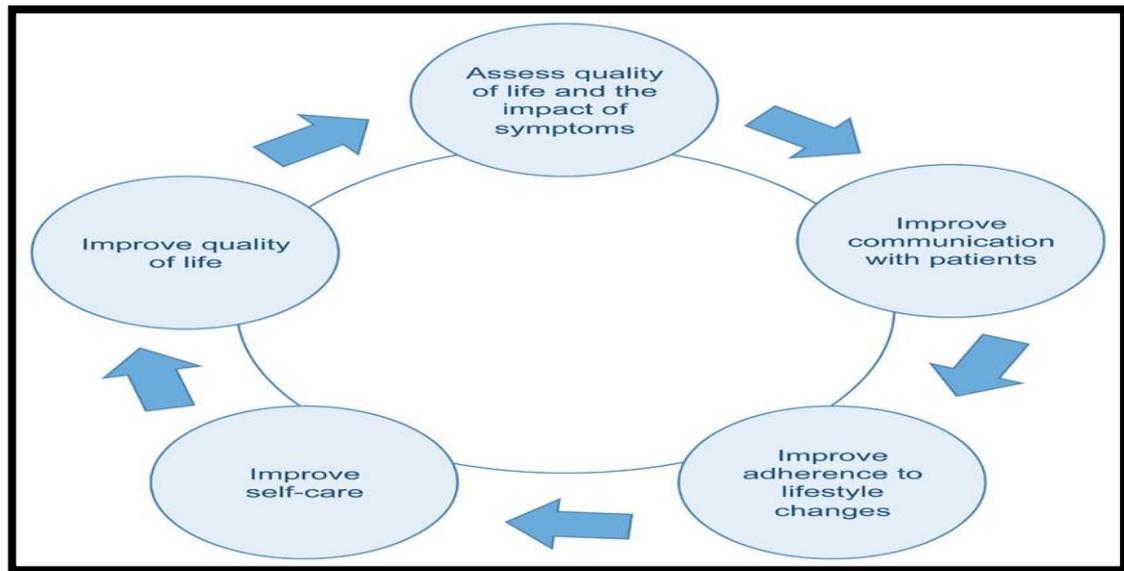


Figure (7) : The assessment of women with PCOS's quality of life the best clinical care and management of these patients is essential. (Assessment of the quality of life in women with polycystic ovary syndrome.) (Rocha AL, et al., [version 1; awaiting peer review.]

Way of life alterations focused on at weight misfortune ought to be the primary step in previously established inclination treatment for overweight or stout PCOS people who wish to conceive. Losing 5 to 7% of body weight may be valuable in encouraging regularization of the menstrual cycle and unconstrained ovulation. Individualized safeguards ought to be taken in case a female has been incapable to lose weight or restore ovulatory cycles, taking under consideration the length of infertility, The age of the woman, the risk of pregnancy at this time, and the reasons related to her weight loss challenges. Bias treatment comprises supplementing with 0.4 mg of folic corrosive per day and abstaining from smoking and devouring liquor. (Balen AH, Morley LC, Misso M, et al.,2016).

Ovulation induction is the moment treatment choice (after way of life changes). This stage must be taken after by a intensive examination of other causes of infertility that require IVF and can coexist with PCOS, such as male figure or tubal blockage. Clomiphene citrate (CC) is the standard treatment for actuating ovulation in PCOS anovulatory women. An person may be judged non-responsive after three cycles of CC at the maximal dosage (150 mg/day), and another medication ought to be given as an adjuvant or CCC substitute. (Rocha, A. L.et al ,2019).

Metformin brings down serum testosterone levels and extends unconstrained ovulation and customary monthly cycle in PCOS patients when compared to fake treatment. Metformin will not be an alternative for activating ovulation since it has lower live birth rates than CC. Besides, there's no conclusive prove that the interface between metformin and CC and live birth rates varies from the connect between CC and live birth rates alone. This makes sense because, compared to CC alone, the combination of metformin plus CC improves the rate of clinical pregnancy and ovulation while also increasing the rate of loss. Limited data suggests that adding metformin to the treatment of women who are resistant to insulin may be beneficial. (Fertil Steril, 2017) .

It does not appear to protect against the negative consequences of taking metformin while pregnant, and it may also increase the risk of future childhood obesity. (Hanem LGE, Stridsklev S, Júlíusson PB, et al.,2018).

The aromatase inhibitor letrozole can be used at a daily dose of 2.5 mg to enhance ovulation in patients who are not responding to CC. Letrozole can be used for primary ovulation containment therapy, but

many are thinking of proposals that are generally considered unlabeled. Measurements can be expanded from 2.5 mg daily up to 7.5 mg. Letrozole features a more noteworthy ovulation-inducing response than CC, which connects to higher pregnancy and live birth rates, particularly in stout people. In an open-label randomized clinical trial, Preliminary findings indicate that based on clinical pregnancy rates, letrozole is more common than metformin in promoting ovulation. (Franik S, Eltrop SM, Kremer JA, et al.,2018).

Within the case that verbal ovulation inducers fall flat, Pregnancy can be achieved using planned intocoto, intrauterine changes or injectable gonadotropins combined with IVF. In low-complexity treatment (coordinated intercut or intrauterine insemination), including metformin to gonadotropins has appeared unassuming adequacy, but not in IVF. Low-dose liraglutide appears to be effective in obese PCOS women, according to preliminary findings may help improve the outcome of IVF therapy. (Kalem MN, Kalem Z, Gurgan T,2017).

Females with PCOS ought to be educated approximately the finest pregnancy term, taking into consideration current obstetric, metabolic, and cardiovascular malady concerns. Secure contraception is additionally an component of coordinates treatment since it permits for the delay of pregnancy whereas taking way of life activities to diminish fat mass and promotion of metabolic homeostasis to arrange to realize that this is not a pregnancy, but a healthy full-term pregnancy for mothers and newborns. (Rocha ALL, Campos RR, Miranda MMS, et al.,2017).

2.13. Indicators that support the lifestyle approach

A study of the literature on PCOS management revealed a dearth of attention for non-pharmaceutical treatments. Patients' quality of life can be disrupted or even harmed by pharmacological therapies for PCOS. Nutrition, physical activity, and stress may alter ovulation and the ovarian response to reproductive treatments, according to new research. (Vause TD, Cheung AP, Sierra S, et al. 2010)

Metabolic health and reproductive hormones may be influenced by dietary intake and physical activity. Although lifestyle intervention is recommended as a first-line treatment, 45% of women with polycystic ovary syndrome said that they have never received information on how to improve their lifestyle. (Gibson-Helm ME, Lucas IM, Boyle JA, Teede HJ., 2014)

Moreover, 62% of women said passionate help or counseling was never said with healthcare professionals, which is eminent given how broad enthusiastic trouble is among women with this stigmatizing condition. (Veltman-Verhulst SM, Boivin J, Eijkemans MJ, Fauser BJ., 2012)

As a result, investigate and clinical practice pay deficiently consideration to the physical and mental wellbeing of women with PCOS. More logical prove is required to deliver clinicians with the competence to advise patients to upgrade their physical and mental wellbeing, and women with PCOS would advantage from an improved quality of life. Given the different highlights of PCOS, a total lifestyle-based technique may be the foremost valuable and slightest destructive elective for administration.

2.13.A.Nutrition

Whereas most restorative specialists accept that a healthy count calories is vital for women with PCOS, there's no information approximately whether particular dietary medications ought to be taken after. An destitute, routine Western eat less was found as a critical component of the 'deadly quartet' of metabolic hazard factors in PCOS (along with hyperinsulinemia) in a survey distributed in Sustenance Inquire about Surveys in 2018 (in conjunction with hyperinsulinemia, hyperandrogenism, and low-grade irritation) (Barrea L, Marzullo P, Muscogiuri G, et al., 2018). Besides, wholesome treatments are not however commonly utilized in clinical hone. Tragically, the inquire about on routine dietary admissions and PCOS hazard components is few and conflicting.

2.13.B. Low Glycemic Diet

Whereas the larger part of inquire about has uncovered no connect between every day calorie admissions or The composition of key nutrients and the status of PCOS, which many people believe to find little or no nourishment gather anomalies in women with PCOS. In a case-control consider of 200 overweight and hefty women, analysts found that the PCOS gather ingested more high-glycemic boring dinners and desserts on normal. (Altieri P, Cavazza C, et al., 2013).

Essentially, a cross-sectional review involving 61 women and 44 control patients with PCOS found that hospitalization of carbohydrates was associated with body weight and obesity in the general PCOS phenotype. (Graff, SK, Mário, FM, Alves, BC, et al., 2013)

These aren't the as it were signs that glycemic stack is playing a part in PCOS side effects. Since affront resistance plays a part in PCOS, and

women with PCOS habitually involvement compensatory hyperinsulinemia after devouring carbs, a low-glycemic-load slim down may be profitable. (Barr, S, Reeves, S, Sharp, K, et al., 2013)

A 12-month, randomized, controlled trial reduced low-glycemic meals in 29 women with PCOS and reduced solid foods in normoglycemic stacks in 21 women. (Marsh KA, Steinbeck KS, Atkinson FS, Petocz P, Brand-Miller JC., 2010)

In a QoL survey, those who followed a low glycemic diet had significantly Increased insulin sensitivity, regular menstruation and higher positive emotional score. In a second study, 21 PCOS women ate an isocaloric low glycemic diet. (Barr, S, Reeves, S, Sharp, K, et al., 2013)

The 12-week dietary intervention resulted in enhanced insulin sensitivity and circulation levels of non-esterified fatty acids. Despite the fact that the outcomes of both trials were encouraging, both studies had high dropout rates. Compared to those who remained in the survey, these dropouts showed heavier and more insulin-resistant conditions. Concurring to Bog et al. As a result, people with more serious PCOS side effects may find it troublesome to stay to a low-glycemic count calories for longer periods of time. (Marsh KA, Steinbeck KS, Atkinson FS, Petocz P, Brand-Miller JC., 2010)

Besides, a low-glycemic count calories has been illustrated to be secure amid pregnancy and may help within the anticipation of large-for-gestational-age newborns, impacting long-term wellbeing results. (Moses RG, Luebcke M, Davis WS, et al., 2006)

2.13.C.Low Carbohydrate Diet

A later audit found five high-quality studies that looked at the impact of low-carbohydrate diets on regenerative results in overweight and hefty PCOS women. Thinks about that had a carbohydrate admissions of less than 45 percent of day by day calorie admissions were considered. Over brief periods of mediation, affront levels, regenerative hormones (testosterone, SHBG, and LH/FSH proportion), and ovulation rates all moved forward (4-24 weeks). Be that as it may, all of the tests included within the assessment included vitality confinements, which may have affected the comes about. (Moran LJ, Ko H, Misso M, et al., 2013)

Also, it is doubtful what the minimum carbohydrate utilization should be, how long you can keep calories from low carb counts, and what the long-term health outcomes are. (McGrice M, Porter J. 2017)

For case, over the course of 24 weeks, a moo carbohydrate, ketogenic slim down (less than 20 grams of carbohydrates per day) moved forward different PCOS lists, counting weight, free testosterone, LH:FSH proportion, and fasting affront, concurring to a little inquire about including 11 women. (Mavropoulos JC, Yancy WS, Hepburn J, Westman EC. 2005). However, more than half of the women dropped out, implying that reducing carbohydrate consumption to this degree is unsustainable. Low carbohydrate diets also raise concerns since they reduce food groups that are beneficial to overall health, such as vegetables, fruits, and whole grains. (Faghfoori Z, Fazelian S, Shadnoush M, Goodarzi R. 2017)

2.13.D.High Fiber Diet

In 2017, 281 women analyzed with PCOS (concurring to the Rotterdam criteria) and 472 age-matched controls were selected in a major Iranian case-control think about. (Eslamian G, Baghestani A, Eghtesad S, Hekmatdoost A. 2017)

The dietary intake was assessed using a food frequency questionnaire. Low fiber intake was found to be inversely related to PCOS in the study. This discovery is not surprising, given the importance of fiber in diabetic treatment. Fiber utilization has too been connected to lower levels of androstenedione in premenopausal women. Tall fiber diets, such as natural products, vegetables, and entire grains, have moreover been connected to lower levels of circulating androstenedione. (Maskarinec G, Morimoto Y, Takata Y, Murphy SP, Stanczyk FZ. 2006)

2.13.E.High Protein Diet

Whereas high-protein diets are habitually prescribed for weight misfortune and diabetes administration, there's small prove to back them up. (Faghfoori Z, Fazelian S, Shadnoush M, Goodarzi R. 2017)

In one month, a small randomized controlled trial of 26 women with PCOS and body weight compared low calorie, high protein / low carbohydrate (30% protein, 40 in sugar water) with low protein calories / high Eat fewer carbs (15% protein, 55 carbs). Although both experienced serious weight problems (perhaps due to a 1,000 kcal / day reduction in dietary intake compared to normal diets) and improvements in regeneration and metabolism, the weight between the two prayer dietary combinations or the index glucose homeostasis does not have any

contrast discomfort. (Stamets K, Taylor DS, Kunselman A, Demers LM, Pelkman CL, Legro RS. 2004).

Furthermore, because protein promotes insulin production, some research suggests that high-protein diets can aggravate IR. (Krebs, M., Krssak, M., Bernroider, E., et al., 2002). Furthermore, high-protein meals should be avoided because they can cause kidney injury. (Martin WF, Armstrong LE, Rodriguez NR. 2005)

In populations with ovulatory infertility, protein intake was examined, and substantial differences were discovered based on animal versus plant protein consumption. In a major study involving 18,555 women, Chavarro et al found that getting 5% of by and large calories from plant protein instead of creature protein brought about in a 50% lower rate of ovulatory infertility. (Chavarro JE, Rich-Edwards JW, Rosner BA, Willett WC. 2008)

2.13.F. Omega-3 Supplementation

Consumption of polyunsaturated greasy acids, such as omega-3, may be invaluable to women with PCOS. Omega 3 supplementation an 8 weeks of (3 grams per day) can guide menstruation, reduce the ratio of testosterone, LH, and LH: FSH, and increase adiponectin in women with PCOS, which is consistent with randomized controlled trials. (Nadjarzadeh A, DehghaniFirouzabadi R, Daneshbodi H, Lotfi MH, Vaziri N, MozaffariKhosravi H. 2015) Omega3 supplementation may also help women with PCOS with NAFLD, because a small randomized controlled trial showed that 4 grams of omega3 per day They can reduce substances liver fat, triglycerides, systolic blood weight and diastolic blood weight (Cussons AJ, Watts GF, Mori TA, Stuckey BG. 2009)

NAFLD is currently treated without medication, however weight loss is encouraged through a nutritious diet and regular exercise (Brown AJ, Tandler DA, McMurray RG, Setji TL. 2005). More research is needed to see if omega-3 supplementation can help with PCOS symptoms and lower the rate of CVD in this population.

2.13.G. Vitamin D Supplementation

In women with PCOS and obesity, blood 25-hydroxyvitamin D levels were shown to be considerably lower (Yildizhan R, Kurdoglu M, Adali E, et al 2009). Because fat cells can sequester vitamin D, supplementation is a significant consideration for patients with obesity. (2016, Joham A.E., Teede H.J., Cassar S., et al.)

2.13.H. Mineral Supplementation

PCOS patients have been found to be deficient in several minerals, including chromium, magnesium, and selenium, and preliminary trials have been conducted to see if supplementation is necessary. (Faghfoori Z, Fazelian S, Shadnoush M, Goodarzi R. 2017). Chromium levels in women with T2D have too been found to be lower.

Women with PCOS who supplemented with chromium picolinate for two months saw changes in glucose levels and affront affectability. Supplementing with chromium can moreover offer assistance with hirsutism and body mass. (Jamilian M, Razavi M, Fakhrie Kashan Z, Ghandi Y, Bagherian T, Asemi Z. 2015)

Some women with PCOS have been found to have lower serum magnesium levels related to T2D, in spite of the fact that there have been few investigate on magnesium supplementation. (Papavasiliou K,

Papakonstantinou E, 2017) Selenium is another mineral that has been found to be missing in certain women with PCOS. (A. Coskun, T. Arikan, M. Kilinc, D. Arikan, and H. Ekerbiçer. 2013)

2.13.I. Physical Activity

There has been very little study done on the benefits of physical activity for women with PCOS (Harrison CL, Lombard CB, Moran LJ, Teede HJ. 2011). Weight misfortune in overweight or hefty women with PCOS by and large makes strides different clinical characteristics, counting sporadic feminine cycle, anovulation, infertility, hirsutism, and acanthosis nigricans, agreeing to the writing. Physical activity can help you lose weight and may even be more effective than calorie restriction. (Cutler, D. 2019).

However, while determining a successful, long-term weight loss approach for this particular group of women, exercise style, duration, and intensity must all be taken into account (Thomson R, Buckley J, Brinkworth G. 2011). Exercise treatments for weight loss in women with PCOS are frequently plagued by high dropout rates (up to 40%) and noncompliance (Harrison CL, Lombard CB, Moran LJ, Teede HJ. 2011).

Furthermore, the greater prevalence of obesity in women with PCOS have not been linked to a lack of activity. Despite the fact that women with PCOS have greater obesity rates, studies on habitual activity It shows that exercise time does not change between women with and without PCOS. (Hutchison, S.K., Stepto, N.K., Harrison, C.L., Moran, L.J., Strauss, B.J., and Teede, H.J. 2011)

Increasing physical exercise, regardless of weight reduction, offers benefits for cardiovascular, metabolic, and reproductive health. Customary physical movement progresses HDL cholesterol and triglyceride levels, brings down visceral adiposity, brings down blood weight, makes strides affront affectability, brings down add up to and central adiposity, and keeps up bone mass within the common populace (Hoeger KM. 2008). Some routine exercise strategies have been shown to reduce cardiovascular disease (WHR, HDL cholesterol, triglyceride levels, blood weight, and homocysteine levels) and risk variables for type 2 diabetes in women with PCOS (IR). (Hutchison SK, Stepto NK, Harrison CL, Moran LJ, Strauss BJ, Teede HJ, 2011)

While an objective length of activity to improve reproductive health outcomes has yet to be identified, exercise programs that have proven to be effective have been of a low to moderate intensity. Furthermore, data indicate that exercise can aid in the relief of primary dysmenorrhea symptoms. (A. Daley, 2009)

In both individuals with and without temperament disarranges, physical action has been illustrated to assist uneasiness, sadness, and disposition (Guszkowska M. 2004). Moo to direct escalated oxygen consuming work out that employments huge muscle groups, in specific, has the foremost mental points of interest. Overtraining or high-intensity work out, on the other hand, can cause central tiredness, undermining the benefits of work out. (Lin TW, Kuo YM. 2013)

Exercise releases brain-derived neurotrophic factor, which helps to alleviate depression. In addition, exercise, particularly strength training,

raises IGF-1 levels, which helps with cognitive performance. (Tumati, S., Burger, H., Martens, S., van der Schouw, Y.T., Aleman, A., 2016)

For the most part women with PCOS are more likely to have destitute mental wellbeing and a decreased quality of life, direct work out may have a number of benefits for this populace, in expansion to weight misfortune, metabolic enhancements, and ovulation control. (Barnard L, et al. 2007)

2.13.J. Mind-Body Medicine

Knowldge is the ponder practice of paying consideration to one's considerations, feelings, and physical sensations. Knowldge-based stretch decrease programs have been illustrated to lower blood weight, glucose levels, and aggravation in non-PCOS populaces due to changes in brain action that emphatically influence the autonomic anxious framework and HPA hub in little, nonrandomized trials. (Raja-Khan N, Stener-Victorin E, Wu X, Legro RS. 2011).

These alterations may well be particularly invaluable for women enduring from physical indications like weight, anovulation, and infertility, as well as mental indications like pity, uneasiness, and push, which are all connected to PCOS. In 2015, a little randomized trial in PCOS women found that an eight-week knowldge-based mediation made strides pity, uneasiness, stretch, and QoL whereas too bringing down salivary cortisol levels. (Stefanaki C, Bacopoulou F, Livadas S, et al. 2015)

A randomized controlled study of 86 overweight or obese women (31 of them with PCOS) found that 8 weeks of knowldge-based thrust

reduction reduced the sensation of stretching and fasting blood sugar. (Raja-Khan N, Agito K, Shah J, et al. 2017)

2.13.K. Complementary and Alternative Medicine

There is a scarcity of research on the usefulness of complementary and alternative medicine (CAM) in the treatment of PCOS. Women, on the other hand, are very interested in complementary and alternative medicine. According to the results of a comprehensive poll of 657 women with PCOS, 99 percent of respondents would prefer utilize complementary and alternative medicine (CAM) than the treatments typically prescribed by specialists. (Sills ES, Perloe M, Tucker MJ, Kaplan CR, Genton MG, Schattman GL. 2001)

It's also been stated that 70% of women with PCOS already use complementary and alternative medicine (CAM), vitamins, minerals, and herb supplement forms. Women used complementary and alternative medicine (CAM) for a variety of reasons, including "PCOS treatment," "fertility treatment," "improvement of overall health," and "reduction of sadness." (Arentz S, Smith CA, Abbott JA, Bensoussan A. 2014)

2.13.L. Acupuncture

Acupuncture is a therapy procedure utilized in traditional Chinese medicine for over 3000 years. (Balen AH, Morley LC, Misso M, et al. 2016)

When needle therapy was compared to an work out regimen in a randomized controlled trial of women with PCOS, it was found to move forward feminine cycle recurrence and lower testosterone, AMH, and ovarian volume. (Leonhardt H, Hellström M, Gull B, et al. 2015)

Reduces adrenal cortisol yield, and its ability to control central bendorphin secretion all affect gonadotropin-releasing hormone (GnRH) discharge, may well be the instrument. Whereas there's a few prove supporting the utilize of needle therapy to treat infertility in women with PCOS, the prove is as of now frail. (Balen Ok, Morley LC, Misso M, et al. 2016)

2.13.M. Herbal Medicine

2.13.M.1. Aloe vera

Aloe vera may be a plant that has hypoglycemic properties. Aloe vera is tall in fiber, which makes a difference to speed up gastrointestinal travel, retention, and hemostasis control. Aloe vera incorporates a assortment of chemicals with different organic capacities. Aloe vera phytosterols can alter the steroidogenic reaction and estrogen receptor protein expression, bringing down androgens whereas expanding estrogens, and thus moving forward PCOS indications. In PCOS rats, phytosterols found in aloe vera, such as sitosterol, decreased serum cholesterol levels and normalized (3-Hydroxysteroid dehydrogenase) 3HSD action. (Doaei S, Hajiesmaeil M, Aminifard A, Mosavi-Jarrahi SA, Akbari ME, Gholamalizadeh M. 2018)

Radha et al. explored the impacts of Aloe vera gel on rats with PCOS in one ponder. In this ponder, rats were given distinctive measurements of aloe vera (5 mg/kg, 10 mg/kg, and 15 mg/kg) for 60 days, and it was found that aloe vera can increment glucose resilience in a dose-dependent way. In spite of the fact that all dosages of Aloe vera may influence changes in ovarian shape, tall dosage treatment decreases atretic follicles, 3HSD, and 17-. The protein 17-hydroxysteroid

dehydrogenase (HSD) is actuated. Serum affront levels and affront resistance were significantly decreased in all bunches, whereas testosterone levels were drastically decreased at measurements of 10 and 15 mg. (Radha M, Padamnabhi N, Laxmipriya N. 2014)

A 45-day clinical investigate in rats looked at the endocrine impacts of 1mL of Aloe vera gel; the comes about appeared that Aloe vera did not adjust biomarker proteins or weight, but it did increment affront affectability and 3HSD and HSD action. Aloe vera has been appeared to lower triglyceride (TG) and low-density lipoprotein (LDL-C) levels, reduce atretic follicles, and upgrade glucose bigotry and fat metabolizing chemical exercises in a few trials. (Ashkar F, Rezaei S, Salahshoornezhad S, Vahid F, Gholamalizadeh M, Dahka SM, Doaei S. 2019)

2.13.M.2.Cinnamon

Cinnamomum is a Lauraceae plant that is a herbaceous plant. Cinnamomum is a tropical plant that thrives in southern India and Sri Lanka. Cinnamon has been shown in numerous trials to behave as an insulin sensitizer. Cinnamon contains a variety of flavonoids and polyphenols that have antioxidant and free radical scavenging properties. (Kort DH, Lobo RA. 2014)

According to some studies, Type-A polymers and procyanidine polyphenols in cinnamon extract improve insulin signaling at the post-receptor level, increase PI3 kinase activity, increase glucose uptake by enhancing the GLUT4 glucose transporter, inhibit glycogen synthesis, and enhance glycogen synthesis and hypoglycemic effects. Wang et al. looked into the effects of cinnamon extract on insulin resistance in PCOS

patients. The intervention group received capsules containing 333 mg of cinnamon extract per serving 3 times a day, while the control group received 3 meals and 1 placebo capsule for each meal. Fasting blood sugar (FBS) and insulin resistance were significantly lower in the intervention group. In this study, cinnamon improved insulin sensitivity and decreased the oral glucose tolerance test. (Wang JG, Anderson RA, Graham GM 3rd, Chu MC, Sauer MV, Guarnaccia MM, et al. 2007)

Borzoei et al. found that taking 500 mg cinnamon three times a day for eight weeks moved forward FBS, affront, and add up to cholesterol levels in PCOS patients. Another ponder looked at 66 women who had been analyzed with PCOS. Members were separated into two bunches at irregular. For three months, the intercession bunch was given 1.5 g of cinnamon powder capsules in three part dosages, while the control bunch was given a fake treatment. Cinnamon was found to significantly decrease affront resistance and fasting affront levels in PCOS women. (Hajimonfarednejad M, et al. 2018)

Cinnamon supplementation diminished affront resistance and improved the wellbeing of PCOS patients, concurring to Dou et al. Cinnamon may lower blood testosterone and affront levels, bringing down insulin-like development factor-1 and expanding insulin-like development calculate 1 (IGF) official protein levels in plasma and the ovary in PCOS. Cinnamon may be utilized to treat a PCOS. (Dou L, Zheng Y, Li L, Gui X, Chen Y, Yu M, et al. 2018)

2.13.M.3.Camellia sinensis

Camellia sinensis is the logical title for green tea. Green tea could be a therapeutic plant and one of the most prominent sources of flavonoids. Green tea drinking has been appeared in thinks about to lower FBS levels in diabetic patients and lower the chance of CVD, cancer, and metabolic disorder. Catechin hinders catechol-O-methyltransferase (COMT), the protein that causes norepinephrine to be decreased. Norepinephrine influences lipid digestion system over time. Green tea organization improves vitality utilization, fat oxidation, and weight misfortune in corpulent patients by up to 4.6 percent after three months. Green tea incorporates caffeine, which raises metabolic rate indeed in minor dosages (100 mg per day, for case). (Tehrani HG, Allahdadian M, Zarre F, Ranjbar H, Allahdadian F. 2017)

In PCOS rats, green tea extricate expanded lipolysis and diminished the estimate and thickness of the follicular theca layer. The sum of steroid hormones and androgens created by the follicular theca layer will diminish as a result of this decrease. Green tea extricate expanded the number of follicles and corpus luteum within the ovary whereas diminishing cystic follicles. (Ghafurniyan H, Azarnia M, Nabiuni M, Karimzadeh L. 2015)

Green tea utilization was considered for its impact on weight misfortune and hormonal changes in stout PCOS people. After 12 weeks of the mediation, weight lessening decreased fasting affront levels and testosterone concentrations were impressively higher within the intervention gather than within the control gather. Green tea diminished LH levels, diastolic blood weight, body and ovarian weight, and prevented testosterone generation and incitement. Green tea, on the other hand, has been appeared in certain considers to boost testosterone levels,

in this manner it cannot be recommended to all women with PCOS, fair those with ordinary levels. (Mombaini E, Jafarirad S, Husain D, Haghizadeh MH, Padfar P. 2017)

2.13.M.4.Fenugreek (Trigonella foenum-graecum L)

Fenugreek (Trigonella foenum-graecum L) is a traditional Asian spice crop that grows as an annual plant. It has 10–20 golden seeds with a pleasant aroma in its crust. Fenugreek contains anti-diabetic and cholesterol-reducing properties, as well as decreasing insulin resistance in PCOS women. (Hassanzadeh Bashtian M, Emami SA, Mousavifar N, Esmaily HA, Mahmoudi M, 2013)

In women with PCOS, it lowers insulin resistance. Soluble fibers in fenugreek extracts lower blood sugar through inhibiting enzymatic digestion and absorption of carbs, lowering postprandial glucose levels. Fenugreek lowers blood sugar levels through increasing insulin production and release from beta-pancreatic cells, as well as blocking alpha-amylase and sucrose. (Swaroop A, Jaipuria AS, Gupta SK, Bagchi M, Kumar P, Preuss HG, et al. 2015)

Hassanzadeh et al. looked at how fenugreek seed extract influenced insulin resistance in PCOS individuals. For two months, the intervention group gotten three 500 mg metformin tablets and two 500 mg foenum pills, whereas the control group gotten three 500 mg metformin tablets and two fake treatment tablets. After two months, there was an impressive decrease in ovarian sores. Fasting glucose, androgen affectability, and hormone concentrations did not contrast between the two groups. Another study employing a comparable strategy on premenopausal women found a 46 percent decrease in sore measure and

71 percent of women detailed a return to a standard menstrual cycle taking after treatment. Women with unpredictable periods with polycystic ovarian ultrasonography ought to take fenugreek, but not essentially those with decreased glucose resistance. (Hassanzadeh Bashtian M, Emami SA, Mousavifar N, Esmaily HA, Mahmoudi M, 2013)

2.13.M.5. Silymarin

Milk thistle is utilized to extricate the flavonoid silymarin (*Silybum marianum* L. Gaernt.). Silymarin has been appeared to have a number of pharmacological qualities, counting hepatoprotective, anti-oxidant, anti-inflammatory, anti-cancer, and cardioprotective impacts. It could be a strong inhibitor of the actuation of atomic calculate kappa-lightchain-enhancer of actuated B cells (NF-kb). By boosting cellular glutathione, it aids within the disposal of free radicals within the body and restrains lipid peroxidation. (Kayedpoor P, Mohamadi S, Karimzadeh-Bardei L, Nabiuni M. 2017)

Silymarin contains anti-angiogenesis properties, which repress follicular cell expansion, bringing down testosterone generation, and raising corpus luteum due to expanded progesterone hormone. Silymarin decreases blisters whereas bringing down testosterone levels. It moreover serves as a hepatoprotective specialist, expanding SHBG protein generation and hindering cyclooxygenase (COX). Silymarin influences glucose 6-phosphatase and hinders gluconeogenesis, bringing down blood glucose levels and lightening PCOS indications. Silymarin diminishes aggravation in PCOS by diminishing cyclooxygenase-2 (COX-2) and lipoxygenase, which includes a favorable impact in

bringing down blood glucose levels.(Nabiuni M, Kayedpoor P, Mohammadi S, Karimzadeh L. 2015)

The impacts of a settled combination of *Berberis aristata* and *Silybum marianum* on sugar and lipid profile were detailed by Toch et al. in a meta-analysis. Low-density lipoprotein, cholesterol, and plasma glucose levels were all diminished with *Silybum marianum*. Another think about found that affront receptor expression levels were significantly down-regulated in Alzheimer's patients compared to solid controls, which supplementing with silibinin (polyphenolic flavonoid determined from *Silybum marianum*) diminished this down-regulation. This appears that silibinin improves insulin signaling pathways within the brain. (Liu P, Cui L, Liu B, Liu W, Hayashi T, Mizuno K, et al. 2020)

2.13.M.6.Chamomile

Chamomile may be a herb native to Western Europe and North Africa that's utilized to treat a assortment of afflictions. Amino acids, polysaccharides, greasy acids, basic greasy acids, minerals, flavonoids, and phytoestrogens are the essential chamomile compounds with anti-inflammatory, antispasmodic, and antioxidant properties. (Rafraf M, Zemestani M, Asghari-Jafarabadi M. 2015)

The impacts of chamomile extricate on biochemical and clinical markers in PCOS rats were inspected by Zanganeh et al. in a consider. Chamomile extricate was given to the mediation gather at measurements of 25 mg/kg, 50 mg/kg, and 75 mg/kg. Blisters vanished, the number of follicles developed, and the levels of estradiol, gonadotropins, LH, were all higher in rats given a 50 mg/kg dose and FSH was

essentially diminish. (Farideh ZZ, Bagher M, Ashraf A, Akram A, Kazem M. 2010)

In another ponder, people took 370 mg of chamomile verbal capsules for three months, and their testosterone levels dropped. Phytoestrogens too boost progesterone hormone by hindering 20-alpha-hydroxysteroid dehydrogenase, a progesterone metabolizing protein. 3- and 7-dihydroxyflavone, as well as flavones, are phytoestrogen chemicals that control this protein. An increment in progesterone causes a rise in basal metabolic rate, which can lead to weight diminishment. At last, chamomile's sterols can offer assistance to lower cholesterol retention. Phytosterols in chamomile extricates boost the generation of dehydroepiandrosterone within the liver. Chamomile hydroalcoholic extricate too contains ascorbic corrosive, which makes a difference to avoid weight pick up and lower cholesterol. (Heidary M, Yazdanpanahi Z, Dabbaghmanesh MH, Parsanezhad ME, Emamghoreishi M, Akbarzadeh M. 2018)

2.13.M.7. Heracleum persicum (Persian Hogweed or Golpar)

In Iran, Iraq, and Turkey, *Heracleum persicum* is a perennial herb that is commonly used in the manufacture of food and medicine. Alkaloids, terpenoids, terpenes, and steroids are all found in *Heracleum persicum*. Furocoumarins like sphondin are found in hydroalcoholic extracts of *Heracleum persicum*. *Heracleum persicum* reduced inflammation by inhibiting cyclooxygenase-2. (Barzegari Firouzabadi F, Mirhosseini M. 2012)

In conventional medication, *Heracleum persicum* is utilized as an anti-inflammatory, sterile, anti-diabetic, and anti-bacterial. *Heracleum*

persicum extricate may offer assistance treat sexual brokenness in men by bringing down plasma testosterone, body weight, and testis weight. (Hajhashemi V, Sajjadi SE, Heshmati M. 2009)

Besides, the hydroalcoholic extricate of *Heracleum persicum* impacts sexuality in women by modifying plasma sex hormone levels, repressing folliculogenesis, and changing plasma sex hormone levels. Furanocoumarins of the *Heracleum persicum*, such as sphondin, xanthotoxin, and pimpinellin, block nitric oxide (NO) amalgamation, bringing down LH levels and estradiol discharge. The bringing down of estradiol helps human propagation in its characteristic state. (Haj-Husein I, Tukan S, Alkazaleh F. 2015)

In another consider, *Heracleum persicum* brought down LH, estrogen, and testosterone in PCOS rats whereas expanding FSH. (Alizadeh F, Azarnia M, Mirabolghasemi G, Karampoor P. 2015)

2.13.M.8. Mentha

Mentha (peppermint) could be a Lamiaceae family therapeutic herb. The mentha may be a plant that develops wild in East India and Asia. Within the nourishment and refreshment businesses, mentha fundamental oils are utilized. *Mentha* has noteworthy inhibitory impacts, actuating cytochrome P450 3A4 (CYP3A4), which comes about in a alter in steroid hormone and androgen concentrations, as well as a decrease in free testosterone levels due to expanded SHBG. Due to physiological changes within the menstrual cycle, peppermint tea can raise the levels of LH, FSH, and estrogen. Antiandrogenic medicines for hirsutism can be supplanted with peppermint tea. (Sadeghi Ataabadi M, Alae S, Bagheri MJ, Bahmanpoor S. 2017)

The impact of peppermint tea on the level of androgen in women with hirsutism was examined by Mehmet Akdogan et al. in Turkey. Amid the follicular stage of monthly cycle, the intercession bunch was given a container of peppermint tea comprising 5 grams of dried mentha clears out in 250 ml of bubbling water (5 days, twice a day). Free testosterone, triglycerides, and LH, FSH, and Prostaglandin E2 levels were essentially lower within the intercession gather, whereas LH, FSH, and Prostaglandin E2 levels were altogether higher (PGE2). DHEA and add up to testosterone levels, on the other hand, did not drop much. (Give P. 2010)

In another logical test, members were given peppermint or chamomile tea twice a day for 30 days, which crossed one menstrual cycle. Peppermint tea was found to actuate a critical diminish in testosterone levels and an increment in LH and FSH levels within the trials. The degree of hirsutism is additionally decreased. (Sadeghi Ataabadi M, Alae S, Bagheri MJ, Bahmanpoor S. 2017)

2.13.M.9. Foeniculum vulgare (fennel)

In conventional medication, fennel (*Foeniculum vulgare*) is utilized to treat hormonal and metabolic issues in PCOS women. Fennel could be a phytoestrogen that can offer assistance ensure you from oxidative push and renal harm. *Foeniculum* disgusting basic oil contains antibacterial and antioxidant properties. (Karampoor P, Azarnia M, Mirabolghasemi G, Alizadeh F. 2014)

Foeniculum vulgare includes a negative input impact on LH and testosterone levels when utilized for a long time. Reduced androgen levels result in diminished LH, which may be a common menstrual cycle

in PCOS women. The extract of *Foeniculum vulga* does not influence creatinine levels, in any case it does lower urea levels. (Kerempour and colleagues) The impact of a hydro-alcoholic extract of *Foeniculum vulgare* seeds on the serum levels of sex hormones in rats with PCOS was considered in Iran. *Foeniculum vulgare* was managed intraperitoneally at dosages of 250 mg/kg, 500 mg/kg, and 1000 mg/kg for ten days in this examination. 500 mg/kg and 1000 mg/kg were given to the intervention group. FSH levels expanded significantly, whereas testosterone and LH levels fell within the 1000 mg/kg group.(Fozalae SS, Farokhi F. 2015)

In another study, *Foeniculum vulgare*, along with metformin, reduced the number of days between menstruation and pain from dysmenorrhea in PCOS patients. (Mokaberinejad R, Rampisheh Z, Aliasl J, Akhtari E. 2019)

2.13.M.10. Potentilla

Potentilla is used to increase fertility, treat menstruation abnormalities, and control sex hormones. *Potentilla* has been shown to have anti-estrogenic properties in recent investigations. (Mazurek S, Fecka I, Węglińska M, Szostak R. 2018)

Tannins, phenolic acid, and triterpenoids are examples of phytochemical derivatives with hypoglycemic, hypolipidemic, and anti-inflammatory properties. Through hindrance of glycogen phosphorylase action, these substances can lower fasting blood glucose, glycated serum protein, malondialdehyde. (Vickers NJ. 2017)

The impacts of an ethanolic root extricate of *Potentilla* on ovarian tissue changes in rats with PCOS were considered by Jaldar et al. For 30 days, the mediation gather got a 365 mg/kg dose. The number of descendant was not influenced by the *potentilla* treatment. (Jelodar G, Askari K. 2017)

2.13.M.11. Licorice

Licorice may be a local plant that develops in Spain, Italy, Turkey, Iran, Iraq, Central Asia, and Northeast China. It has a place to the Leguminosae family. Licorice may have estrogen-like activities as well as unassuming inhibitory impacts on endogenous hormone digestion system. (Nazari S, Rameshrad M, Hosseinzadeh H. 2017)

Licorice restrains 17-hydroxyl esterase dehydrogenase and 17,20-lyase action, advances aromatase movement, influences 5 and 5 reductase, and is utilized to treat menopause. Licorice stifles tyrosinase action and brings down intemperate hair development through enzymatic impacts on the melatonin era cycle. (Faghihi G, Iraji F, Abtahi-Naeini B, Saffar B, Saffaei A, Pourazizi M, et al. 2015)

Concurring to Yang et al., licorice extricate decreases the side effects of PCOS by tweaking serum FSH, the LH/FSH proportion, and unpredictable ovarian follicles. (Yang H, Kim HJ, Pyun BJ, Lee HW. 2018)

2.13.M.12. Marrubium vulgare (White Horehound)

Marrubium vulgare could be a blooming plant having a place to the mint family that develops wild in Europe, northern Africa, and Asia. Polyphenols and flavonoids found in *Marrubium vulgare* have been

appeared to have hypoglycemic impacts, as well as lower cholesterol, triglycerides, and oxidative stress. A few flavonoids, such as apigenin, compete with flunitrazepam for authoritative and so restrain LH emission. (Bouterfas K, Mehdadi Z, Elaoufi M, Latreche A, Benchiha W, editors. 2016)

LH is additionally reduced by the -testosterone within the extract of *Marrubium vulgare*. By lessening cholesterol, -sitosterol hinders testosterone generation. -sitosterol brings down estradiol levels by hindering the aromatase chemical, which avoids testosterone from being changed over to estrogen. White horehound extract moreover contains apigenin and ursolic corrosive, which square cytochrome P450 and the transformation of cholesterol to pregnenolone, lessening the union of steroid hormones like progesterone. (Gavarić A, Vladić J, Ambrus R, Jokić S, Szabó-Révész P, Tomić M, et al. 2019)

The impact of fade extract on hormonal parameters in rats with PCOS was examined by Mokhtari et al. in a ponder. The exploratory gather was given measurements of 500 mg/kg and 1000 mg/kg orally for 21 days in this examination. In a 1000 mg/kg measurements, the LH hormone was drastically decreased. (Mokhtari M, Ebrahimipoor MR, Harfsheno S. 2014)

2.13.M.13. Inositol

Inositol is presently classified as an exploratory medicine for PCOS, concurring to modern rules, since the prove is constrained and powerless (Universal evidence-based rule for the evaluation and administration of polycystic ovary disorder. Monash College, Melbourne, Australia 2018.). Inositols are found in nourishments such as

natural products and beans, which people ingest. Phosphatidyl-myoinositol, a forerunner of inositol triphosphate, is coordinates into cell films as an inositol (Kalra B, Kalra S, Sharma JB. 2016). Since inositol triphosphate could be a moment flag-bearer for hormones like affront and FSH, it may be viable in treating IR in PCOS.

There are nine cis/trans isomers of inositol. Myo-inositol (MI) and D-chiro-inositol (D-chiro-inositol) are two stereoisomers of inositol which will be advantageous to women with PCOS (DCI). In nature and the human body, MI is the foremost inexhaustible isomer of inositol. Thyroid-stimulating hormone (TSH), FSH, and affront are all directed by it. (Unfer V, Facchinetti F, Orrù B, Giordani B, Nestler J. 2017) Epimerase changes MI into DCI. The MI:DCI proportion in most human tissues is 40:1. (Bizzarri M, Carlomagno G. 2014). The part of these two stereoisomers in easing PCOS side effects independently and synergistically has been considered in certain inquire about.

2.13.M.14. Myo-inositol

In the human body, glucose-6-phosphate is used to make MI (mostly in the kidneys). MI has been found to help women with PCOS manage their weight by inducing menstruation, increasing the occurrence of ovulation, improving oocyte quality, reducing acne and hirsutism, and decreasing acne and hirsutism. (Unfer V, Facchinetti F, Orrù B, Giordani B, Nestler J. 2017)

Little randomized controlled trials comparing two to four grams of MI per day to folic corrosive have appeared that MI can make strides ovulation rates (70 percent versus 21 percent), decrease time to

ovulation, upgrade HDL cholesterol, and lead to weight misfortune. (Costantino D, Minozzi G, Minozzi E, Guaraldi C. 2009)

Another single-arm consider found that four grams of MI per day can offer assistance 72 percent of women with PCOS recapture ovulation (Papaleo E, Unfer V, Baillargeon JP, et al. 2007). MI brought down fasting serum affront levels and HOMA-IR in women with PCOS, according to a meta-analysis that included only randomized controlled trials. While overall testosterone levels appeared to drop as well, due to the significant variability of the research populations, this impact was equivocal. (V. Unfer, F. Facchinetti, B. Orrù, B. Giordani, J. Nestler. 2017)

2.13.M.15. D-chiro-inositol

In modest studies, including women with PCOS, DCI treatment has had favorable benefits on endocrine, reproductive, and metabolic variables, but few randomized controlled trials have been done (Tang T, Lord JM, Norman RJ, Yasmin E, Balen AH. 2012). In one study, 22 obese and PCOS women were given 500 milligrams of DCI every day for three months. LH, estradiol, androstenedione, testosterone, fasting insulin, and BMI all decreased significantly after treatment. (Genazzani AD, Santagni S, Rattighieri E, and others, 2014) Another tiny study indicated that when 47 women were given DCI, their menstrual periods were managed. (A. La Marca, V. Grisendi, G. Dondi, G. Sighinolfi, and A. Cianci. 2015).

Oocyte quality was inspected in women with PCOS who were experiencing gonadotrophin incitement whereas taking either DCI or

metformin in one randomized controlled explore. 2014 (Piomboni P, Focarelli R, Capaldo A, et al.)

2.13.M.16. Myo-inositol + D-chiro-inositol

Whereas MI appears to be more useful for women with PCOS since of its capacity to direct feminine cycle and increment oocyte quality, combining MI with DCI may give an extra advantage. A major randomized controlled trial of 100 women with PCOS who were getting IVF treatment compared a combination of MI and DCI (1100 mg MI furthermore 27.6 mg DCI) to 500 mg DCI alone in 100 women with PCOS who were experiencing IVF treatment.(Colazingari S, Treglia M, Najjar R, Bevilacqua A. 2013). When compared to DCI alone, the combination treatment improved oocyte quality, developing life quality, and boosted pregnancy rates.

2.14. Myths about Polycystic Ovarian Syndrome

2.14.A. Myth 1: Single symptoms indicate you have PCOS

Since PCOS may be a disorder, or a collection of side effects, a determination cannot be made based on fair one sign or indication. Numerous specialists in our current ponder (GPs, endocrinologists, and gynecologists) communicated concerns with respect to PCOS misdiagnosis and over conclusion. They portrayed assembly a part of women who had self-diagnosed or had been misdiagnosed based on sporadic periods or an ultrasound that appeared polycystic ovaries. Numerous youthful women, be that as it may, have polycystic ovaries but not PCOS. Indications too come in a run of seriousness, with no self-evident cutoff between typical and neurotic. For illustration, women of

different ethnicities have shifting amounts of confront and body hair. Skin break out is additionally exceptionally visit. Concurring to one consider, 40% of women in their 20s, 25% of women in their 30s, and 12% of women in their 40s have clinical acne. Stress, hormonal contraceptives just like the pill, corpulence, thyroid disarranges (which can alter digestion system), over-exercising, and disarranged eating are fair some of the various reasons and disarranges that might reflect PCOS indications. Women with PCOS are mislabeled, which stops them from getting treatment for their honest to goodness issue. A few infections, such as hypothalamic amenorrhea (when periods halt due to stretch, weight misfortune, or extraordinary physical movement), can have major wellbeing repercussions on the off chance that cleared out untreated, counting bone misfortune. (Copp T, Muscat DM, et al. 2020)

2.14.B. Myth 2: Women with PCOS don't need to use contraception

A few PCOS women may have trouble conceiving normally and may require medicine to assist them ovulate when they need to. In any case, numerous women with PCOS conceive suddenly and have the family measure they crave. Women with and without PCOS have generally the same number of children. In spite of this, numerous women with PCOS fear they will never be able to have children. This might have life-altering consequences. Fear of infertility expanded long-term mental distress for women with PCOS, concurring to a later think about. They were beneath weight to conceive rapidly, had awkward discussions with their life partners, and a handful indeed changed their parental goals and decided not to have children. Numerous individuals tested with contraception, and a couple of of them had unforeseen babies as a result. Other ponders have additionally seen a diminish in prophylactic utilize.

Women with PCOS need consolation as well as exact data approximately the probability of pregnancy so that they are mindful that contraception is required in the event that they don't wish to ended up pregnant. (Copp T, et al. 2019)

2.14.C. Myth 3: All women with PCOS are at risk of "metabolic complications"

PCOS is connected to an expanded chance of affront resistance (when the body's reaction to the hormone affront isn't because it ought to be), sort 2 diabetes, and metabolic disorder (a collection of variables such as high blood pressure weight and destitute cholesterol levels). As a result, a few women with PCOS express concern approximately their long-term wellbeing. The potential repercussions, in any case, are not the same for all women who are analyzed. Women who don't appear prove of androgen abundance, such as those analyzed with unpredictable menstrual cycles and polycystic ovaries, don't confront the same metabolic concerns as those who do. In any case, the larger part of the specialists we talked with were totally uninformed of this. As a result, a few PCOS women are inaccurately classified as high-risk, creating undue concern. Another broadly held conviction is that women with PCOS are more inclined to create heart malady. In any case, the negligible data accessible so distant recommends something else. (Lizneva D, Suturina L, et al. 2016)

2.14.D. Myth 4: PCOS causes weight gain or prevents weight loss

In spite of the reality that women with PCOS are more likely to be overweight than women without the clutter, the interface between PCOS and weight is however obscure. Whereas numerous women with PCOS

have inconvenience losing weight and accept they are more inclined to weight pick up, weight administration techniques such as slim down and behavior alter programs have found that women with and without PCOS lose the same sum of weight. Concurring to a later consider, having a tall BMI is one of the causes of PCOS, with weight pick up compounding side effects. PCOS, on the other hand, does not show up to change BMI. More investigate is required to completely comprehend these associations. Indeed a minor sum of weight misfortune can offer assistance with PCOS side effects, which is empowering. For women with PCOS, the primary line of treatment is to live a sound way of life (eat well, work out regularly, and dodge smoking). Women with PCOS, on the other hand, may have extra challenges in making these alterations, such as expanded stress and pity, emphasizing the require of having access to back. Within the nonappearance of high-quality prove, we must be cautious with presumptions and generalizations. Women with PCOS have a assortment of contributing components and, as a result, changing levels of chance. Patients will be able to way better oversee their ailment, move forward their comes about, and minimize unneeded uneasiness in the event that they get genuine patient-centered wellbeing care. (Brower MA, et al. 2019)

2.14.E. Myth 5: You Have to Have Polycystic Ovaries to Have PCOS

For a few individuals, the term "polycystic ovarian disorder" may be a misnomer. Agreeing to David A. Ehrmann, MD, executive of the College of Chicago Center for PCOS in Illinois, numerous women with PCOS don't have cysts on their ovaries, and having blisters does not ensure you have got PCOS. "When PCOS is specified, it alludes to sores

within the ovary. That's why there's a current drive to rename PCOS as the "regenerative metabolic disorder," he says, since it centers consideration on what things: the disease's metabolic and regenerative issues. As it were two of the three conditions must be met for a lady to be analyzed: Overabundance androgen (Indications incorporate hirsutism, skin break out, and hair misfortune), unpredictable feminine cycle, and various follicles/cystic ovaries). (Legro RS, et al. 2014)

2.14.F. Myth 6: You Can't Get Pregnant if You Have PCOS

Infertility is habitually caused by PCOS. (Centers for Infection Control and Avoidance, 2018) The ovary's capacity to discharge an egg that can be fertilized for pregnancy is hurt by the hormonal issue. 2018 (Women's Wellbeing G) But — and take a profound breath — you'll still become pregnant, either actually or with the assistance of ripeness drugs like follicle-stimulating drugs. (PCOS Knowledge Affiliation, 2018)

2.14.G. Myth 7: If Your Menstrual Cycle Is Irregular, You Have PCOS

An unpredictable cycle can be caused by a assortment of variables, and PCOS is fair one of them. A ordinary cycle endures between 21 and 35 days. Breastfeeding, over the top slimming down or overexercising, pelvic provocative malady, uterine fibroids, and thyroid issues are all conceivable causes of an out-of-whack cycle. 2016 (Mayo Clinic) Push might moreover play a part.

2.14.H. Myth 8: If You're Not Looking to Get Pregnant, You Don't Have to Worry About PCOS

PCOS doesn't fair harm a woman's fertility; it can have a long-term impact on her generally wellbeing. Sort 2 diabetes (more than half of PCOS women have diabetes or prediabetes sometime recently the age of 40), high blood pressure weight (hypertension), moo cholesterol levels, rest apnea, discouragement and uneasiness, and endometrial cancer have all been related to it. It is imperative for a woman's wellbeing to be analyzed and tended to. (Women's Wellbeing, 2018)

2.14.I. Myth 9: Every Woman With PCOS Should Go on the Birth Control Pill

Specialists commonly utilize hormonal birth control to treat PCOS feminine cycle anomalies. The treatment for PCOS, on the other hand, will be essentially decided by your conclusion point. You'll not utilize a birth control pill if you crave to induce pregnant. Moreover, Medling accepts that the pill is more of a Band-Aid that covers indications, hence she exhorts women to address their hormonal wellbeing comprehensively through way of life changes like decreasing stretch and eating an anti-inflammatory eat less. (Salama AA, Amine EK, Salem HAE, et al. 2015)

2.15. Quality of Life :

Quality of life can be defined as a multi-dimensional construct of passionate, material, and physical success that results in strong relationship bonds, material well-being, self-assurance, and the perception of oneself as a solid human with valid rights. Personal satisfaction, according to Abrams (2004), is the level of contentment or disappointment experienced by individuals with various aspects of their lives. Physical and natural variables, socio-ecological components,

economical aspects, cultural, health issues, character characteristics, independent factors, and a general sense of fulfillment are all important aspects that influence personal satisfaction. (Legro, R.S., Arslanian, S.A., et al, 2013)

Quality of life (QoL) is defined by the World Health Organization as a person's perception of their situation in life as it is embedded in a social, cultural, and environmental context. The concept of QoL is broad and encompasses a variety of spaces, including physical, mental, social, family, and environmental ones. Examining these areas can reveal the overall impact of a disease on a patient's life. Significantly, QoL appears to have a greater impact on a person's perception of affluence, wellbeing, and life fulfillment than goal proportions of life situations. There has been an exponential increase in the number of studies conducted to explore QoL in nearly all areas of medicine during the last three decades. This growing interest in psychiatry and brain research to assess the role of QoL in mental clutter has been particularly notable. Studies have been carried out to determine the role of QoL in schizophrenia, grief, and stress issues, as well as the role of QoL in psychological wellness administration plans. (Naaz, F., Zaidi, S. Z. H., & Dubey, A. 2019)

The current theories range from those that place a broad focus on a patient's social, ecological, and physical well-being after treatment to those that depict the impact of a person's well-being on his or her ability to live a satisfying life. Salary, opportunity, and social support are all highly valued aspects of life that are not often recognized as well-being. Although low pay, a lack of opportunity, and helpless social assistance may be relevant to happiness, these factors are prohibited when dealing with personal satisfaction and medical issues, and there is a focus on

disease-related aspects of utilitarian limit (for example, portability in aspiratory infection) and prosperity. The term 'health related quality of life (HRQOL)' was coined as a result of this. Furthermore, many experts tend to substitute QOL for various terminology offered to describe patients' wellbeing (for example, 'wellbeing/practical status') or to summarize those aspects of life quality or ability that are impacted by one's wellbeing status (the 'wellbeing related QOL'). As a result, QOL is something that everyone understands yet believes is difficult to achieve or characterize precisely. (González-Blanch, C., Hernández-de-Hita, F., et al, 2018)

2.16. Polycystic Ovary Syndrome and Women Quality of Life

It's important to remember that women with PCOS often have multiple illnesses in addition to those listed above that might affect their short- and long-term physical and emotional health. Reduced personal pleasure due to aggravations in temperament, decreased sexual fulfillment, weight gain, skin inflammatory vulgaris, and alopecia have all been documented.(Chaturvedi, S.K. and Muliya, K.P., 2016)

PCOS is one of the most well-known endocrine diseases in women of reproductive age, with significant emotional, social, and economic consequences. Diminished personal happiness, as evidenced by depression, decreased sexual pleasure, and concerns with female confidence and mental self-portrait have all been explained.(Brady C, Mousa SS, Mousa SA., 2009)

The impact of this illness on patients' lifestyle and mental health is widely recognized. Patients with PCOS are subjected to a slew of testing and medical clinic appointments following their diagnosis, which can be

stressful. Patients with PCOS have lower (HRQoL), conjugal and social problems, melancholy, and self-destructive ideation, according to studies. Poor quality of life is likely to be a risk factor for other helpers. (Petkova, V., Kamusheva, M., Manova, M., Savova, A. and Andreevska, K., 2018)

Depression is linked to low emotional personal satisfaction as a result of PCOS symptoms. After controlling for goal proportions of symptoms like weight and hirsutism, this result remained. Despite the fact that the cause of the influence has yet to be determined, these findings may suggest that the abstract knowledge of PCOS manifestations is changing. In patients with PCOS, treating melancholy may increase emotional perception of indications and personal happiness.(Taghavi, S.A., Bazarganipour, F., Hugh-Jones, S. and Hosseini, N., 2015)

2.17.Theory:

2.17.A. Self-Regulation theory (Common-Sense Model of Self-Regulation (CSM)) This theory is used in nursing, and I believe it works best as a strategy for portraying the wonder, reducing the effect, and/or increasing the personal pleasure of women with polycystic ovarian condition.

2.17.B. Theory Overview

2.17.B.1.Common-Sense Model of Self-Regulation (CSM)

Describes how people react to and deal with health issues. It recommends that people build conceptual models of well-being hazards, abstract and target recovery objectives, and activities and ways to attain

those goals in order to effectively engage in critical thinking. The origins of the presence of mind model of self-regulation (CSM) can be traced back to a similar model established by Leventhal in the mid-1970s to investigate how people react to fear-exciting interactions (Leventhal, 1970). The CSM, like the equal model, states that when a hazard is detected (e.g., physical side effects or changes in work), Subjective and enthusiasti are two equally valid, though interconnected, depictions of the upgrading.(Greenwood, E.A., Pasch, L., Legro, R.S., Cedars, M. and Huddleston, H., 2017)

2.17,B.2. Basic Assumptions of the CSM.

Leventhal and colleagues (2003) identify three essential assumptions of the CSM: (1) People are problem solvers who are always changing. Most human acts, according to "critical thinking," are intentional and objectively placed. When it comes to health and sickness, people are expected to first try to "understand" the problem before devising 35 adapting techniques. The process of ill adjustment is analogous to critical thinking in this case. (2) People's responses to illness are based on their "sound judgment" convictions. As a result, methodology adaptations and wellness outcomes are dependent on how an individual acquires their illness. (3) Objective, clinical depictions of illness are distinguishable from emotive, individual depictions of illness. This qualification is crucial because individual depictions, which pay little attention to clinical precision, determine people's response to illness. The theoretical and solid wellsprings of info available to the individual, such as human services providers, media, interpersonal organizations, and previous encounters with the sickness itself, may be

used to construct emotional representations. (Prochaska, J.O., Gellman, M.D. and Turner, J.R., 2013)

2.17.C. Application of This Theory :

The self-guideline hypothesis states that prudent people will make decisions to reduce their health risk. Patients' behavior is influenced by their perceptions of themselves and their circumstances. Leventhal et al. (2003) identify five basic features of intellectual depictions of sickness that are connected but clearly distinct: personality (perceptions of symptoms and disease names), outcomes (beliefs about ailment outcomes: physical, social, and behavioral), course of events (assumptions about the duration of illness and the tenacity of symptoms), cause (beliefs about the cause of the ailment: organic, enthusiastic, ecological, or mental), and fix/control (beliefs about the controllability and reparability of ailment).

PCOS Conceptual Representations	
Identification	Name the women offer to PCOS and the manifestations correlate with the syndrome.
The effect	The effect of PCOS and its manifestations on the life quality of women.
Duration	Expectations of women's views of the duration of PCOS and the presence of its manifestations.
Cause	PCOS cause the women perceived .
Cure/Control	The perception of women that PCOS should be handled and/or regulated.

2.18. Nursing Role :

Nurses can use their undivided attention skills to provide sympathy, support, and assistance to PCOS women. Through convincing meetings, medical attendants can boost sensible dieting and exercise practices without focusing on weight loss. Persuasive talking, according to Emmons and Rollnick (2001), is a patient-centered guiding style that encourages behavior change through intelligent tuning in and targeting criticism to inspire inspiration from patients. Attendants and members of the multidisciplinary team should be aware that many overweight women have faced weight prejudice throughout their lives, notably from professionals in the clinical network. (Cronin, L., Guyatt, G., Griffith, L., Wong, E., Azziz, R., Futterweit, W., Cook, D. and Dunaif, A., 1998)

Nurses are well-positioned to develop and implement PCOS care plans that are best described as diverse, deeply embedded, and educational approaches to health. Nutritional training, supper planning, physical mobility, mental and emotional wellbeing, and weight and stress reduction techniques are all part of a good plan. (Bergh CM, Moore M, Gundell C., 2016)

Nurses and doctors should be aware that weight loss is difficult for many people, but for a woman with PCOS, weight loss is even more difficult due to elevated androgens and insulin resistance. (Center for Young Women's Health., 2015)

For women with PCOS, weight loss and weight management are far more difficult than for those without PCOS. Setting aside some time to tune in and analyze enthusiastic and physical side effects, as well as offering praise for little adjustments, will encourage women to be more actively involved in their PCOS management strategies. BMI

intercessions for screening and weight loss before pregnancy will be much easier to carry out if a woman understands that if she does not lose weight, pregnancy will become progressively difficult.(Cronin L, Guyatt G, Griffith L, Wong E, Azziz R, Futterweit W, Cook D, Dunaif A., 1998)

Polycystic ovarian problem is present in all national and racial assemblages. Surprisingly, only around half of all women with the illness get examined by 75 percent. Skin indications such as skin breakout, hirsutism, and androgenic alopecia make health caregivers and dermatology professionals crucial participants in the early diagnosis of polycystic ovarian condition..(Mahoney, D., 2014)

Nurses who work with women of reproductive age who want to get pregnant should be knowledgeable with the medical, social, and mental issues that women with PCOS face. These issues are essential because they can affect a woman's ability to envision as well as her overall well-being and personal fulfillment.(Cronin L, Guyatt G, Griffith L, Wong E, Azziz R, Futterweit W, Cook D, Dunaif A., 1998)

2.19.New issues about PCOs

2.19.A. Influence of PCOs on health of offspring :

Yu et al. found a detrimental relationship between a mother's diagnosis of PCOS and her offspring's health in their meta-analysis, which supports the Barker hypothesis, which states that bad early life variables may contribute to disease later in life. The study found a nearly threefold increase in the risk of newborn hypoglycemia and a twofold increase in the likelihood of perinatal death, but no increased risk of fetal

macrosomia, respiratory failure or fetal malformations. (Yu, H.F.; Chen, H.S.; Rao, D.P.; Gong, J. 2016).

Christ et al review .s sheds some light on possible pathways for PCOS's intergenerational consequences. Hyperandrogenic pre-pregnancy women had a higher risk of pre-eclampsia and preterm birth, according to their research, and greater blood insulin and serum testosterone were predictors of pregnancy problems. (Christ, J.P et al , 2018).

Hyperinsulinemia is common in women with PCOS, and it is more prevalent when hyperandrogenic traits predominate; it is exacerbated by obesity, and it is significantly increased when a woman with PCOS becomes pregnant. Insulin creates a prothrombotic and prothrombotic milieu, as well as facilitating vascular vasoconstriction, which raises blood pressure. (Bahri Khomami, M.et al , 2018).

In a prothrombotic and profibrotic environment, insulin promotes and potentiates vascular vasoconstriction, which leads to an increase in blood pressure. This environment will eventually have an impact on fetal growth in women with PCOS, especially when uterine artery blood flow improves.

Furthermore, the pro-inflammatory effect of this hyperandrogenic/hyperinsulinaemic milieu is amplified by serum C-reactive protein, white blood cells, inflammatory cytokines, and cell adhesion chemical components. In addition to the unfavorable placental alterations associated with PCOS consisting of alterations in the spiral arteries, placental vascular lesions and inflammation, which may lead to documented transgenerational consequences, this inflammatory milieu can cause issues with embryo implantation, miscarriage, and negative

pregnancy outcomes. (Puttabyatappa, M.; Cardoso, R.C.; Padmanabhan, V. 2016).

A number of research have suggested that genes and the environment play a role in the understanding of Autism Spectrum Disorder (ASD). Furthermore, the number of children born with Autism Spectrum Disorder (ASD) is increasing. This means that polycystic ovarian syndrome and irregular menstruation in the mother can cause autism in the children. D. Shah and S. Bobade Mothers whose children are already on the continuum took part in the standardized interview. Polycystic Ovarian Disorder (PCOD) is a menstrual abnormality that affects 11.76 percent of moms. This gives a rough idea of likelihood, but more research and larger sample sizes using standardized instruments are required. (Shah, D., & Bobade, S. 2018).

2.19.B. Polycystic Ovary Syndrome and Vitamin D Deficiency:

Vitamin D insufficiency has been linked to the development of metabolic syndrome, according to limited evidence. Vitamin D is required for the generation of hormones in the adrenal cortex. As a result, treating vitamin D insufficiency is necessary for PCOS management. Vitamin D insufficiency is frequent in women with PCOS, with blood values of 25-hydroxyvitamin D (25OHD) 20 ng/ml ranging from 67 to 85 percent. Vitamin D insufficiency might exacerbate the symptoms of PCOS in women. Vitamin D deficiency has been linked to IR, reduced pregnancy rates, ovulatory and menstrual abnormalities, hirsutism, increased risk factors for cardiovascular disease, obesity, and hyperandrogenism in PCOS patients. Vitamin D levels are currently not linked to PCOS condition due to a lack of data. (Israel, N. B., & Shamdeen, M. Y. 2019).

It's questionable whether PCOS is connected to low vitamin D levels within the blood. A comprehensive survey found 12 papers with profoundly blended comes about, and their meta-analysis found diminished serum 25-(OH)D in PCOS compared to controls, but no contrasts in serum 1,25(OH)₂D. When a lady with PCOS has vitamin D inadequate, the chance of metabolic comorbidity is raised. Vitamin D treatment may diminish unremitting fiery markers in women with PCOS and vitamin D lacking, in any case there's no prove that it makes strides patients' metabolic condition. (Rocha, A. L. et al, 2019).

2.19.C. PCOs and Genetics :

Environmental factors, as well as genetic and endocrine factors. Genetic, endocrine, and environmental factors all have a role in the etiopathogenesis of the syndrome and its subsequent manifestation of pathophysiology. The idea proposed by Franks et al. was the most compelling. Who defined PCOS as a genetically determined ovarian illness marked by androgen overproduction that manifests in a variety of ways depending on how this genetic propensity interacts with other genetic and environmental factors. (Franks S, Mc Carthy M, Hardy K., 2006)

Given that increased AMH is a hallmark of teenagers and women with PCOS, as well as daughters of women with PCOS, these relationships may suggest a link between the degree of maternal hyperandrogenism and the evolution of PCOS in their daughters. If hypothalamus-pituitary-ovarian axis is enabled, the condition fully manifests in puberty. At this time, metabolic changes occur that lead to alterations in body fat distribution. At puberty, there is a physiological

increase in insulin levels, which leads in a drop in SHBG levels with an increase in the effects of circulating androgens on the one hand, and direct stimulation of ovarian steroidogenesis on the other. Adolescent physiologic hyperinsulinemia can contribute to the development of hyperandrogenism and anovulation in women with PCOS. Insulin resistance and predisposed overweight girls are also more likely to develop early adrenarche and PCOS later in adolescence. (De Leo, V., et al ,2016)

The malfunction of theca cells and adrenal steroidogenesis is thought to be influenced by genetic and epigenetic factors. A genetic cause of adrenal PCOS is a lack in the enzyme cortisone reductase. Mutations in type I 11-hydroxysteroid dehydrogenase (11HSD) and hexose-6-phosphate dehydrogenase were discovered in the Digenic Triad mode of inheritance in the original investigation. In 11-HSD type I deficiency, cortisone is not converted to cortisol, resulting in an increase in ACTH, which increases androgenogenesis and contributes to the PCOS phenotype. (Crespo, R. P., Bachega, T. A., Mendonça, B. B., & Gomes, L. G. ,2018)

2.19.D. PCOs and environment :

Environmental factors and genetic variants are well recognized as significant etiological variables in PCOS. Several susceptibility genes were discovered using candidate gene screening and GWAS. Environmental factors, on the other hand, are not fully understood and are a major component in pathophysiology. Environmental endocrine disruptors have been proven to affect the hormonal modulation of the

hypothalamus pituitary ovarian axis (EEDs). EEDs are also thought to act as steroid agonists and antagonists. (Rattan S, et al , 2017).

In addition, long-term air pollution exposure has been linked to inflammation. Air pollution, according to Chung et al., causes inflammation, oxidative stress, and autonomic dysfunction. Sun et al. discovered that air pollutants trigger vascular inflammation in mice models. Although the actual cause of polycystic ovarian syndrome (PCOS) is unknown, it has been postulated that the condition is linked to increased oxidative stress and inflammation. It has also been suggested that pro-inflammatory stimuli may upregulate the ovarian theca cell steroidogenic enzyme, causing an increase in androgen output, which could lead to PCOS growth. Despite research that have looked at the influence of air pollution on fertility and hormone levels, the association between polycystic ovarian syndrome (PCOS) and air pollution has received little attention. PCOS is linked to hormonal imbalances and can result in infertility. (Lin, S. Y. et al,2019)

2.19.E. PCOs and Non-Alcoholic Fatty Liver Disease (NAFLD):

Non-alcoholic greasy liver infection (NAFLD) may be a metabolic result of PCOS that's characterized as hepatic steatosis that's not caused by liquor or other particular etiological causes. NAFLD is connected to corpulence, IR, and MS both robotically and epidemiologically. PCOS is connected to an raised hazard of NAFLD notwithstanding of corpulence, signaling that other PCOS traits, such as IR and androgen abundance, may moreover play a part within the interface between PCOS and NAFLD. A writing audit and meta-analysis uncovered that women with hyperandrogenic PCOS have a altogether higher predominance of

NAFLD than women with other phenotypes of the clutter, whereas serum androgen levels were higher in women with PCOS with NAFLD compared to women without NAFLD with PCOS compared to women without NAFLD with PCOS. (Rocha ALL, Faria LC, Guimares TCM, et al.2017).

2.19.F. PCOS at Different Stages of Life

Due to a need of cohort considers with long-term follow-up, the advancement of PCOS over distinctive life stages is ineffectively caught on. The clinical and biochemical parameters of PCOS-positive women and sound controls who gone to a therapeutic office at an normal age of 29 and returned 6 a long time afterward on normal were compared in a ponder. Maturing was connected to an increment within the recurrence of day by day menstrual cycles, a drop in blood testosterone levels, and a drop in IR in this longitudinal examination (Brown ZA, Louwers YV, Fong SL, et al.,2011) The causes for this continuous blurring of PCOS indications are obscure. Other thinks about, such as the ones recorded underneath, have centered on PCOS appearances in different age bunches.

2.19.F.1. PCOS in childhood. The pathophysiology of PCOS appears to be influenced by the interaction of a hereditary propensity and certain prenatal and postnatal environmental variables. Intrauterine or small gestational age growth retardation (or both, with increasing androgen levels throughout the intrauterine period) can cause increased glucocorticoid production, which can cause epigenetic alterations and

raise the risk of PCOS. (Bellver J, Rodríguez-Tabernero L, Robles A, et al.,2018).

2.19.F.2. PCOS in adolescence. PCOS is habitually analyzed amid youth. Menstrual inconsistency, skin break out, and hirsutism are the foremost common discoveries in this age run. These characteristics of PCOS, be that as it may, cover with those of ordinary youth. PCOS is linked to a family history of the condition, being overweight or having a low birth weight, being exposed to androgen during pregnancy, early puberty, obesity, and IR. PCOS is diagnosed using stricter criteria during adolescence than in adult females. Unambiguous hyperandrogenism (e.g., moderate to severe hirsutism or chronic serum testosterone elevation or both) and ovulatory failure that lasts longer than two years following menarche are required. (Fitzgerald S, DiVasta A, 2018)

2.19.F.3. PCOS in postmenopausal women. Indeed after menopause, women with PCOS bargain with hyperandrogenism, coming about in metabolic variations from the norm and MS, as well as an expanded chance of cardiovascular infection. As a result, postmenopausal women with a history of PCOS may proceed involvement indications of the illness amid their regenerative a long time. (Teede HJ, Misso ML, Costello MF, et al.,2018).

2.20. Previous Studies Related :

First study : **Alsaadi, Y. L., & Mohamad, B. J. (2019). Prevalence of hyperandrogenism in Iraqi women with polycystic ovary syndrome. Iraqi Journal of Science, 2600-2608.**

Abstract :

For the most part, polycystic ovarian syndrome (PCOS) is a recurring endocrine issue. Hyperandrogenism is an essential norm in the research of PCOS transformation. Eighty women with PCOS and twenty powerful women participated in this study, which was conducted at the infertility center of Kamal AL-Samaraay Hospital in Baghdad (aged 20-40 years). The Rotterdam models were used to make the PCOS observations. The weight list was evaluated using a specified formula (BMI, Kg/m²). Menstrual inconsistency, hirsutism, skin rupture, and baldness were all present. Serum hormone levels, specifically luteinizing hormone (LH), follicle animating hormone (FSH), and testosterone, were measured in all patients and control participants. There was a statistically significant difference in BMI between PCOS and control women (P0.05). Furthermore, the prevalence of overweight and corpulence was considerably greater in PCOS females than in their coordinating power. In PCOS, serum levels of LH, FSH, and testosterone were significantly higher (P0.05) than in healthy females. Clinical hyperandrogenism (hirsutism and alopecia) was present in the majority of PCOS females, though skin break out was a less helpful clinical indicator of hyperandrogenism. Similarly, hirsutism and baldness have become more common.

Second study : **Moghadam, Z. B., Fereidooni, B., Saffari, M., & Montazeri, A. (2018). Measures of health-related quality of life in PCOS women: a systematic review. International journal of women's health, 10, 397.**

Abstract :

The goal of this systematic audit was to distinguish between these general and explicit instruments, as well as to assess the variables that affect HRQoL in PCOS women. The exam technique includes general and explicit words about PCOS women and their quality of life. A study was carried out on the considerations that were distributed between 1945 and 2017 and submitted to MEDLINE, ISI Web of Science and Scopus. The information was compiled into a story. In total, 52 studies (9 subjective and 43 quantitative) were reported for the survey. According to the study, three explicit and five generic approaches were utilized to calculate QoL in PCOS women. For Polycystic Ovary Syndrome, the 36-Item Short Form Health Survey (SF-36) and the Health-Related Quality of Life Questionnaire (PCOSQ) were utilized. Both studies looked at different aspects of QoL in PCOS women and discovered that PCOS had an impact on their quality of life. Most of the time, the PCOSQ and SF-36 were used to assess QoL in PCOS women. When evaluating QoL in PCOS women, it may become more acceptable to utilize either a specific poll or a specific survey coupled to a non-exclusive measure. Regardless, the two studies revealed that PCOS women can experience various aspects of QoL.

Third study : **Williams, S., 2016. *The impact of Polycystic Ovary Syndrome (PCOS) on quality of life: exploration, measurement and intervention (Doctoral dissertation)*..**

Abstract :

Polycystic Ovary Syndrome (PCOS) is one of the most well-known female endocrine disorders, affecting one out of every ten women. Boreness, heaviness, baldness, skin breakouts, hirsutism, and monthly

irregularities are all symptoms. Women who have the disorder are more likely to develop co-morbid physical and mental disorders, such as diabetes, cardiovascular disease, endometrial malignant development, and depression and anxiety. PCOS has also been linked to a decrease in personal happiness. This hypothesis aims to better understand and increase the personal satisfaction of women with PCOS in the United Kingdom. To that end, the project aimed to investigate and distinguish how women with PCOS in the United Kingdom perceive and characterize their own happiness, as well as get a better understanding of the day-to-day experience of living with PCOS. It also planned to establish and approve a UK illness explicit personal satisfaction measure for women with PCOS in order to assess personal satisfaction. It also sought to identify, develop, and test a pilot intervention to improve personal satisfaction in PCOS women. To achieve these goals, a mixed strategy approach was used, which included photovoice, online Skype™ interviews, LimeSurvey, and Qualtrics, among other tools. The findings of this hypothesis show that PCOS has a detrimental impact on personal satisfaction in all areas of life, including mental, social, natural, and physical well-being. Women with PCOS who had infertility, hirsutism, weight gain, alopecia, skin discoloration, skin marks, and emotional episodes reported significantly poorer overall personal satisfaction than women who did not have these manifestations. Furthermore, women with PCOS who experienced tension as well as wretchedness reported lower levels of personal satisfaction. The spread of these discoveries will make it simpler for social protections experts to appreciate the involvement of living with PCOS and its affect on individual fulfillment. Besides, this proposition distinguishes a number

of ranges for future inquire about that will help in distant better;a much better;a higher;a stronger;an improved">a distant better understanding of the affect of PCOS on individual joy. At long last, this proposition incorporates proposals for clinical hone, counting more support from restorative experts for women with PCOS in arrange to assist them way better oversee their indications and, as a result, make strides their in general individual joy.

Fourth study : **Yavarikia, P., Dousti, S., Ostadrahimi, A., Mobasseri, M. and Farshbaf-Khalili, A., 2019. Quality of Life Specified for Polycystic Ovary Syndrome and its Relationship With Nutritional Attitude and Behavior. *INTERNATIONAL JOURNAL OF WOMENS HEALTH AND REPRODUCTION SCIENCES*, 7(1), pp.99-105.**

Abstract

PCOS (polycystic ovarian syndrome) is a common hormonal issue that can cause hirsutism, menstruation problems, weight gain, skin inflammation, premature birth, and infertility. The goal of this study was to look at how personal satisfaction is defined for polycystic ovarian disorder and how it relates to healthy attitudes and behaviors, taking into account the impact of PCOS-related weight gain. Materials and Methods: In 2015, a cross-sectional study was conducted on 150 PCOS cases at Tabriz, Iran, using comfort testing in educational medical clinics. a socio-segment analysis, The pre-owned instruments included the Polycystic Ovarian Syndrome Questionnaire (PCOSQ), Three-Factor Eating Questionnaire (TFEQ-R18: Uncontrolled Eating (UE), Subjective Restriction (CR), and Enthusiastic Eating (EE), as well as the Eating

Mentalities Survey (Eat-26: Including Food Distraction, Eating Less Carbohydrates, and Oral Control). Multivariate relapse and the Pearson connection Pearson connection and multivariate relapse investigation were used to analyze the association between personal satisfaction and healthy attitudes and practices. P0.05 was considered enormous in this study. The average personal satisfaction score was 16.584.18 out of a possible 35. Out of a range of 18 to 72, nourishing behavior fell in the middle at 42.28 ± 19.63 . The average healthy disposition score was 24.6412.55 out of a possible 78. In members, there was an essentially opposing association between personal satisfaction and dietary demeanor (P0.001, $r = -0.317$), as well as healthy behaviour (P=0.015, $r = -0.198$). At the conclusion of the day, when healthy attitude and conduct (uplifting demeanor and conduct) decreased, personal pleasure increased. Personal satisfaction was influenced by EE, abstaining from excessive food intake, and having a history of pregnancy, according to a multivariate relapse analysis. Decisions: For polycystic ovary disease, there was a link between a healthy manner and conduct and personal happiness. As a result, it is critical to concentrate on nutritional and other indicators through improved well-being arrangements for these women.

Fifth study : Sulaiman, M. A., Al-Farsi, Y. M., Al-Khaduri, M. M., Waly, M. I., Saleh, J., & Al-Adawi, S. (2017). Psychological burden among women with polycystic ovarian syndrome in Oman: a case–control study. *International journal of women's health, 9, 897.*

Abstract : The objective of this consider is to see on the off chance that women with polycystic ovarian disorder (PCOS) have higher levels of "mental

stack" than women without PCOS. Whereas PCOS has been reported in Middle easterner countries like Oman, there are small considers on the mental stack experienced by PCOS women within the Middle easterner world. The goal of this study was to compare the socio-demographic and clinical characteristics of PCOS women diagnosed with non-PCOS women, as well as the prevalence of depression, anxiety, and stress, and to investigate the relationship between PCOS and indices of psychological disturbances after controlling for potential confounding factors. Patients and procedures: The women in this hospital-based case-control investigate extended in age from 16 to 49 a long time ancient. The think about comprised 52 women with PCOS (as characterized by the Rotterdam 2003 criteria) and 60 women without PCOS. The Misery, Uneasiness, and Push Scale-21 was utilized to survey the nearness of mental trouble (sadness, uneasiness, and stretch) (DASS-21) . The unrefined chances proportions (ORs) gotten by calculated relapse models recommended that women with PCOS had the next hazard of discouragement, uneasiness, and stretch than controls. An higher chance of misery (OR =1.10; 95 percent certainty interim [CI] 0.50, 2.43), uneasiness (OR =1.09; 95 percent CI 0.47, 2.52), and stretch (OR =1.45; 95 percent CI 0.68, 3.12) was too uncovered by the balanced OR. However, no statistical differences between the two study groups were found in any of the three psychological distresses (p.0.05). Conclusion: The existence of PCOS is linked to an increased risk of psychological distress, according to the findings. If this study is to stand up to examination, it will need to consider how to address the psychological needs of such a group.

Sixth study : **Taghavi, S.A., Bazarganipour, F., Montazeri, A., Kazemnejad, A., Chaman, R. and Khosravi, A., 2015. Health-related quality of life in polycystic ovary syndrome patients: A systematic review. *Iranian journal of reproductive medicine*, 13(8), p.473.**

Abstract :

The rise in ubiquity of the thought of polycystic ovarian illness (PCOS)-related individual fulfillment has driven the advancement of innovation that can degree this concept. The objective of this ponder was to conduct an successful study of the psychometric highlights of the PCOS wellbeing-related individual fulfillment survey. Materials and Strategies: From January 1998 to December 2013, a database look (Pubmed, PsychInfo, CINAHL, CENTRAL, Scopus, and SID) returned 6152 references, of which 27 papers remained after a survey of titles and revised works. The commentators utilized straightforward instruments to see over the articles, assess the papers, and condense the fabric. Eight papers at long last met the total thought models. Agreeing to considers, the PCOS wellness related individual fulfillment survey (PCOSQ)/or its adjusted shape (MPCOSQ) has inadequately known get-togethers legitimacy. The poll's combined/dissimilar authenticity was moreover regarded to be to a great extent commendable. For its perpetual quality coefficients, the PCOSQ/MPCOSQ come to palatable criteria. In terms of legitimacy, some examinations recommended that, in expansion to its existing estimations for special or balanced versions, the PCOSQ/MPCOSQ have an additional estimation (related with month to month cycle). Conclusion result: The PCOSQ/MPCOSQ given adequate fabric and appeared construct authenticity, steadfastness, and inside consistency. In any case, a few other qualities, especially those related

with calculate and longitudinal authenticity, preeminent estimation mistake, and insignificant clinically significant refinement responsiveness, ought to be assessed.

Seventh study : Pastoor, H., Timman, R., de Klerk, C., Bramer, W. M., Laan, E. T., & Laven, J. S. (2018). Sexual function in women with polycystic ovary syndrome: a systematic review and meta-analysis. *Reproductive biomedicine online*, 37(6), 750-760.

Abstract:

We offer the first comprehensive review and meta-analysis of sexual function in women with and without polycystic ovarian syndrome (PCOS). Data on this subject is few and frequently contradictory. Endocrine, emotional, and social factors all influence sexual function, which is frequently hampered in women with PCOS. Validated sexual function surveys and visual analogue scales were the primary outcome measures (VAS). We found and evaluated 1925 original articles, of which 18 were included. On the sexual function subscales, significant minor effect sizes were found (total score: $P = 0.006$; arousal: $P = 0.019$; lubrication: $P = 0.023$; satisfaction: $P = 0.015$; orgasm: $P = 0.028$), showing that sexual function was impaired. The influence of body hair on sex ($P = 0.006$), social effect of look ($P = 0.007$), and sexual attractiveness ($P = 0.001$) all had large impact sizes. Sexual satisfaction was deemed equally important in women with PCOS and controls, although satisfaction with sex life was diminished ($P = 0.001$). We conclude that for women with PCOS, having a pleasant sex life is vital; nevertheless, sexual function and emotions of sexual attractiveness are compromised. The findings suggest that every clinical assessment of

women with PCOS should include sexual function, sexual satisfaction, and psychosocial functioning.

Eighth study: **Petkova, V., Kamusheva, M., Manova, M., Savova, A., & Andreevska, K. (2018). Polycystic ovary syndrome impact on women's quality of life: pilot study.**

Abstract :

The goal of this study is to use a Polycystic Ovary Syndrome Questionnaire (PCOSQ) to analyze the impact of Polycystic Ovary Syndrome (PCOS) on Bulgarian patients' quality of life. A pilot study was conducted on a group of 24 persons aged 15 to 35 from Sofia, Bulgaria. PCOSQ was used to collect data. The PCOSQ was translated into Bulgarian and normalized using the forward, reverse, and pre-test interpretation methods. For this example, the mean age was 25.6 6.4 (territory 15-35). Females with PCOS had a worse opinion of their looks because of their weight, according to the results of the study. The lowest and best outcomes were attained due to their psychological and enthusiastic status (q.18-1.92 and q.7-4.42). The most decreased results were obtained as a factor bunch for the questions concerning their overweight; all five questions were in the range of 3.25-3.58. The greatest result (- 4.42) was accounted for in the factor bundle "feelings." According to this pilot study, the average degree of QoL for a size of 1 to 7 is 3.7. Obesity in women is the underlying harmful disease-related investigation. The considerable variation in research respondents' emotional levels suggests the necessity for a bigger patient cohort to better research this topic. It is reasonable to conclude that PCOS management and mental well-being are urgent.

Ninth study : **Moghadam, Z.B., Fereidooni, B., Saffari, M. and Montazeri, A., 2018. Polycystic ovary syndrome and its impact on Iranian women's quality of life: a population-based study. *BMC women's health*, 18(1), p.164.**

Abstract :

Polycystic ovarian disease (PCOS) is a severe health issue that affects up to one in every five women in their reproductive years. It's linked to biochemical and hormonal disturbing aspects, resulting in diminished personal pleasure, just like opposing restorative, regenerative, metabolic, and mental consequences. The current study's purpose is to assess personal happiness and determine its deteriorating components among Iranian women who are suffering from this ailment. This cross-sectional study was conducted on 200 PCOS females in Hamadan, Iran. To assess personal satisfaction, we utilized the Persian version of the Health-related Quality of Life Questionnaire for PCOS (PCOSQ). The data were analyzed using illuminating metrics. Straight relapse research was undertaken to investigate characteristics affecting well-being-related personal satisfaction in this population. Results From best to least sincere care, the mean score for the areas of personal satisfaction was: Fruitlessness (3.43 1.63), emotions (3.55 1.17), menstrual issues (3.77 1.36), body hair (3.80 2.05), and weight (4.32 1.80) are all separate variables. A higher score indicates that all of the possibilities are more likely. However, multivariate analysis revealed that hirsutism had the strongest impact on patients' personal satisfaction ($p < 0.001$), Fruitlessness ($p = 0.038$) and monthly inconsistency ($p = 0.003$) were found to be related. End The findings revealed that disorders

associated with PCOS, such as hirsutism, fruitlessness, and menstrual issues, were linked to a lack of personal fulfillment.

Tenth study : **Azhar H. Ali and Rabe'a M. Ali.(2014). The Effect of Polycystic Ovarian Syndrome on the Physical Status of Women in Reproductive Age. Iraqi National Journal of Nursing Specialties, Vol. 27 (1).**

Abstract :

Evaluate the Affect of Polycystic Ovarian Disorder Physical Status on Women in Reproductive age, Decide the Relationship Between Polycystic Ovarian Disorder and Women's Physical Wellbeing (Skin break out, Hirsutism, Weight Pick up, Sporadic Menstrual Period), and Decide the Relationship Between Polycystic Ovarian Disorder and A few Socio Statistic Characteristics (Age, Occupation, and Corpulence), and Characteristics of Generation (Gravida ,Para ,Premature birth &Menstrual Normality). A clear orderly examination was coordinated on the probability (purposive case) of (100)women encountering polycystic ovarian condition in reproductive age in desolateness, with exhortation from three restorative clinics in Baghdad city, counting al-yarmouk appearing crisis clinic, Baghdad appearing crisis clinic, and Baghdad appearing crisis clinic , and Kamal Al-Samaraee Healing center, which specializes in ripeness and IVF within the Al-Kark and Al-Russafa areas. The investigate was carried out from January 2nd to April 30th, 2013. Portion I 1-socio-segment trademark 2-a conceptive information 3-menstrual cycle data& 4-previous clinical involvement was utilized as a information collection device to meet the study's reason. Portion II moreover incorporates questions around the hormonal and physical state

of polycystic ovarian illness indications in women. The survey's steadfastness and substance were tried in a pilot inquire about, and the survey's authenticity was built up with the assistance of 21 specialists. To deconstruct the information, clear and inferential quantifiable exams were utilized. The discoveries uncovered that the larger part of the women within the think about gather (20-34) were between the ages of 20 and 34. 89 percent were housewives, 77 percent were basic school graduates, and 66 percent had a appalling money related circumstance, 99 percent were encountering pointlessness, and 88 percent were enduring from sporadic feminine cycle cycles (87 percent). The menstrual cycle endures (2-7) days, and (51%) of women endure from serious torment amid their periods, whereas (30%) of women endure from polycystic ovary condition, in spite of the innate rate sisters polluted amid the review taken note it (22 percent). The examination suggested the creation of ventures and knowldge social occasions for women living with polycystic ovarian infection in arrange to figure out how to oversee the infection as well as how to dodge complications, as well as the creation of courses for medical specialists, especially within the ranges of desolateness knowldge and pass on unused information approximately what's going on exploration and strategies for treatment and how to manage tolerant.

Eleventh study : **Ramos, F.K.P., da Silva Lara, L.A., Kogure, G.S., Silva, R.C., Ferriani, R.A., de Sá, M.F.S. and dos Reis, R.M., 2016. Quality of life in women with polycystic ovary syndrome after a program of resistance exercise training. *Revista Brasileira de Ginecologia e Obstetrícia/RBGO Gynecology and Obstetrics*, 38(07), pp.340-347.**

Abstract :

Personal satisfaction (QoL) may improve in women with polycystic ovarian disease if they engage in oxygen-consuming activities (PCOS). In any event, no data exists on the influence of obstruction practice preparation (RET) programs on the quality of life of PCOS women. As a result, the goal of this study was to see how a 16-week RET program affected PCOS women's quality of life. This 16-week case-control study included 43 women with PCOS (PCOSG) and 51 healthy premenopausal controls, ranging in age from 18 to 37 years (control gathering, CG). All of the women participated in a four-month RET program and were evaluated at two different times: Weeks 0 (standard) and 16 (advanced) (after RET). The 36-Item Short Form Health Survey was used to assess personal satisfaction (SF-36). After RET, testosterone levels dropped significantly in both groups ($p < 0.01$). In comparison to week 0, the PCOSG demonstrated improvements in usable limit at week 16 ($p = 0.02$). At week-16, the CG exhibited significant improvements in imperativeness, social perspectives, and emotional health when compared to week-0 ($p < 0.01$). There was a shaky link between testosterone levels in PCOS women and the social portions of the SF-36 domain. A 16-week RET program modestly improved QoL in PCOS women.

Twelfth : **Fliegner M, Richter-Appelt H, Krupp K, Brunner F. Sexual function and socio-sexual difficulties in women with polycystic ovary syndrome (PCOS). Geburtshilfe und Frauenheilkunde. 2019 May;79(5):498.**

Abstract

Introduction: PCOS is the most frequent endocrine syndrome in women of reproductive age, and it has a wide range of consequences for those who suffer from it. The sexual life of these women have received little scholarly scrutiny. The goal of this study is to look into the sexual quality of life of women who have PCOS. Methods: A total of 44 people were included in the study. The following tests were used: DSM-IV-TR extended list of sexual dysfunctions and perceived distress, Female Sexual Function Index (FSFI), German Questionnaire on Feelings of Inadequacy in Social and Sexual Situations (FUSS), Rosenberg Self-Esteem Scale (RSE), and BSI depression subscale. Additional variables were used to investigate the correlations between these components (body mass index, degree of hirsutism using the Ferriman-Gallwey Score, wish for a child). The participants were asked an open question regarding what they believe is the source of their sexual troubles. Results: Although there was only a minor decrease in sexual function, feelings of inadequacy in social and sexual circumstances were significantly enhanced and were linked with hirsutism. Depression was discovered to be a significant issue. Conclusion Patients with PCOS should be evaluated for social and emotional issues. Psychiatrists and sexologists who specialize in a variety of issues can complement patient care.

Thirteenth : **Yin X, Ji Y, Chan CL, Chan CH. The mental health of women with polycystic ovary syndrome: a systematic review and meta-analysis. Archives of Women's Mental Health. 2020 Jun 9:1-7.**

Abstract

Polycystic ovarian syndrome (PCOS) has been linked to a number of mental health issues, including anxiety, sadness, decreased sexual pleasure, and a poor health-related quality of life, among others. The mental health of women with and without PCOS was compared in a systematic review and meta-analysis of published material. Up till December 31, 2018, ten English and Chinese databases were searched. To establish the cause of heterogeneity among trials, random-effects models were incorporated, and subgroup analysis, sensitivity testing, and meta-regression were performed. According to the inclusion criteria, 46 studies with a total of 30,989 individuals (9265 women with PCOS and 25,638 controls) were eligible for review. Twenty-eight studies looked at depression symptoms, 22 looked at anxiety, 16 looked at quality of life (QoL), 12 looked at sexual dysfunction, five looked at emotional distress, four looked at binge eating, and four looked at somatization. PCOS women had significantly higher depression (SMD = 0.64; 95 percent CI 0.50–0.78), anxiety (SMD = 0.63; 95 percent CI 0.50–0.77), poor QoL (SMD = 0.55; 95 percent CI 0.69 to 0.40), and not significantly higher sexual dysfunction (SMD = 0.24; 95 percent CI 0.49 to 0.01). Studies from various nations, using varied diagnosis criteria, and utilizing various equipment, as well as studies from various years, heterogeneous outcomes have been reported. Women with PCOS in China had a greater depression and anxiety effect size than women in other countries. According to the findings of this study, women with PCOS suffer from sadness, anxiety, and have a poor quality of life, despite the fact that their sexual function is similar to that of healthy women. Interventions in psychological health care for women with PCOS were addressed.

Fourteenth : **Navid B, Mohammadi M, Sasannejad R, Dehkordi MA, Maroufizadeh S, Hafezi M, Omani-Samani R. Marital satisfaction and social support in infertile women with and without polycystic ovary syndrome. Middle East Fertility Society Journal. 2018 Dec 1;23(4):450-5.**

Abstract

Background and purpose Few studies have looked at marital satisfaction and social support in women with polycystic ovarian syndrome who are unable to conceive (PCOS). The purpose of this study was to examine and evaluate marital happiness and social support among infertile women with and without PCOS. **Methods** The Royan Institute, a referral reproductive center in Tehran, Iran, conducted this case-control study between July and September 2015. A total of 150 PCOS-positive infertile women were compared to 150 PCOS-negative infertile women. The ENRICH marriage satisfaction scale and the Multidimensional Scale of Perceived Social Support (MSPSS) were used to assess marital contentment and social support, respectively. **Results** The findings revealed that there is no significant difference in marital satisfaction and social support between infertile women with and without PCOS ($p > 0.05$). **Conclusion** According to these findings, though PCOS may have negative impacts on various areas of suffering people, it cannot alone lower social support and marital happiness among infertile women; infertility may be more essential to infertile women than PCOS.

Fifteenth: **Rzońca E, Bień A, Wdowiak A, Szymański R, Iwanowicz-Palus G. Determinants of quality of life and satisfaction with life in**

women with polycystic ovary syndrome. International journal of environmental research and public health. 2018 Feb;15(2):376.

Abstract

The goal of the study was to compare the quality of life (QoL) and contentment with life (SwL) of women with PCOS to those of healthy controls, as well as to identify and analyze the factors that influence QoL and SwL in women with PCOS. Between January and November 2016, 504 women who used health-care services in Poland participated in a cross-sectional survey. Women with PCOS were in the study group, while women without PCOS were in the control group. A diagnostic survey including questionnaires was used in the investigation. The World Health Organization Quality of Life-BREF (WHOQOL-BREF) questionnaire, the satisfaction with life scale (SWLS), and a standardized interview questionnaire with questions about the participants' characteristics were used as research instruments. PCOS women have poorer QoL and SwL than healthy women (p 0.05). Socioeconomic status, time since PCOS diagnosis, BMI, age, and professional activity were all found to have an impact on QoL in PCOS patients (p 0.05). SwL was affected by socioeconomic status, having children, BMI, and time since PCOS diagnosis in PCOS patients (p 0.05). The better the QoL of PCOS patients, the better their SwL (p 0.05). More research is needed on PCOS and its origin, as well as its impact on women who have been diagnosed with the disorder.

Sixteen: **Cutler, D. (2019). *The impact of lifestyle on the reproductive, metabolic, and psychological well-being of women with polycystic***

ovary syndrome (PCOS) (Doctoral dissertation, University of British Columbia).

Abstract

Introduction: PCOS affects 6 to 18 percent of women worldwide, affecting their reproductive, metabolic, and psychological health. In both study and practice, the impact of lifestyle is poorly understood. The objective of this thesis is to find how dietary utilization, physical movement, and mental well-being are connected to the wide run of indications and characteristics related with PCOS. In four observational thinks about, women with PCOS were compared to women without PCOS who were barren. Dietary utilization, physical action, mental well-being indications (discouragement, uneasiness, stretch, and quality of life), anthropometrics, metabolic, and regenerative hormonal measures were among the information gotten. A convention for a way of life mediation randomized controlled test is portrayed. Comes about: In spite of being more overweight (P 0.001), women with PCOS had comparable calorie admissions and physical action to women without PCOS. Affront resistance (IR) was related with lower fiber admissions (P 0.05), the next glycemic stack (P = 0.03), and lower magnesium admissions (P 0.05) in women with PCOS. Fiber admissions was adversely related with IR (rho = -0.35, P < 0.005), fasting affront (rho = -0.37, P < 0.005), glucose resistance (rho = -0.23, P < 0.05), testosterone (rho = -0.35, P < 0.005), and dehydroepiandrosterone sulfate (rho = -0.27, P = 0.02). Magnesium admissions was contrarily connected with IR (rho = -0.32, P < 0.01), C-reactive protein (rho = -0.47, P < 0.001), and testosterone (rho = -0.30, P < 0.01), but emphatically connected with HDL cholesterol (rho = 0.29, P = 0.01). Uneasiness indications were considerably higher in PCOS

women, particularly those with hyperandrogenism (P 0.01). Vitamin D utilization was impressively lower (P 0.02) in women with PCOS and hoisted depressive indications. Conclusions: Whereas expanding fiber and magnesium impalpable may make strides IR, hyperandrogenemia, and dyslipidemia in women with PCOS, calorie utilization alone cannot clarify corpulence. Women with PCOS, especially those with hyperandrogenic phenotypes, have more uneasiness indications, which may be connected to hirsutism, a condition that damages social guidelines of women's appearance. A high-fiber, low-glycemic-index count calories, supplements, physical action, and mental trouble administration may offer assistance to lighten a few of the side effects of PCOS.

Chapter Three

Methodology

Methodology :

The method of this research work is organized and implemented in the following ways:

- 3.1. Research Design**
- 3.2. Administrative Agreement**
- 3.3. Setting of The Study**
- 3.4. Sample of The Study**
- 3.5. Inclusion Criteria**
- 3.6. Exclusion Criteria**
- 3.7. Study Instrument**
- 3.8. Validity of the Instrument**
- 3.9. Pilot Study**
- 3.10. Instrument's Reliability**
- 3.11. Data collection**
- 3.12. Limitations of the study**
- 3.13. Statistical analysis**

Methodology

From March 2020 to May 2020, a cross-sectional study was undertaken among female attending infertility consultants at Al-Imam Al-Sadiq Hospital and Babel Hospital for Women and Children. After receiving written agreement, a total of 150 women of reproductive age with a definite diagnosis of PCOS were enrolled.

3.1. Research design:

A cross sectional estimate was applied throughout the study. A cross-sectional study involved looking at data from a population at one specific point in time. The participants in this type of study are selected based on particular variables of interest. Cross-sectional studies are often used in developmental psychology, but this method is also used in many other areas, including social science and education. Cross-sectional studies are observational in nature and are known as descriptive research, not causal or relational, meaning that it can't use to determine the cause of something, such as a disease.

3.2. Administrative agreement:

The Ethics Review Committee of the Faculty of Nursing at the University of Babylon approved this study. Official administrative agreement to conduct the investigation was obtained from the institutions before beginning the actual data collection:

1. Official permissions from the University of Babylon's College of Nursing (a letter entitled to facilitate the task of research to the training and development center in Babylon). (Appendix 1)

2. A letter to aid in the task of research from Babylon's training and development center, Imam Al- Sadiq Hospital, and Babel teaching hospital for women and children, for the aim of assisting in the task of searching. (Appendix 2 ,3 and 4)

3.3. Setting of the Study:

Imam Al-Sadiq Hospital / Women's infertility Consultant, Babel Teaching Hospital for Women and Children / Women's Consultation.

3.4. Sample of the study :

Non -probability (purposive) sample for the investigation consists of (150) women who attending Imam Al-Sadiq Hospital's/ infertility Consultant and Babel Teaching Hospital for Women and Children's/ Women's Consultation.

3.5. Inclusion Criteria :

1- Women who are attending Women's Consultation in the above-mentioned hospitals who are medically diagnosed with PCOS based on biochemical tests, ultrasound imaging, and other testing approved to diagnose this syndrome.

2- A sample will be drawn from all women of reproductive age who have been diagnosed with PCOS and agree to join in the study.

3.6. Exclusion Criteria :

The following people were excluded from this study:

- 1- Those with conditions that could produce a period of menstruation abnormalities were excluded from the study.

2- women's who suffer from psychological problems.

3- Who do not agree to participate in the research.

3.7. Study instrument :

Section 1 : Socio Demographic Characteristics :

This section consisted of the following items : Age, Education, Occupational status, Marital status, Having children, Economic status, Duration of diagnosis, Recurrence of the disease, Chronic diseases, Symptoms reported. (Appendix 6)

Section 2 : Health related quality of life domains

This section consist of seven domains (Psychosocial and emotional domain, Self-body image domain, Infertility domain, Sexual satisfaction domain, Menstrual irregularity domain Hirsutism domain, Obesity and Metabolic disorder) as a total of 40 items. This section is standard questionnaire designed to measure the quality of life in Polycystic Ovary Syndrome women (Int J Endocrinol Metab. 2018 April; 16(2):e12400. Published online 2018 February 3. The Polycystic Ovary Syndrome Health-Related Quality-of-Life Questionnaire: Confirmatory Factor Analysis, Fatemeh Nasiri-Amiri and et al) with little modification to be suitable for our culture. (Appendix 6)

3.8. Validity of the Instrument

This has been determined through presentation of the instrument to a panel of (8) experts in the different fields , to examine the questionnaire format for content relevancy and adequacy .the recommended modifications were done according to experts opinions and their comments ,which included : five experts from the College of

Nursing / University of Babylon , two experts from the College of Medicine / University of Babylon , one expert from the College of Nursing / University of Al Kufa. (See Appendix 7)

3.9. Pilot Study

The pilot analysis was conducted with ten percent of the original sample size, which equates to 15 women who were included in the research conditions and criteria for randomly picking the sample but were not involved in the original size of sample.

Goal of the pilot analysis was to verify the dependability of the research's instrument.

-To confirm the instrument structure's clarity and content sufficiency throughout the participants' understanding and to decide the necessary revisions.

- Calculate the average amount of time each woman will spend collecting data throughout the questioning procedure.

- Determine the challenges that the researcher may be exposed to.

Furthermore, table (3-1) displays the determination of the pilot analysis's reliability; this outcome indicates that the pilot study's dependability is good & appropriate. Furthermore, the following conclusions can be drawn from the pilot study:

1- The questionnaire's items were straightforward and understandable, however some needed minor revisions.

1- Each interview takes between 15 and 30 minutes.

3.10. The Instrument's Reliability:

The dependability of the tool utilized to verify the truthfulness of the tool as calculated using the major statistical parameter : Alpha Cranach's Because the results appeared a statistically satisfactory level of stability and inner constancy of the major investigation fields at the level of items of the useful tools. As appeared in table (3-1), the constructed tools was acceptable for examining the phenomena (Impact of Polycystic Ovary Syndrome on Quality of Life for Reproductive Age Women in Al-Hilla City Hospitals) on the similar people at any period in the future.

Table (3-1): Reliability Coefficients of the studied questionnaire's

Reliability Coefficients of the studied questionnaire's		Sample	N. Items	Acceptable value	Actual values	Assessment
Methods of	Alpha(Cranach's)	15	40	0.71_ 0.91	0.900	Pass

3.11.Data Collection :

Data were collected from women diagnosed with polycystic ovary syndrome who attending Imam Al-Sadiq Hospital / infertility Consultant, Babel Teaching Hospital for Women and Children / Women's Consultation during the period (1st of March 2020 to 1st of May 2020) using the interview using the study instrument the questionnaire. After the participants agreed, the data was collected.

3.12. Limitations of the Study :

During the current investigation, the study facing the following major challenges and constraints:

1. Failure to collect the sample within the time frame due to the deterioration of the health condition as a result of the emerging corona virus, which resulted in near-total inundation in most hospital departments save for emergencies.
2. The majority of the women polled refused to participate in the interview, which caused a delay in gathering the sample and determining the sample size.
3. There are little references to the prevalence of the present research title in Babylon, Iraq.

3.13. Statistical Analysis :

Under the usage of the statistical package (SPSS) ver. (22), the subsequent statistical facts investigation methodologies were employed to evaluate and appraise the study's outcomes:

Descriptive Statistics :

The following methodologies were used to examine the data in the current study:

- Frequency (F) :

The number of times an observation occurred/was recorded in an experiment or study is known as the frequency (or absolute frequency) of an occurrence in statistics.

- Percentage (%):

A % is a figure or ratio stated as a fraction of 100 in mathematics (from Latin per centum "by a hundred"). The percent sign, " percent ", is frequently used to represent it.

- Mean (M): It is the average of the data.

- Standard Deviation (Std) : is the square root of variance.

$$\text{Mean Of Score (M.S)} = 2$$

Mean Score of level of quality of life :

Poor : **2.34-3**

Fair : **1.67-2.33**

Good : **1-1.66**

Since we used negative scaled for PCOs for this, the lower the level the better and the higher the level the worse. This means that a good level of quality of life has a lower mean score ,while a poor level of quality of life has a higher mean score.

Inferential Statistics :

1- Chi – Square Test:

The chi-square statistic measures the difference between the observed and predicted frequencies of the outcomes of a set of occurrences.

Factor analysis:

A strategy for condensing a large number of variables into a smaller number of components is factor analysis. This technique combines all of the variables' biggest common variances into a single score.

2- Initial Eigenvalues :

Characteristic roots is another name for eigenvalues. The eigenvalues of a factor reveal how much of the overall variance is explained by that factor. We can tell how much variance is explained by the first factor out of the overall variance by looking at the commonality column. For example, if our first component explains 68 percent of the overall variance, the other component will explain 32 percent of the variance.

Table (3- 2): Initial Eigenvalues Test

Factor	Initial Eigenvalues				
	Domains	Degree of effect	Total	% of Variance	Sig
1	D4 (Sexual Satisfaction)	.798	3.193	45.615	.000
2	D7 (Obesity and Metabolic disorder)	.780	1.187	16.964	
3	D6 (Hirsutism)	.643	.833	11.895	
4	D2 (Self-body Image)	.638	.748	10.692	
5	D3 (Infertility)	.634	.453	6.478	
6	D5 (Menstrual Irregularity)	.628	.326	4.663	
7	D1 (Psychosocial and Emotional distress)	.576	.259	3.693	

Table (2) shows Initial Eigenvalues test. The variances of the factors are the first Eigenvalues. The variables are standardized since we accomplished our factor investigation on the correlation matrix, which indicates that every variable has a variation of 1, and the overall variation equals the number of variations utilized in the investigation.

The domain 4 Sexual Satisfaction has 4 items, with an degree of effect 0.798, and a total of 3.193 out of 7. The percentage of the effect it had on the QOL was 45.615%. It is considered to have the highest impact on the quality of life of women with PCOS.

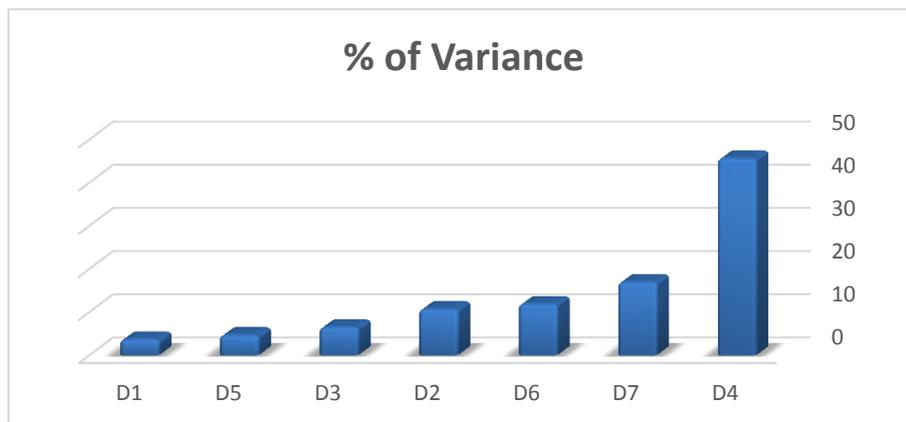
The domain 7 obesity and metabolic disorder has 5 items , with an degree of effect 0.780, and a total of 1.187 out of 7. The percentage of the effect it had on the quality of life was 16.964% . it is considered the second highest impact on the quality of life .

The domain 6 hirsutism has 6 items , with an degree of effect 0.643, and a total of 0.833 out of 7. The percentage of the effect it had on the quality of life was 11.895% .

The domain 2 self- body image has 4 items , with an degree of effect 0.638, and a total of 0.748 out of 7. The percentage of the effect it had on the quality of life was 10.692%. The domain 3 infertility has 9 items , with an degree of effect 0.634, and a total of 0.453 out of 7. The percentage of the effect it had on the quality of life was 6.478 % .

The domain 5 menstrual irregularity has 3 items , with an degree of effect 0.628, and a total of 0.326 out of 7. The percentage of the effect it had on the quality of life was 4.663 % .

The domain 1 psychological and emotional distress has 9 items , with an degree of effect 0.576, and a total of 0.259 out of 7. The percentage of the effect it had on the quality of life was 3.693 % .



**Figure (3-1):
percent of
variance**

3- P- Value :

$P \leq 0.01$ Considered As Statistically Highly Significant at 1% (Hs)

$P \leq 0.05$ Considered As Statistically Significant at 5% (S) .

P Value More than 0.05 Considered as Non – Significant (Ns) .

Chapter Four

Study Results

Results

This chapter presents the findings of the data analysis presented systematically in tables and these correspond with the objectives of the study as follows:

1- Socio-Demographical Data :

Table (4- 1) Distribution of the Sample Under Study According to Their Socio-Demographic and Personal Characteristics (N.150)

Item	Frequency	Percent
Age group		
17 -23 Years Old	52	34.7
24 -30 Years Old	72	48.0
31 - 37 Years Old	19	12.7
38 and Older	7	4.7
Total	150	100.0
Occupational Status		
Not Employed	68	45.3
Employed	82	54.7
Total	150	100.0
Marital Status		
Single	10	6.7
Married	132	88.0
Divorced	8	5.3
Total	150	100.0
Education Qualification		
Dose not read and write	3	2.0
Primary school graduate	26	17.3
Secondary school graduate	57	38.0
Bachelor degree	58	38.7
Postgraduate	6	4.0
Total	150	100.0

Having children	Frequency	Percent
Not Married	10	6.7
Has children	45	32.1
Pregnant	9	6.4
Trying to conceive	86	61.4
Total	150	100.0
Economic Status (monthly household income):	Frequency	Percent
Inadequate	31	20.7
Somewhat Adequate	76	50.7
Adequate	43	28.7
Total	150	100.0
Duration of Diagnosis (duration of disease)	Frequency	Percent
New (days or weeks)	44	29.3
Acute (months)	50	33.3
Chronic (years)	56	37.3
Total	150	100.0
Recurrence of the Disease	Frequency	Percent
First time	68	45.3
It was previously treated	28	18.7
Chronic	54	36.0
Total	150	100.0
Suffer from Chronic Diseases	Frequency	Percent
Hypertension	21	14.0
Diabetes mellitus	10	6.7
Thyroid disease	14	9.3
Others	4	2.7
Not suffer from chronic diseases	101	67.3
Total	150	100.0

Symptoms Reported (problems you suffer from)	Frequency	Percent
Infertility Problems	37	24.7
Irregular Periods	49	32.7
Excess Weight	34	22.7
Excess Hair	17	11.3
Acne	6	4.0
Mood Swings	7	4.7
Total	150	100.0

This table shows the frequency and percentages of socio-demographic characteristics of the studied sample. The highest percentages of the sample were within the age group (24-30) year in percent of (48 %), and (88%) of them were married . Sixty one point four percent (61.4%) of women were trying to conceive. Recurrence of the disease was the first time in (45.3%) of the sample. Sixty seven point three percent (67.3%) of studied sample did not suffer from chronic diseases. The most frequent symptoms reported by them was irregular periods in percent of (32.7%) followed by infertility problems in percent of (24.7%).

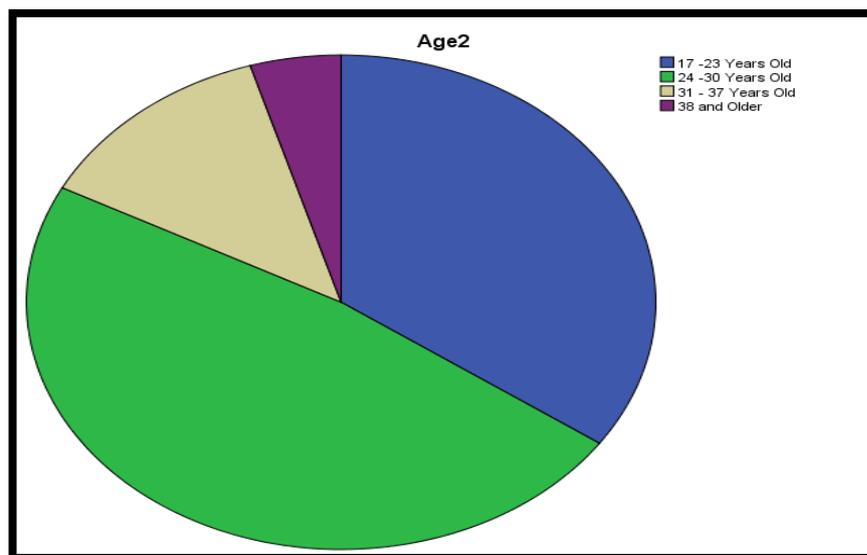


Figure (8): Distribution of Age groups among Study Sample

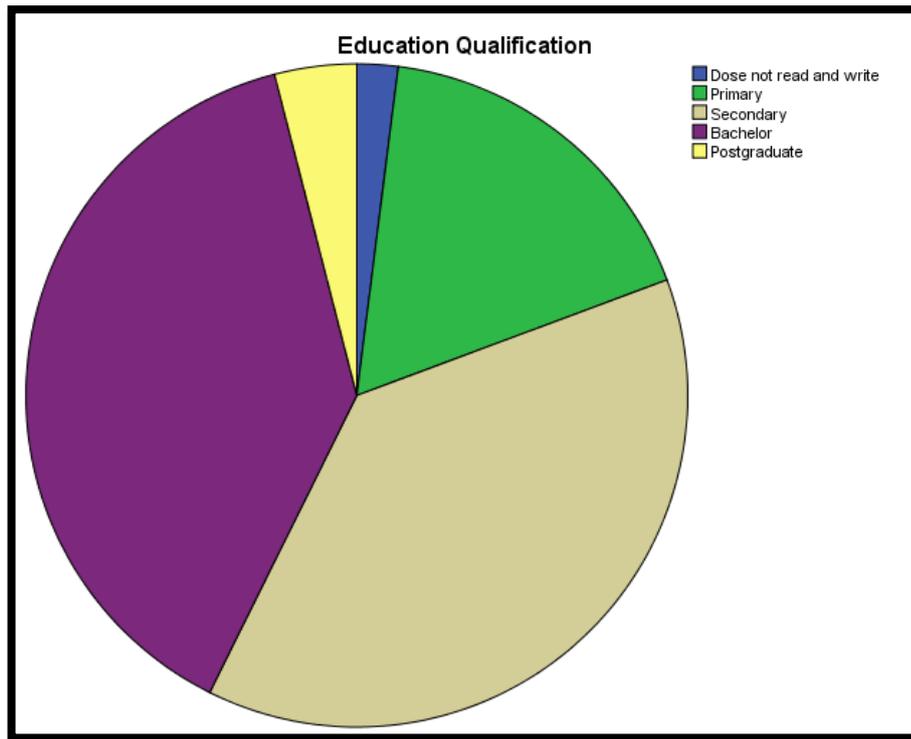


Figure (9) : Education Qualification among Study Sample

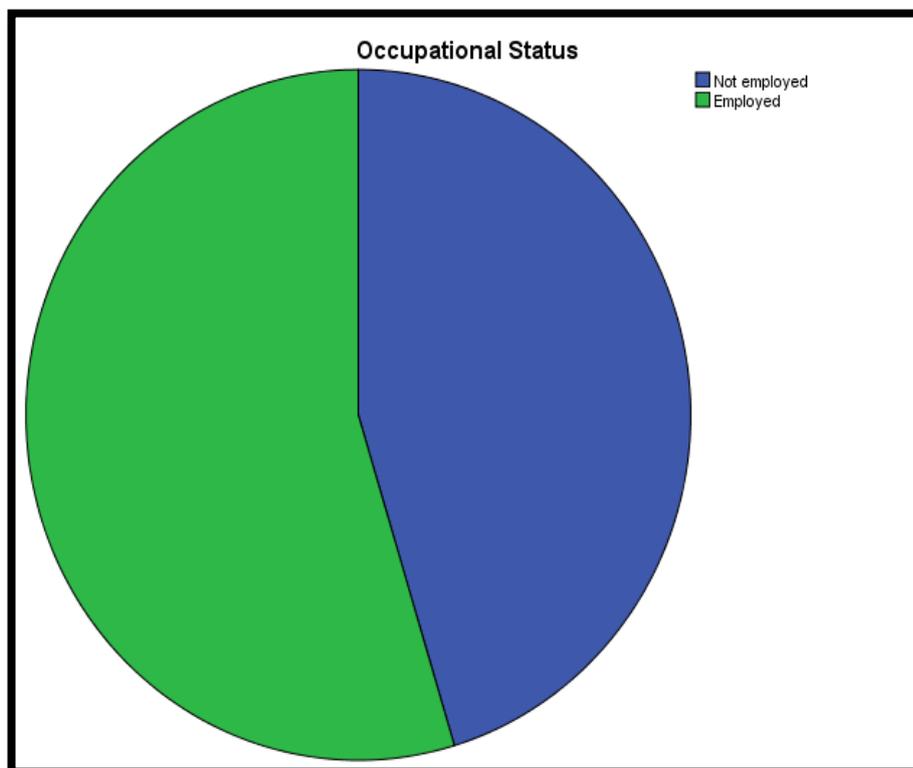


Figure (10) : Occupation Status among Study Sample

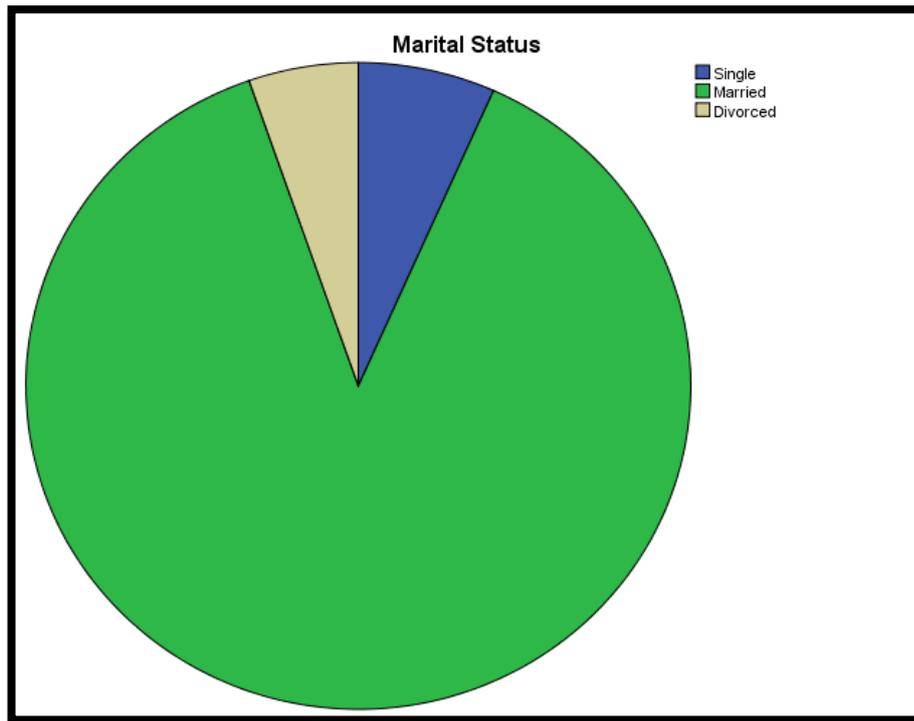


Figure (11) : Marital Status among Study Sample

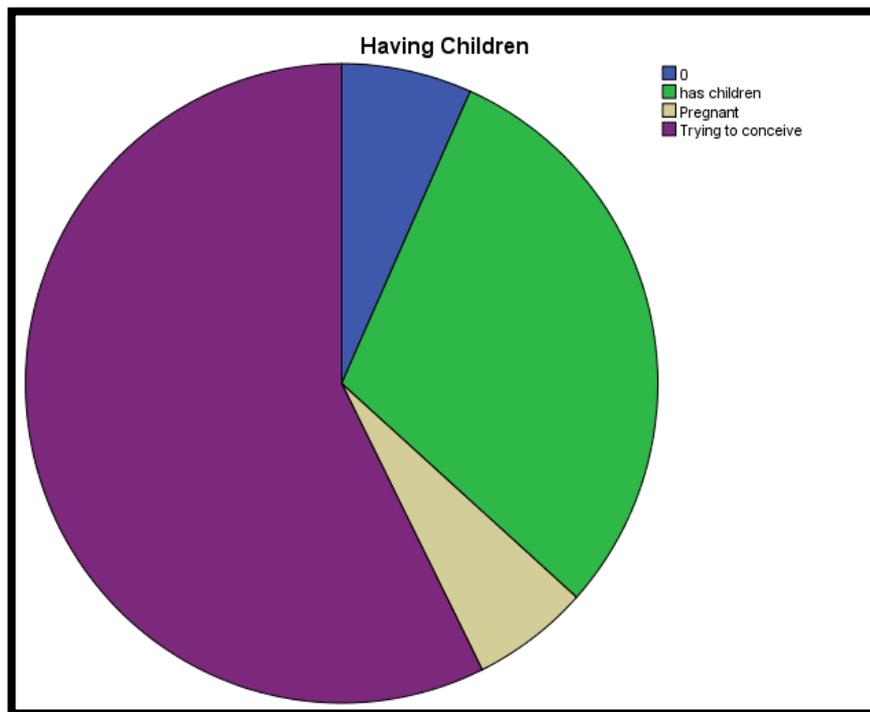


Figure (12) : It Shows the Reproductive Status (Childbearing) among the Study Sample

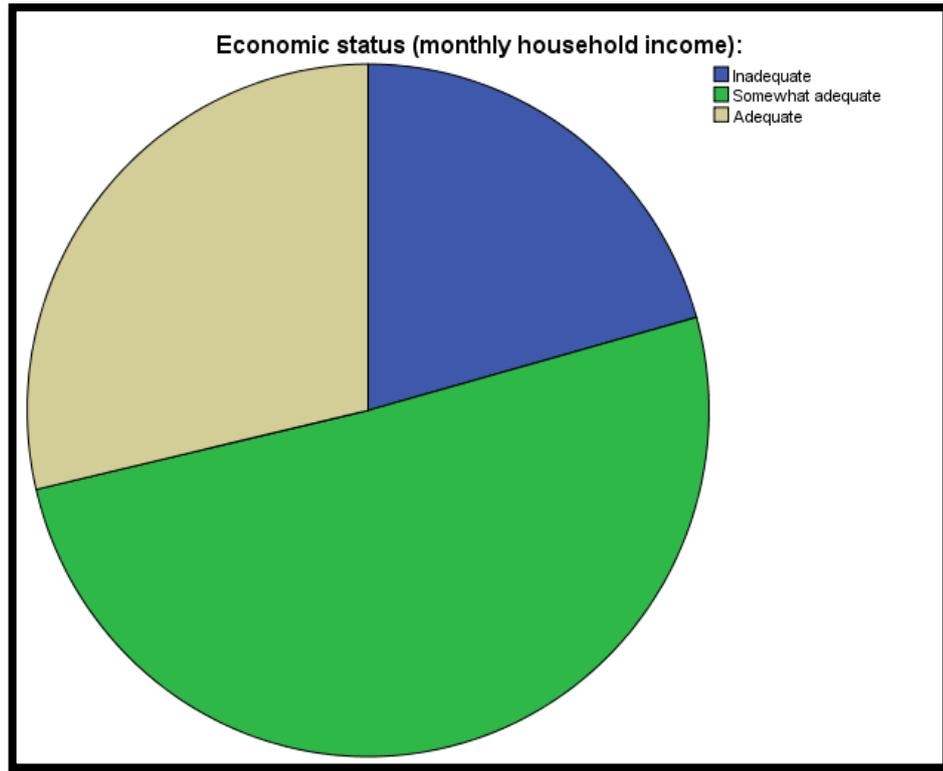


Figure (13) : Show the Economic Status among Study Sample

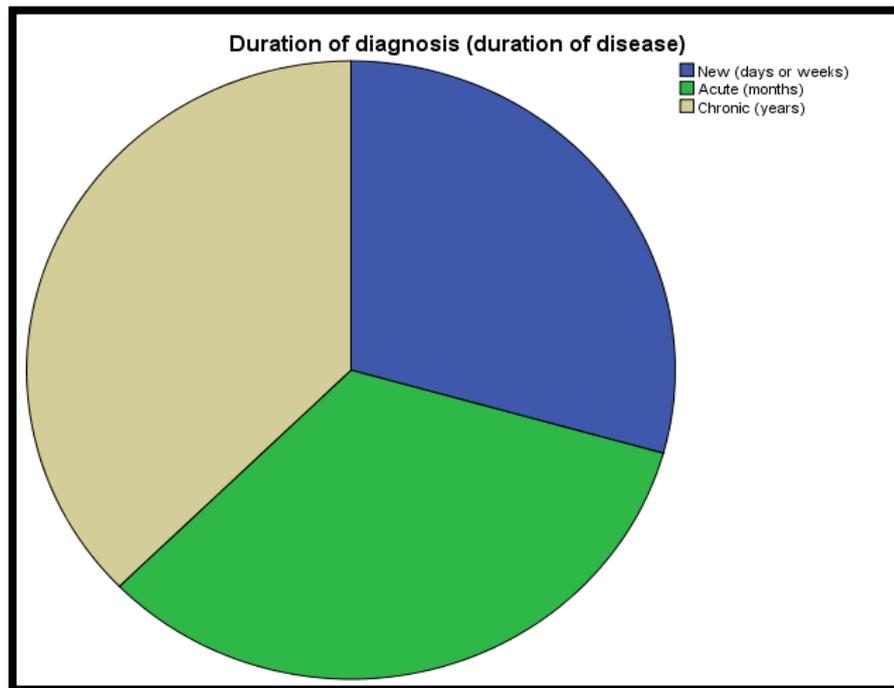


Figure (14) : Show the Duration of Diagnosis of PCOS among Study Sample

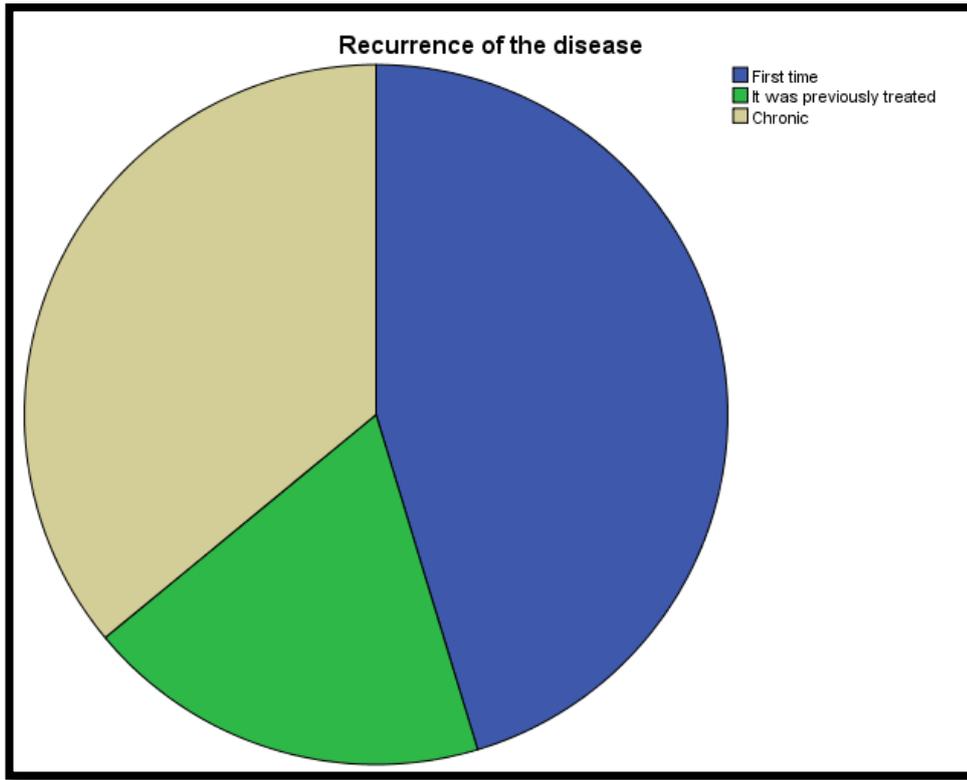


Figure (15): Show the Recurrence of the Disease among Study Sample

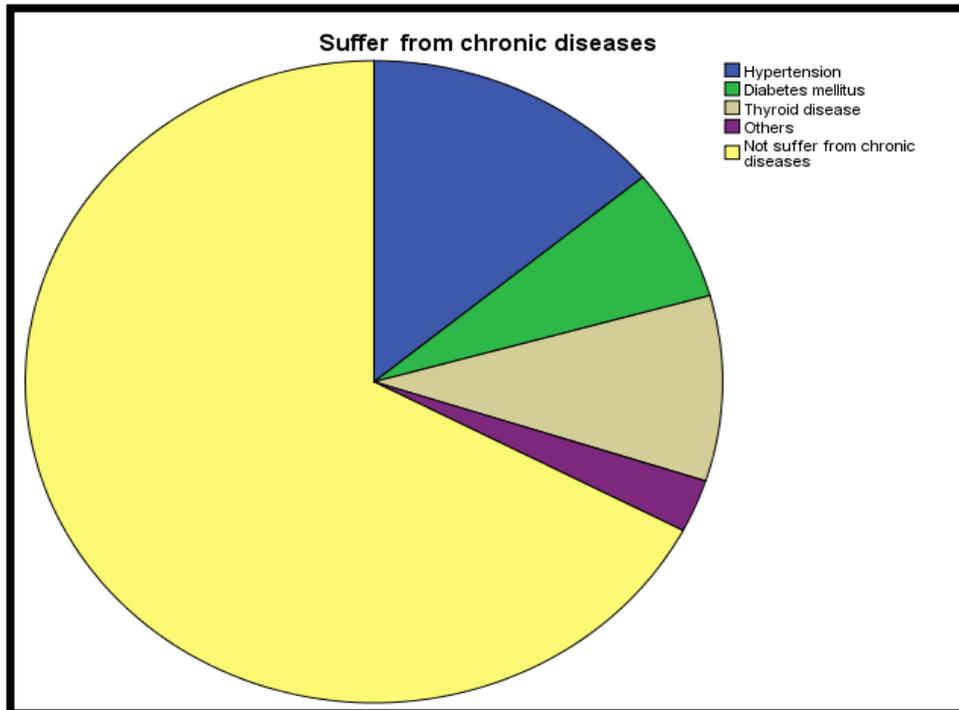


Figure (16): Show the Chronic Disease the PCOS Women Suffer From

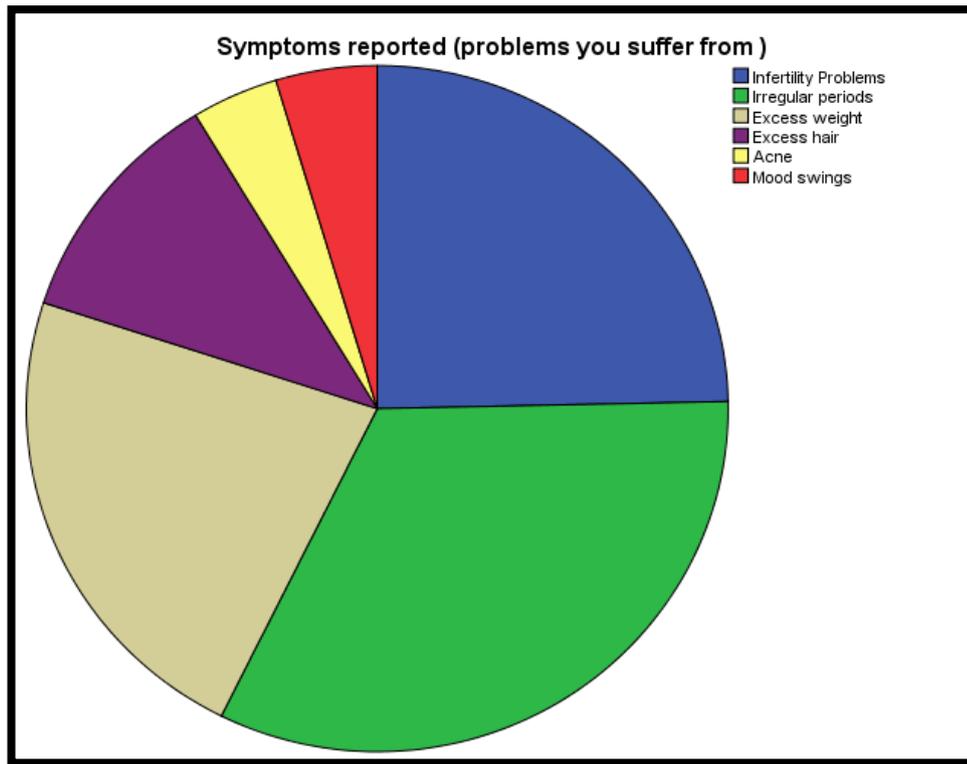


Figure (17): Show the Symptoms Reported by Study Sample

Table (4- 2) : Overall Quality Of Life Level Assessment

Quality of life levels	Frequency	Percent
Good QoL	23	15.3
Fair QoL	79	52.6
Poor QoL	48	32
Total	150	99.9

This table shows overall assessment of levels of quality of life for women with PCOS. Depending on frequency and percentages, the fair level was the highest among PCOS women in percent of (52.6 %).

Table (4- 3) Levels of Women's' Health Quality Of Life According to Each Domain

Psychological and Emotional Distress Domain		
	Frequency	Percent
Good QoL	29	19.3
Fair QoL	73	48.6
Poor QoL	48	32
Total	150	99.9
Self - body Image Domain		
	Frequency	Percent
Good QoL	64	42.7
Fair QoL	48	32
Poor QoL	38	25.3
Total	150	100
Infertility Domain		
	Frequency	Percent
Good QoL	41	27.3
Fair QoL	35	23.3
Poor QoL	74	49.3
Total	150	99.9
Sexual Satisfaction Domain		
	Frequency	Percent
Good QoL	59	39.3
Fair QoL	65	43.3
Poor QoL	26	17.3
Total	150	99.9
Menstrual Irregularity Domain		
	Frequency	Percent
Good QoL	34	22.7
Fair QoL	69	46
Poor QoL	47	31.3
Total	150	100

Hirsutism Domain	Frequency	Percent
Good QoL	29	19.3
Fair QoL	23	15.3
Poor QoL	98	65.3
Total	150	99.9
Obesity and Metabolic Disorder Domain	Frequency	Percent
Good QoL	29	19.3
Fair QoL	38	25.3
Poor QoL	83	55.3
Total	150	99.9

This table shows the frequency and percentages for the levels of women's quality of life according to each domain. Results show that the poor level was related to (infertility domain (49.3%) , hirsutism domain (65.3%) and obesity domain(55.3%) , fair level related to (psychological domain (68%), sexual domain (43.3%) and menstrual irregularity domain (46%) and good level was related to (body image domain in percent of (42.7%).

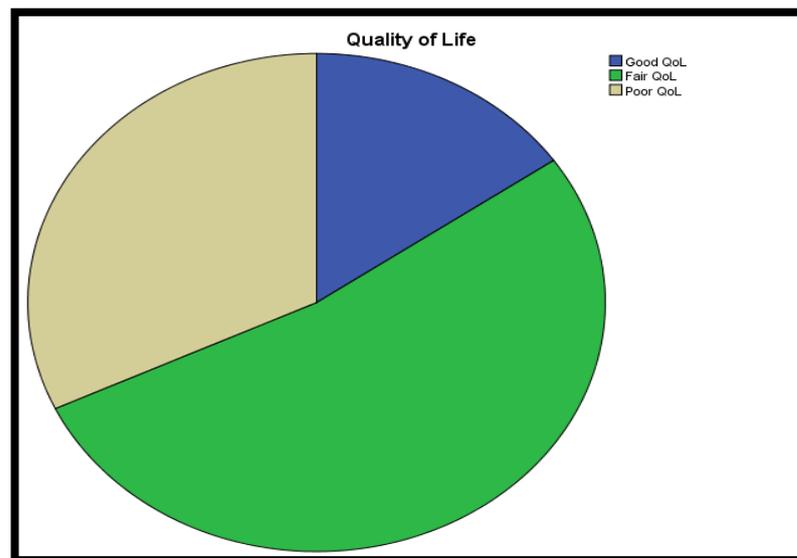


Figure (18) : Show the Levels of Women's Quality Of Life

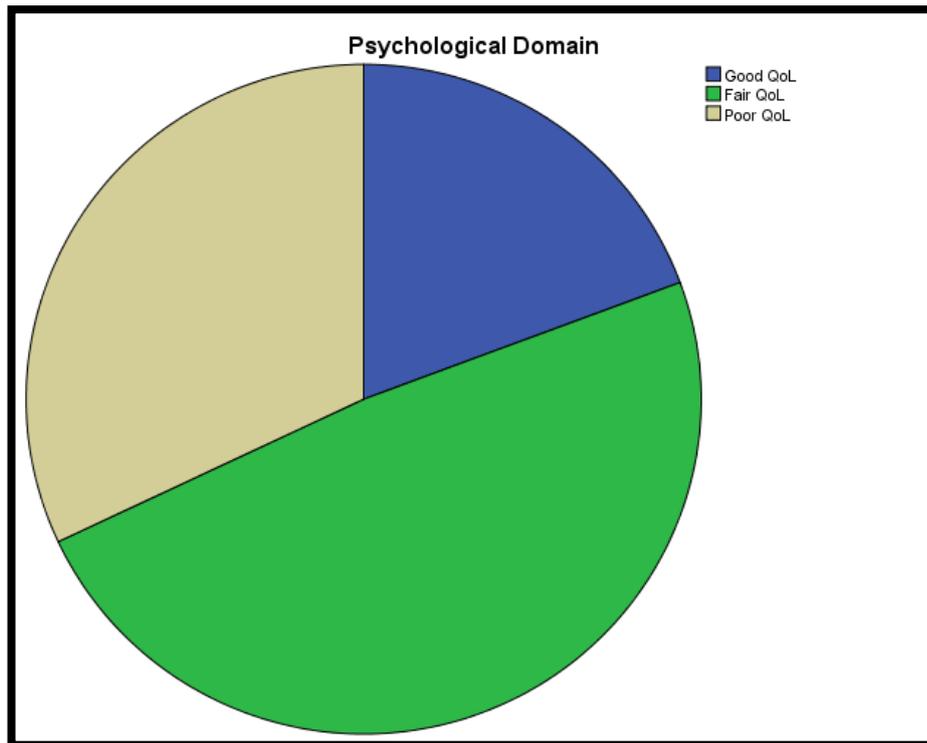


Figure (19) : Level of Quality of Life According to Psychological Domain

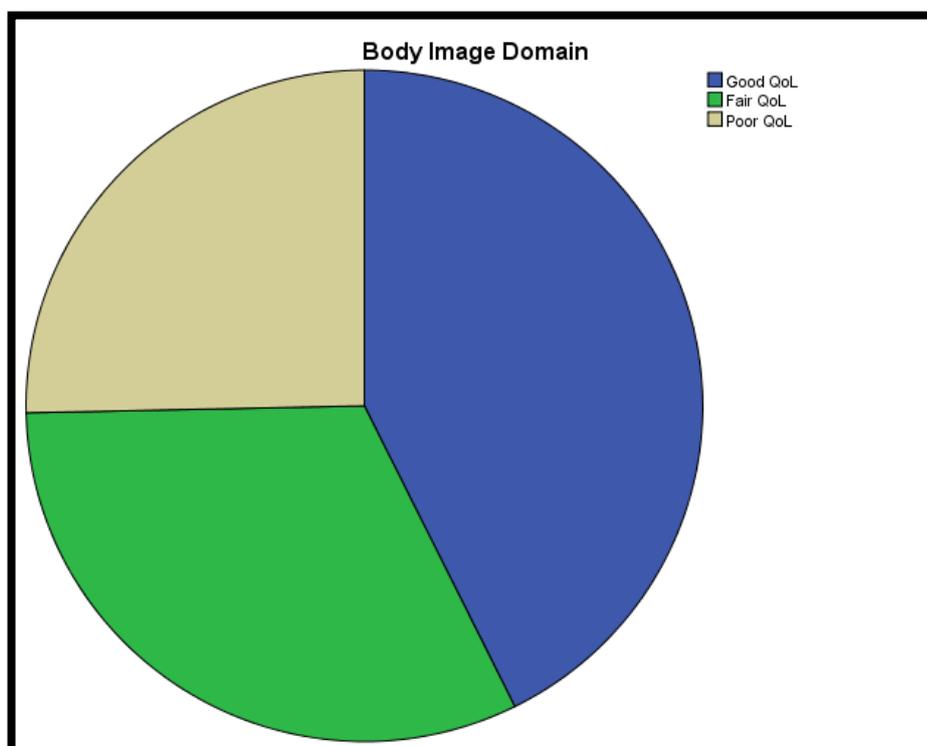


Figure (20) : Level of Quality of Life According to Body Image Domain

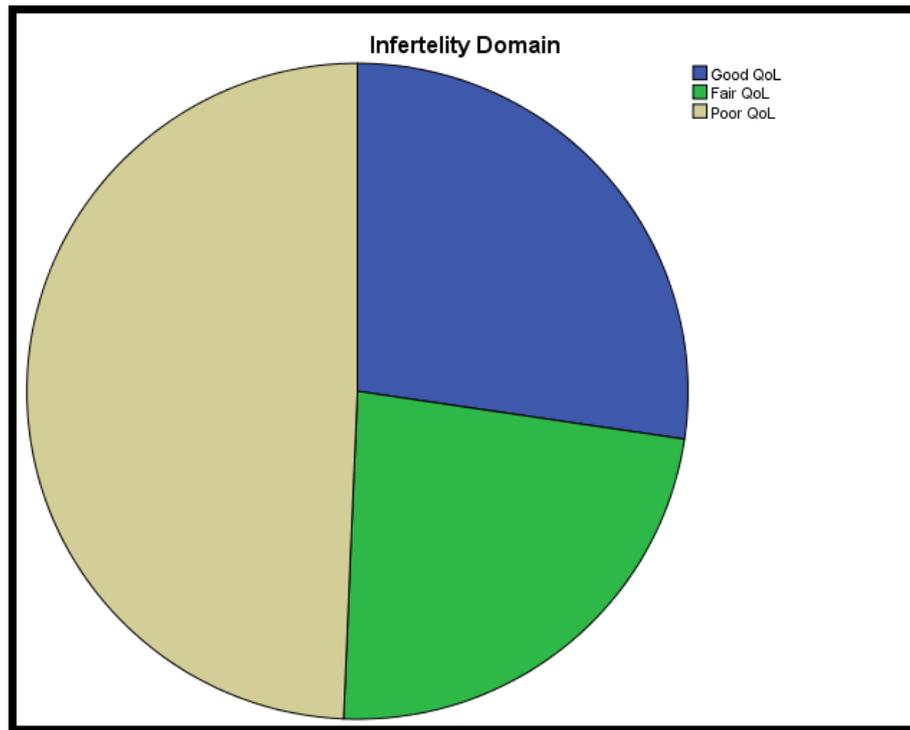


Figure (21) : Level of Quality of Life According to Infertility Domain

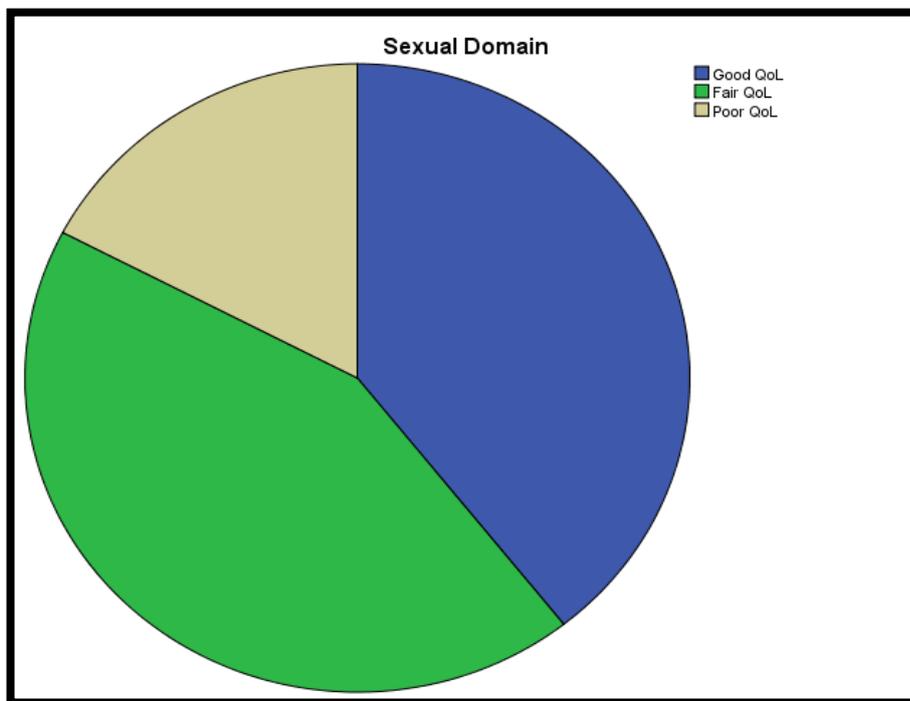


Figure (22) : Level of Quality of Life According to Sexual Domain

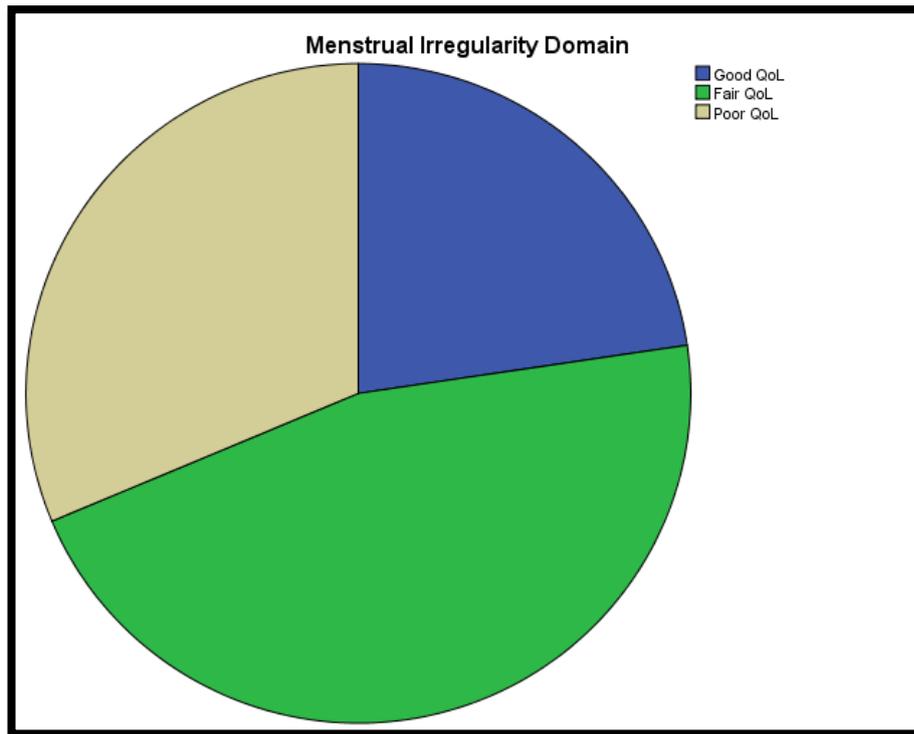


Figure (23) : Level of Quality of Life According to Menstrual Irregularity Domain

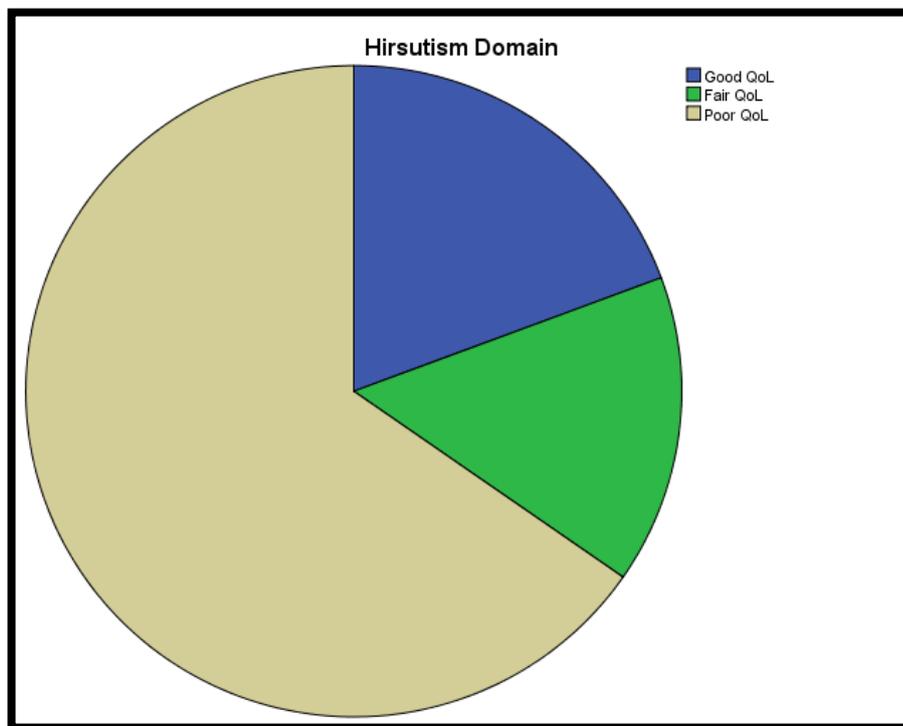


Figure (24) : Level of Quality of Life According to Hirsutism Domain

Table (4-4): Quality of Life of Women with Polycystic Ovary Syndrome.

Items	M.S.	std. Dev.	Assessment
Domain 1: Psychosocial and Emotional distress			
Domain			
1. Bad mood due to PCOS	2.47	631.	Always
2. Impatience due to PCOS	2.38	730.	Always
3. Blamed your-self for having PCOS	2.13	788.	Sometime
4. Trouble dealing with others	1.96	785.	Sometime
5. Low self-esteem due to PCOS	1.77	798.	Sometime
6. Aggressiveness due to PCOS	1.90	801.	Sometime
7. Pessimistic about the treatment	2.37	727.	Always
8. Lack of control of emotions	2.20	676.	Sometime
9. Easily become feel tired	2.27	720.	Sometime
M.S=2.16, S.D= .47377			
Domain 2: Self-body Image Domain			
1. Embarrassment due to your appearance	1.79	744.	Sometime
2. Different to normal females	1.93	766.	Sometime
3. Lack of satisfaction with your role as a women	1.86	786.	Sometime
4. Lack of satisfaction with being a woman	1.34	820.	Never
M.S= 1.83, S.D= .607			

Domain 3: Infertility Domain			
1. Trouble getting pregnant	2.18	812.	Sometime
2. Sad seeing children	2.16	875.	Sometime
3. Sad seeing pregnant women	2.15	910.	Sometime
4. Felt you will accept all other PCOS manifestations if assured of pregnancy	2.29	814.	Sometime
5. Fear of abortion	2.31	819.	Sometime
6. Concerned about infertility in the future	2.33	879.	Sometime
7. Fear of divorce or separation	2.19	862.	Sometime
8. Uselessness of sexual intercourse due to infertility	2.01	916.	Sometime
9. Concerned about the long term effects of PCOS medication	2.34	801.	Always
M.S= 2.21, S.D= .620			
Domain 4: Sexual Satisfaction Domain			
1. Lack of sexual desire	1.91	717.	Sometime
2. Ashamed of sexual coldness/unresponsiveness	1.81	748.	Sometime
3. Unsatisfied with sex	1.75	779.	Sometime
4. Lack of sexual stimulation	1.66	740.	Never
M.S= 1.78, S.D= .65661			

Domain 5: Menstrual Irregularity Domain			
1. Concerned about the complete cessation of menstruation	2.15	847.	Sometime
2. Concerned about menstruation at long intervals	2.30	712.	Sometime
3. Fear of ovarian cancer risk	2.15	831.	Sometime
M.S= 2.19, S.D= .61074			
Domain 6: Hirsutism Domain			
1. Sad to see hair in the mirror	2.42	771.	Always
2. Concerned about the progression of excess hair	2.39	835.	Always
3. Embarrassed because of excess facial hair	2.42	744.	Always
4. Concerned about having excess body hair	2.41	795.	Always
5. Concerned about rapid re-growth of unwanted hair after its removal	2.34	801.	Always
6. The need to cover your body and face because of excess hair	2.35	837.	Always
M.S= 2.38, S.D= .71671			
Domain 7: Obesity and Metabolic disorder			
1. Did you feel being obese	2.09	780.	Sometime
2. Concerned about being overweight	2.31	812.	Sometime
3. Concerned about a fast return to your previous weight after any weight loss	2.35	786.	Always
4. The need to decrease your weight to control PCOS status	2.38	774.	Always
5. Fear of diseases such as diabetes, hypertension and heart disease	2.00	941.	Sometime
M.S= 2.22, S.D= .62591			

m.s. (mean of scores = 2), cut off point (0.66), never (M.S. 1-1.66), sometime (1.67-2.33), always (M.S. 2.34-3).

This table shows the assessment for each area of quality of life based on a mean of score (mean of scores = 2), cut off point (0.66), never (M.S. 1-1.66), sometime (1.67-2.33), always (M.S. 2.34-3). The mean scores for the HRQoL domains obtained from the questionnaire showed that the lowest score was for Sexual Satisfaction Domain (M.S= 1.78) and the highest score was for the Hirsutism Domain (M.S= 2.38).

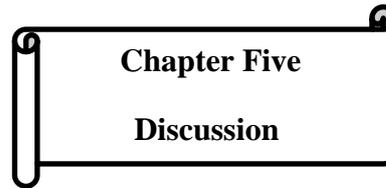
Table (4- 5): Association Between Women’s Quality of Life with Their Socio-Demographic Characteristics

Socio-Demographic and Personal Characteristics	Chi-square Value	D.f.	P-Value	Sig.
Age	107.437	6	.000	H.S
Education Qualification	19.741	8	.011	S
Occupational Status	5.887	2	.053	N.S
Marital status	19.453	4	.001	H.S
Children	17.286	4	.002	H.S
Economic status (monthly household income)	14.599	4	.006	H.S
Duration of diagnosis (duration of disease)	26.158	4	.000	H.S
Recurrence of the disease	20.823	4	.000	H.S
Suffer from chronic diseases	45.528	8	.000	H.S
Symptoms reported (problems you suffer from)	75.960	10	.000	H.S

This table shows the association between women’s quality of life with their socio-demographical characteristics. The socio-demographic characteristics like

(age, marital status, economic status, duration of diagnosis, symptoms reported, recurrence of disease) were found highly significant associated with quality of life for women with polycystic ovarian syndrome. But the occupational status shows no association with their quality of life.

Chapter Five
Discussion



This chapter explained the study's findings, which could lead to determining the impact of PCOS on the QOL of reproductive-age women. The discussion was methodically determined and oriented to the validation of the results that emerged from the data analysis in order to validate the study goals.

Polycystic Ovarian Syndrome (PCOS) is a growing health concern among women as a result of changes in lifestyle, rising stress levels combined with a lack of physical activity, and drastic changes in menstrual cycle patterns. Because there is currently no permanent cure for the illness, the most effective and vital remedy is to prevent it from developing and to diagnose it early so that major long-term repercussions can be avoided.

Section One : Socio-Demographic and Personal Characteristics

Table (4-1) Distribution the socio-demographical characteristics of the sample in the current study , nearly half of the sample (48 %) with age group (24-30) year, the majority of women under study were married in percent of (88%), the majority with secondary education and bachelor (76.7%), this result agreed with study conducted by Zahra Behboodi Moghadam and et al, Participants were 27.9 ± 5.88 years old on average, as shown. 73.5 percent of those who have ever married and have a secondary or higher education (80 percent). Regarding occupation (the majority of this study was employed in percent of (54.7%) this result inconsistent with the study by Zahra Behboodi

Moghadam and et al, were the majority of women were housewives (79.5%).(Moghadam Z and Fereidooni1B, 2018)

Regarding reproductive health, the majority of study sample(61.4%) was trying to conceive and (24.7%) of women suffer from infertility problems, while (32.7%) reported that they suffer from irregular period, this result agreed with a study done by (Haqq L, McFarlane J, Dieberg G and N., 2014) that shown that PCOS is the highest common reason of ovulatory infertility. About 90-95% of ovulatory women looking for infertility treatment suffer from PCOS. Numerous females with PCOS have tall luteinizing hormone levels and moo follicle-stimulating hormone (FSH), as well as elevated androgen and insulin levels. Oligomenorrhea or amenorrhea are indications of hormonal variations from the normal (occasional or need of monthly cycle).

Concerning the Duration of diagnosis (duration of disease), the high percent of studied sample (37.3%) reported that the disease chronic (diagnosed before years). This result advocated with (Rzońca E, Bień A, et al. 2018) that found about (50.40%) of women had been diagnosed with PCOS 1 to 5 years before.

In the recent study, it was found that the recurrence of PCOS was (45.3%) of studied sample, they reported that it is occur for the first time, (36%) of them was chronic PCOS and (18.7%) stated it was treated previously. So far there is little studies which clearly states the prevalence/incidence and recurrence of PCOS in Iraq. Various studies have suggested the prevalence to be between 10%- 36% which are in accordance with the study. (Joshi B, Mukherjee S, et al . 2014). Also

studies have shown the prevalence of PCOS to be higher in urban areas as compared to rural areas which supports the higher incidence in the setting as it is an urban area.(Bharathi RV, Swetha S,. 2017).

In regard to the chronic diseases, the majority of study sample (67.3%) were not suffering from any chronic disease. While (14%) of women were suffering from hypertension, this result consistent with (Amiri M, et al, 2020), This meta-analysis uncovers that PCOS patients have the next hazard of HTN, but it moreover appears that this chance is higher solely in reproductive-age women with PCOS, inferring that having a history of PCOS may not be as huge a inclining calculate for HTN after menopause. In expansion, I oppose this idea with a Cardiff College think about that demonstrated that women with Polycystic Ovary Disorder (PCOS) are three times more likely to obtain type 2 diabetes.

In relation to symptoms reported, (32.7%) reported irregular period. While (24.7%) mentioned infertility problems, (22.7%) of women reported excess weight and (11.3%) reported excess hair. This result supported by a study conducted by (SHINDE, Khushboo Suresh; PATIL, Sunil Somnath. 2019) it was seen that more than half of women (56%) complained from irregular menstrual cycle reported to be suffering from PCOS. And this result disagree with a study by (Faris Abdul Kareem Khazaal et al , 2014) that show between February 2013 and February 2014, 756 adult females aged 20 to 40 years old visited the Obesity Research and Therapy Unit (ORTU), 14.3 percent of whom had PCOS and (65 percent) were diagnosed during assessment. (94.4%) had menstrual disturbances, (63.8%) had hirsutism and (91.7%) had PCOS ultrasound findings. (Khazaal FA, Liebi AH, Mahmoud IJ. 2014)

Section Two : QOL of female suffering PCOS.

The findings of the study on the QOL of female suffering PCOS will be discussed in this part. In this section, a measure of the quality of life was adopted based on a number of areas, including the Psychosocial and Emotional Distress Domain, Self-body Dmage Domain, Infertility Domain, Sexual Satisfaction Domain, Menstrual Irregular Domain, Hirsutism Domain, Obesity and Metabolic Disorder.

Depending on the mean of score, the quality of life for women was divided into three categories or three levels: good, fair and poor. The General assessment of the QOL of females suffering PCOS was fair level of quality of life according to the area affected by the syndrome.

Table (2) shows overall assessment for levels of QOL for female suffering PCOS. Depending on frequency & percentages, the fair level was the highest among PCOS women in percent of (52.6 %).

Table (3) depicts the frequency and percentage for the levels of quality of life according to each quality of life domain. Results show that the poor level was related to (hirsutism domain 65.3% , obesity domain 55.3% and infertility domain 49.3%) , fair level related to (psychological domain 68%, menstrual irregularity domain 46% and sexual satisfaction domain 43.3%) and good level was related to (body image domain in percent of 42.7%).

Table (4) illustrates the evaluation for each quality of life area based on a mean score m.s. (mean of scores = 2), cut off point (0.66), never (M.S. 1-1.66), sometime (1.67-2.33), and always (M.S. 2.34-3). The questionnaire's mean scores for the HRQoL categories revealed that

the Sexual Satisfaction Domain (M.S= 1.78) had the lowest score and the Hirsutism Domain (M.S= 2.38) had the highest. This mean that the hirsutism was the most affected domain by polycystic ovarian syndrome, while the sexual satisfaction shows approximately little affected by the syndrome. This result agreed with (Bazarganipour F, Taghavi SA, et al 2015) The meta-analysis showed the combine mean of emotional (4.40; 95% CI 3.77-5.04), infertility (4.13; 95% CI 3.81-4.45) and weight (3.88; 95% CI 2.33-5.42) dimensions were better, but menstruation (3.84; 95% CI 3.63-4.04) and hirsutism (3.81; 95% CI 3.26-4.35) domains were lower than the mean score of PCOSQ/MPCOSQ in related dimension. A meta-analysis found that hirsutism and monthly cycles are the most important spaces of influence in a particular HRQOL.

Concerning the psychological and emotional distress domain (M.S=2.16), the (Bad mood caused by polycystic ovary syndrome, intolerance caused by polycystic ovary syndrome, pessimistic about the treatment) was the most affected for women in mean of score (2.47, 2.38, 2.37). That mean the PCOS has negative effect on psychological status of women. This result consistent with (Sulaiman MA, Al-Farsi YM, et al. 2017) that found When comparing women with PCOS to controls, the crude odds ratios (ORs) computed by logistic regression models revealed an elevated risk of depression, anxiety, and stress. The adjusted OR also indicated an increased risk of depression (OR =1.10; 95% confidence interval [CI] 0.50, 2.43), anxiety (OR =1.09; 95% CI 0.47, 2.52) and stress (OR =1.45; 95% CI 0.68, 3.12), However, no statistical differences were observed along the three psychological distresses (p.0.05) between the two studied groups. and conclude that

the presence of PCOS is associated with an increased risk of psychological burden.

Regarding Self-body Image Domain (M.S= 1.83). Embarrassment as a result of appearance, as opposed to normal females Dissatisfaction with one's role as a woman this items show negative effect (in moderate level) as result of PCOS. While lack of satisfaction with being a woman, this item showed no effect by PCOS. This result agreed with (Scaruffi E, Franzoi IG, et al. 2019) that show the Alexithymia and bodily discomfort were increased in the PCOS group. Physical appearance and bodily function appear to act a major job in the thoughts and relationships of females suffering PCOS. It is, however, a body with which they have difficulty identifying and with which they are generally uneasy. Their relationship with the outer world appears to be marked by immaturity, aggression, antagonism, and distrust. Low self-esteem appears to be associated with a proclivity towards introversion and disengagement. This can cause issues in social, professional, and personal relationships.

In relation to Infertility Domain (M.S= 2.21). Having difficulty conceiving, It makes me sad to see children, and it makes me sad to see pregnant mothers. If you're sure you'll get pregnant, I'm sure you'll tolerate any other PCOS symptoms. Abortion phobia, Concerned about the possibility of infertility in the future, Divorce or separation is a source of anxiety for many people. Due of infertility, sexual intercourse is no longer useful. This item show moderate level of negative effect of PCOS. While Concerned about PCOS medication's long-term consequences, this item show high level of negative effect of PCOS. This result agreed with (Melo AS, Ferriani RA, Navarro PA. 2015) that

mention Infertility is common in women with PCOS, ranging from 70 to 80 percent. According to the American Society for Reproductive Medicine, if the couple has regular sex (2 to 3 times a week) without using contraception, they should begin treating PCOS or other infertility after 6 months of failed pregnancy attempts. The infertility of women suffering from the disease is evaluated.

Regarding Sexual Satisfaction Domain (M.S= 1.78), polycystic ovarian syndrome shows its effect in area of Lack of sexual desire, Ashamed of sexual coldness/unresponsiveness and Unsatisfied with sex, and has no effect in the area of Lack of sexual stimulation. This result inconsistent with (Silva JS, Fonseca AM, et al. 2010) that found The clinical elements of the illness had no effect on Sexual enlightenment, way of expressing sexual behavior, communication with partner and intimacy or sexual satisfaction. The menstrual cycle was found to have a statistically significant correlation with polycystic ovarian syndrome clinical characteristics and sexual behavior. Conclusion: The lack of menstruation decreased sexual interest in non-partner behaviors, resulting in increased masturbation frequency.

Concerning Menstrual Irregular Domain (M.S= 2.19). polycystic ovarian syndrome showed its effect in this area: Concerned about menstruation ceasing completely, Menstruation at irregular intervals concerns me, as does the possibility of ovarian cancer. This result agree with (Park YJ, Shin H, Jeon S, Cho I, Kim YJ. 2021) that mention Abnormal uterine bleeding (AUB) is described as abnormalities in It is divided into two types, menstrual cycle and menorrhagia, depending on the menstrual cycle pattern and the amount of menstrual fluid. Endocrine disorders such as PCOS, thyroid disease, coagulopathy, & cancer all of

them linked to AUB. That is, menstrual irregularities in adolescent / early women can be due to temporary factors such as psychological or physical fatigue, while persistent abnormalities are PCOS, endometriosis, hypogonadism. It can be due to pathological causes such as illness or malignant tumors. PCOS, in particular, has a high prevalence of 10% and is an endocrine disease that needs to be preferentially diagnosed by women throughout this developmental stage. Hyperandrogenism, uncommon (or non-existent) ovulation, and polycystic ovary are among the diagnostic factors to be aware of. Infertility, obstetric problems, type Type 2 diabetes, Cardiovascular illness, psychiatric condition, and eating illnesses are all more likely to be caused by PCOS. A health survey of nursing staff found that 10.9% of women aged 20-35 years experienced irregular menstruation and 4.3% had irregular menstruation, which was associated with both PCOS. As a result, adolescent / early adult women are at greater risk of developing concomitant disorders such as PCOS and AUB, as well as risk of sexual activity, poor eating / eating disorders, alcohol / substance abuse, etc. There is an increased risk of participating in the action.

Regarding to Hirsutism Domain (M.S= 2.38), polycystic ovarian syndrome showed highly degree of effect in the area of It's depressing look at the head in the mirror Worried about unnecessary hair growth, Extra facial hair makes you feel self-conscious, while having excess body hair makes you feel uncomfortable. Concerned about undesired hair regrowing quickly after removal, Excess hair necessitates the necessity to cover your body and face. This result advocated by (Ersoy S, Ersoy İH, Ateş M, Özkahraman-Koç Ş. 2020) study that mention For women, hirsutism is an unfavorable situation. In spite of the fact

that the relationship between the mental and social conditions of women analyzed with hirsutism shows up complicated, hirsutism causes issues such as uneasiness and discouragement in 80 percent of women. Hair development within the confront zone, in specific, causes a weakening in women's discernment of their bodies. In these cases, quality of life is unfavorably influenced. Hirsutism ought to not as it were be considered a physical issue, but too its mental perspectives. The mental, social and sexual issues of the influenced patients within the future may cause social issues, segregation, and a more challenging and longer treatment prepare counting mental issues and disturbances in conjugal life. In expansion, other thinks about were found that women with hirsutism have moo self-confidence. Hirsutism not as it were decreases the quality of life of women, but moreover features a negative affect on their mental status. So also, in other consider, it was detailed that hirsutism influences women's social status and it may cause passionate stretch and clinical uneasiness. (Chachia L, 2018)

Regarding Obesity and Metabolic Disorder (M.S= 2.22). PCOS shows its effect in the area of obesity and weight, most of sample under study reported concerned around a quick return to past weight after any weight misfortune and the ought to diminish weight to control PCOS status. Moreover anxiety of illnesses such as Diabetic, Hypertention & Heart sickness was one of the cause of concerned among women with PCOS. This result agreed with (Barber TM, Hanson P, Weickert MO, Franks S. 2019) that mention that is weight-gain and obesity are vital hazard variables for the clinical and biochemical appearances of PCOS in those women who are hereditarily inclined. The different instruments interceding this prepare are complex. Be that as it may, the affiliation

between corpulence and PCOS is more complex than a straightforward cause-and-effect handle and likely incorporates complicated interlinks between numerous components. As sketched out, it appears likely that in at slightest a few stout women with PCOS, advancement of PCOS through backhanded components (counting sadness and seen need of self-control and expanded trouble) may obstruct progressing endeavors at way of life alter and thus compelling weight-loss.

Depending on the statistical analysis of the data and the results, it was found that PCOS has a negative impact in some areas on the quality of life as well as in other areas, it affects in a moderate or different way. Therefore, polycystic ovaries had a negative impact with regard to the field of hirsutism , obesity and infertility aspects of women, while it was almost has fair effect in terms of sexual satisfaction, psychological and menstrual aspect for women.

Table (5) shows the association between quality of life with socio-demographical characteristics. The demographic characteristics like (age, marital status, economic status, duration of diagnosis, symptoms reported, recurrence of disease) were having highly significant association with QOL for women with PCOS. But the occupational status shows that it doesn't have any association with quality of life.

The assessment of sexual behavior in PCOS patients is crucial both academically to enhance understanding of the role of androgens in female sexual function and clinically to improve the quality of care provided to these patients. Age, children, the duration of the disease, and the symptoms reported have all been found to have an impact on sexual function. This contradicts a study (Eftekhar, T., Sohrabvand, F.,

Zabandan, N., Shariat, M., Haghollahi, F., and Ghahghaei-Nezamabadi, A., 2014) that found the age range of patients was limited (19-34 yrs.) and showed no association between age and a number of factors.

So far there is no study which clearly states the association between quality of life with socio-demographical characteristic of PCOS women in Iraq. Various studies have suggested the significances of some characteristics with quality of life which are in accordance with the study. A study done by (Tabassum F, Jyoti C, Sinha HH, Dhar K, Akhtar MS. 2021) found that in PCOS situations, the financial position is comparable to healthy controls. However, cases of PCOS seem to be quite reduced in HRQOL. Older menstrual age, history of menstrual irregularities/delayed periods, and children's appearance were completely unchanged in PCOS cases compared with controls. Number of children, pregnancy recurrence and unsuccessful labor were over-monitored above in cases of PCOS.

Chapter Six

Conclusions & Recommendations

Conclusions and Recommendations

6.1. Conclusions:

1- Most of participant were within age of (24-30) year in percent of (48 %). Most participant (88%) of them were married . Most participant (61.4%) of women were trying to conceive. Most of participant (67.3%) of studied sample did not suffer from chronic diseases.

2- The most frequent symptoms reported by the PCOS women was irregular periods in percent of (32.7%) followed by infertility problems in percent of (24.7%).

3- The fair level of quality of life was the highest among PCOS women in percent of (52.6 %).

4- In women with PCOS, hirsutism, irregular menstruation, ovulation difficulties (infertility), obesity, and metabolic disorders all have a poor impact on HRQOL.

Based on the results of this study , the study concluded that: the findings support the hypothesis that stated **there is a negative impact of PCOS on the women QOL domains** . Because PCOS is a chronic and relatively common disorder in females of generative years, using HRQoL to track their development in conjunction with medication could be beneficial during follow-up.

According to the current study. These findings may act as a wake-up call for us to set goals and implement solutions that can help women with this life-threatening condition improve their HRQOL.

If the findings of a recent study confirmed, they could have significant implications for prevention, clinical practice, and management in women with this condition, particularly those who appear to have the worst HRQoL. Medical and psychological treatment could help those women enhance their quality of life.

6.2. Recommendations-

Depending on the results and conclusions of the present study, the investigator recommends the following:

1. It is important that the health institutions 'centers, units and consultancies include advanced awareness programs that include the latest findings of modern science in everything related to this syndrome, modern methods of diagnosis, treatment and prevention, as well as diet and sports regimens that can improve the symptoms and complications of this syndrome.
2. Develop certain protocol / nursing model to improve the quality of life for women affected by this syndrome in line with the nature of our society and the possibility of applying it by the largest possible number of targeted women.
3. Adopting reliable global programs approved by international organizations to improve the QOL for females suffering this syndrome.
4. Create or provide reliable statistics about this syndrome in every consultation clinic or at primary health care center that receives these cases and according to the catchment area, so that they can be used when conducting subsequent studies.
5. Expanding the scope of the study further to include the largest number of targeted women with this syndrome in order to generalize its results to the women of Iraqi society.

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Appendices

Appendix One



Ref. No. :

Date: / /



العدد : ٥٥٥

التاريخ ١٦ / ١٢ / ٢٠٢٠

الى / دائرة صحة بابل
م / تسهيل مهمة

تحية طيبة :

يطيب لنا حسن التواصل معكم ويرجى تفضلكم بتسهيل مهمة طالبة الدكتوراه (رنا رزاق حميدي فرحان) لغرض جمع عينة دراسة الدكتوراه والخاصة بالبحث الموسوم :
اثر متلازمة تكيس المبايض المتعدد على نوعية الحياة للنساء في سن الانجاب في مستشفيات مدينة الحلة .

Impct of Polycystic Ovary Syndrome on Quality of Life for Reproductive Age Women in AL-Hilla City Hospitals.

مع الاحترام ...

الاستاذ الدكتور
فحطان هادي حسين
ع / عميد الكلية
٢٠٢٠/١٢/١٥

صورة عنه الى //
مكتب السيد العميد للتفضل بالاطلاع مع الاحترام .
لجنة الدراسات العليا مع الاوليات .
المصادرة .

E-mail:nursing@uobabylon.edu.iq



07711632208
009647711632.08

وطني
المكتب

www.uobabylon.edu.iq

Appendix Two:

جمهورية العراق		
<p>Ministry Of Health Babylon Health Directorate Email:- Babel_Healthmoh@yahoo.com Tel:282628 or 282621</p>		<p>وزارة الصحة والبيئة دائرة صحة محافظة بابل المدير العام مركز التدريب والتنمية البشرية وحدة ادارة البحوث</p> <p>العدد : ٢٩٠ التاريخ : ٢٠٢١ / ٢ / ٢٤</p>

إلى / مستشفى بابل التعليمي للنسائية والاطفال

مستشفى الامام الصادق (ع)

م / تسهيل مهمة

وزارة الصحة
دائرة صحة بابل
مركز التدريب والتنمية البشرية

تحية طبية ...

حصلت موافقة اللجنة العلمية للبحوث في دائرتنا حول تسهيل مهمة الباحثة ممرض اختصاص (رنا رزاق حميدي) من مستشفى بابل التعليمي للنسائية والاطفال و مستشفى الامام الصادق (ع) لإجراء بحثها الموسوم (اثر متلازمة تكيس المبايض المتعدد على نوعية الحياة للنساء في سن الانجاب في مستشفيات مدينة الحلة) والذي نال الموافقة من قبل اللجنة برئاسة (د.منعم مكي الشوك) وعضوية كل من (د. محمد عبد الله عجرش) طبيب اختصاص و (د. صباح جاسم الربيعي) طبيب استشاري للتفضل بالاطلاع وتسهيل مهمة الموما إليه في مؤسساتكم الصحية وحسب الضوابط والإمكانيات المتاحة على أن لا تتحمل دائرتنا أية تبعات مادية وقانونية

مع الاحترام

الدكتور

محمد عبد الله عجرش

مدير مركز التدريب والتنمية البشرية

٢٠٢١ / /

نسخة منه إلى :

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

Appendix Three:

Republic of Iraq
Babel Health Directorate
Email:
Babel_Health@yahoo.com
Tel 282628/ 282621



جمهورية العراق
محافظة بابل
دائرة صحة محافظة بابل
المدير العام
مركز التدريب والتنمية البشرية
وحدة البحوث
العدد: ٢٦
التاريخ: ٢٠٢٠ / ١٢ / ١٤

وزارة الصحة
دائرة صحة بابل
مركز التدريب والتنمية البشرية
إلى / مستشفى الإمام الصادق (ع) / مستشفى بابل التعليمي للنسائية والأطفال
م / تسهيل مهمة

السلام عليكم ..

إشارة إلى كتاب جامعة بابل/ كلية التمريض ذي العدد ٥٢٥ في ٢٠٢٠/٢/١٦ ...
ربطاً " استمارات الموافقة المبدئية لمشروع البحث العائدة للباحثة طالبة الدراسات
العليا/ دكتوراه (رنا رزاق حميدي) من جامعة بابل/كلية التمريض للتفضل بالاطلاع
وتسهيل مهمة الموما إليه من خلال توقيع وختم استمارات إجراء البحث المرفقة في
مؤسساتكم وحسب الضوابط والإمكانات لاستحصال الموافقة المبدئية لیتسنى لنا
إجراء اللازم على أن لا تتحمل مؤسساتكم أية تبعات مادية وقانونية... مع الاحترام .

المرفقات :

• استمارة عدد ٢/

(٢٦)
الدكتور

محمد عبد الله عجرش
مدير مركز التدريب والتنمية البشرية
٢٠٢٠ / ١ /

نسخة منه إلى :

مكتب المدير العام / مركز التدريب والتنمية البشرية / وحدة البحوث.... مع الأوليات .

Appendix Four:

Republic of Iraq	جمهورية العراق
Babel Health Directorate	محافظة بابل دائرة صحة محافظة بابل المدير العام مركز التدريب والتنمية البشرية
Email: Babel_Health@yahoo.com Tel 282628/ 282621	وحدة البحوث العدد: ٢٢٦ التاريخ: ٢٠٢٠ / ٢ / ١٦
وزارة الصحة دائرة صحة بابل مركز التدريب والتنمية البشرية	إلى / مستشفى الإمام الصادق (ع) مستشفى بابل التعليمي للنسائية والأطفال م / تسهيل مهمة
	السلام عليكم .. إشارة إلى كتاب جامعة بابل/ كلية التمريض ذي العدد ٥٢٥ في ٢٠٢٠/٢/١٦ ... ربطاً " استمارات الموافقة المبدئية لمشروع البحث العائدة للباحثة طالبة الدراسات العليا/ دكتوراه (رنا رزاق حميدي) من جامعة بابل/كلية التمريض للتفضل بالاطلاع وتسهيل مهمة الموما إليه من خلال توقيع وختم استمارات إجراء البحث المرفقة في مؤسساتكم وحسب الضوابط والإمكانات لاستحصال الموافقة المبدئية ليتسنى لنا إجراء اللازم على أن لا تتحمل مؤسساتكم أية تبعات مادية وقانونية... مع الاحترام .
	المرفقات : • استمارة عدد ٢/
محمد عبد الله عجرش مدير مركز التدريب والتنمية البشرية ٢٠٢٠ / /	السيد العبد لا مانع لربنا الدكتور بمساعدة السيد ٢٠٢٠ / /
	نسخة منه إلى : مكتب المدير العام / مركز التدريب والتنمية البشرية / وحدة البحوث مع الأوليات . لا مانع لربنا ٢٠٢٠ / /
	شكره سوزان احسان ٢٠٢٠ / /

Appendix Five :

Questionnaire

Part 1:

Demographical characteristics of participants

Age :..... year

Education Qualification :

- Dose not read and write
- Primary
- Secondary
- Bachelor
- Postgraduate

Occupational Status :

- Not employed
- Employed

Marital Status:

- Single
- Married
- Separated
- Divorced
- Widow

If Married :

You

Trying to conceive Pregnant Had children

Economic status (monthly household income):

- Inadequate
- Somewhat adequate

- Adequate

Duration of diagnosis (duration of disease):

- Days or weeks

- Months

- Years

Recurrence of the disease:

- First time

- It was previously treated

- Chronic

Suffer from chronic diseases:

- Hypertension

- Diabetes mellitus

- Thyroid disease

- Others

- Not suffer from chronic diseases

Symptoms reported (problems you suffer from) :

Infertility Problems

Irregular periods

Excess weight

Excess hair

Acne

Mood swings

Part 2 : Health Related Quality of Life Domains

Domains	Item	Always 3	Sometimes 2	Never 1
A. Psychosocial and Emotional distress Domain	Bad mood due to PCOS			
	Impatience due to PCOS			
	Blamed your-self for having PCOS			
	Trouble dealing with others			
	Low self-esteem due to PCOS			
	Aggressiveness due to PCOS			
	Pessimistic about the treatment			
	Lack of control of emotions			
Easily become feel tired				
B. Self-body Image Domain	Embarrassment due to your appearance			
	Different to normal females			
	Lack of satisfaction with your role as a women			
	Lack of satisfaction with being a woman			
C. Infertility Domain	Trouble getting pregnant			
	Sad seeing children			
	Sad seeing pregnant women			
	Felt you will accept all other PCOS manifestations if assured of pregnancy			
	Fear of abortion			
	Concerned about infertility in the future			
	Fear of divorce or separation			
	Uselessness of sexual intercourse due to infertility			
	Concerned about the long term effects of PCOS medication			

D. Sexual Satisfaction Domain	Lack of sexual desire			
	Ashamed of sexual coldness/unresponsiveness			
	Unsatisfied with sex			
	Lack of sexual stimulation			
E. Menstrual Irregularity Domain	Concerned about the complete cessation of menstruation			
	Concerned about menstruation at long intervals			
	Fear of ovarian cancer risk			
F. Hirsutism domain	Sad to see hair in the mirror			
	Concerned about the progression of excess hair			
	Embarrassed because of excess facial hair			
	Concerned about having excess body hair			
	Concerned about rapid re-growth of unwanted hair after its removal			
	The need to cover your body and face because of excess hair			
G. Obesity and Metabolic disorder	Did you feel being obese			
	Concerned about being overweight			
	Concerned about a fast return to your previous weight after any weight loss			
	The need to decrease your weight to control PCOS status			
	Fear of diseases such as diabetes, hypertension and heart disease			
Total	40			

القسم الاول :

الخصائص الديموغرافية للمشاركات

العمر : سنة

المؤهل العلمي :

لا تقرأ ولا تكتب

ابتدائي

ثانوي

بكالوريوس

دراسات عليا

الحالة الوظيفية :

لا تعمل

تعمل

الحالة الزوجية :

عزباء

متزوجة

منفصلة

مطلقة

ارملة

إذا كنت متزوجة :

لديك اطفال حامل تحاول الحمل

الوضع الاقتصادي (دخل الأسرة الشهري):

- غير كافية

- كافية إلى حد ما

- كافي

مدة التشخيص (مدة المرض):

- (أيام أو أسابيع)

- (أشهر)

- (سنوات)

تكرار حدوث المرض:

- اول مرة

- تمت معالجته سابقا

- مزمن

هل تعاني من أمراض مزمنة؟

- ارتفاع ضغط الدم

- السكرى

- مرض الغدة الدرقية

- اخرى

- لا تعاني من الأمراض المزمنة

• الاعراض المسجلة (المشاكل التي تعاني منها):

- مشاكل بالخصوبة

- اضطراب الدورة الشهرية

- زيادة الوزن

- ظهور الشعر على الوجه

- ظهور الحبوب على الوجه

- اضطراب المزاج او الكآبة

القسم الثاني :

نوعية الحياة المرتبطة بالصحة للنساء المصابات بمتلازمة تكيس المبايض المتعدد

العوامل المؤثرة	البنود	دائما ٣	احيانا ٢	ابدا ١
المجال النفسي والعاطفي	١. تشعرين ان مزاجك سيئ بسبب تكيس المبايض			
	٢. تشعرين بنفاد الصبر بسبب تكيس المبايض			
	٣. تلومين نفسك على وجود تكيس المبايض			
	٤. لديك مشكلة في التعامل مع الآخرين			
	٥. تشعرين بتدني احترام الذات بسبب تكيس المبايض			
	٦. تشعرين بالعدوانية بسبب تكيس المبايض			
	٧. متشائمة من العلاج			
	٨. عدم السيطرة على العواطف			
	٩. تشعرين انك متعبة بسهولة			
النظرة الذاتية لمظهر الجسم	١. تشعرين بالحرج بسبب مظهرك			
	٢. تشعرين انك مختلفة عن الإناث العادية			
	٣. عدم الرضا عن دورك امرأة			
	٤. عدم الرضا عن كونك امرأة			
الخصوبة	١. لديك مشكلة في الحمل			
	٢. تشعرين بالحزن عند رؤية الأطفال			
	٣. تشعرين بالحزن عند رؤية النساء الحوامل			
	٤. شعرت أنك سوف تقبلين جميع اعراض تكيس المبايض الأخرى إذا تأكدت من الحمل			
	٥. تشعرين بالخوف من الإجهاض			
	٦. تشعرين بالقلق إزاء العقم في المستقبل			
	٧. تشعرين بالخوف من الطلاق أو الانفصال			
	٨. تشعرين بعدم فائدة الجماع الجنسي بسبب العقم			
	٩. تشعرين بالقلق إزاء الآثار الطويلة الأجل لدواء تكيس المبايض			

			١. تشعرين بقلّة الرغبة الجنسية	الرضا الجنسي
			٢. تشعرين بالخجل من البرودة الجنسية / عدم الاستجابة	
			٣. تشعرين بعدم الرضا عن الجنس	
			٤. تشعرين بعدم وجود التحفيز الجنسي	
			١. تشعرين بالقلق إزاء الانقطاع الكامل للطمث	اضطرابات الدورة الشهرية
			٢. تشعرين بالقلق إزاء الحيض على فترات طويلة	
			٣. تشعرين بالخوف من احتمال الإصابة بسرطان المبيض	
			١. تشعرين بالحزن لرؤية الشعر في المرأة	الشعرانية
			٢. تشعرين بالقلق إزاء تطور الشعر الزائد	
			٣. تشعرين بالحرج بسبب الشعر الزائد في الوجه	
			٤. تشعرين بالقلق إزاء وجود شعر الجسم الزائد	
			٥. تشعرين بالقلق إزاء إعادة نمو سريع للشعر غير المرغوب فيه بعد إزالته	
			٦. تشعرين بضرورة تغطية جسمك ووجهك بسبب الشعر الزائد	
			١. هل تشعرين بالسمنة؟	السمنة ومتلازمة الايض
			٢. تشعرين بالقلق إزاء زيادة الوزن	
			٣. تشعرين بالقلق إزاء العودة السريعة إلى وزنك السابق بعد أي فقدان للوزن	
			٤. الحاجة إلى خفض وزنك للسيطرة على حالة تكيس المبايض	
			٥. تشعرين بالخوف من الأمراض مثل مرض السكري وارتفاع ضغط الدم وأمراض القلب	
			٤٠	المجموع

Appendix Six :

قائمة الخبراء

ت	اسم الخبير	الشهادة أو اللقب	الاختصاص	مكان العمل
١	د. قحطان هادي الجبوري	أستاذ	دكتوراه في تمريض صحة المجتمع	جامعة بابل – كلية التمريض
٢	د. سلمى كاظم جهاد	أستاذ	دكتوراه في تمريض صحة المجتمع	جامعة بابل – كلية التمريض
٣	د. حسين جاسم	أستاذ	دكتوراه في تمريض صحة المجتمع	جامعة بابل – كلية التمريض
٤	د. بشرى جابر الربيعي	أستاذ	طبيبة اختصاص طب النسائية والتوليد	جامعة بابل – كلية الطب مستشفى بابل للنسائية والأطفال
٥	د. حيدر حمزة الحدراوي	استاذ مساعد	دكتوراه تمريض الصحة النفسية والعقلية	جامعة بابل – كلية التمريض
٦	د. ناجي ياسر سعدون	استاذ مساعد	دكتوراه تمريض صحة المجتمع	جامعة بابل – كلية التمريض
٧	د. سهيلة فاضل محمد حسن	استاذ مساعد	طبيبة اختصاص نسائية وتوليد وعلاج العقم / حاصلة على شهادة البورد العربي والبورد العراقي في اختصاص النسائية والتوليد	جامعة بابل- كلية الطب
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Appendix Seven :

FACT OR FICTION: PCOS MYTHS DEBUNKED

Polycystic Ovary Syndrome (PCOS) is the most common hormonal condition among women of reproductive age. Symptoms can include an increase of male hormone (androgen), excess hair growth on the face or body, acne, and weight gain or difficulty losing weight. The Hormone Health Network is here to debunk common misconceptions about PCOS!

MYTH 1

All Women with PCOS have Ovarian Cysts

Based on its name, many people think PCOS refers to cysts, but this is false. For many women, tiny follicles are present in the ovary and may resemble a "strand of pearls" on an ultrasound. The follicles may look like small cysts, but they are very different. These follicles aren't cancerous and do not cause pain. Not all women diagnosed with PCOS have follicles on their ovaries.

MYTH 2

Women Diagnosed with PCOS Can't Have Children

PCOS is a common cause of fertility problems for women, but that doesn't mean carrying a pregnancy to term is impossible. Many women with PCOS can conceive on their own or with the help of fertility treatments. Lifestyle changes and a healthier diet can also improve the chances of conceiving.

MYTH 3

An Irregular Menstrual Cycle Means You Have PCOS

PCOS is one cause of an irregular menstrual cycle, but there are so many other reasons! Typical cycles range between 21 to 35 days. Other factors such as stress, thyroid disorders or other endocrine conditions, fibroids, or extreme dieting can lead to an irregular cycle. If your cycle is irregular, speak to a doctor. Additional tests and exams will identify the cause.

MYTH 4

Women with PCOS Can't Lose Weight

Weight loss may be harder for women with PCOS, but it's not impossible. Many women with PCOS have a lowered sensitivity to insulin, a hormone that regulates sugar in the blood. This is known as insulin resistance, which is a risk factor for type 2 diabetes and may make it difficult to lose weight, even if you are following a healthy lifestyle. Working with a registered dietician and endocrinologist can also help with weight loss goals.

MYTH 5

All Women with PCOS Experiences Unwanted Hair Growth

Hirsutism is excessive growth of "male" pattern hair that may appear on a woman's face, back, chest, abdomen, or thighs. Hirsutism is usually an underlying sign of PCOS or another endocrine condition, but it's important to remember not every woman will have this symptom. Other factors, such as ethnicity, can increase the likelihood of a woman having excess hair growth.

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Patients have questions. We have answers.

The Hormone Health Network is your trusted source for endocrine patient education. Our free, online resources are available at hormone.org.





Polycystic Ovary/Ovarian Syndrome (PCOS)

Underrecognized, Underdiagnosed,
and Understudied

2019



National Institutes of Health
Office of Research on Women's Health

www.nih.gov/women

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Appendix Eight:

Polycystic Ovary/Ovarian Syndrome: Underrecognized, Underdiagnosed, and Understudied



Section I: What is PCOS?

Polycystic ovary/ovarian syndrome (PCOS) is a set of symptoms related to an imbalance of hormones that can affect women and girls of reproductive age.¹⁻⁷ It is defined and diagnosed by a combination of signs and symptoms of androgen excess, ovarian dysfunction, and polycystic ovarian morphology on ultrasound.²

This informational booklet provides guidance for those who are concerned that they may have PCOS and those who have already been diagnosed. There is also information on current efforts to understand and treat PCOS.

At least 70%

of women with PCOS
remain undiagnosed in
primary care*

* Tomlinson, J. A., Pinkney, J. H., Evans, P., Millward, A., & Stenhouse, E. (2013). Screening for diabetes and cardiometabolic disease in women with polycystic ovary syndrome. *The British Journal of Diabetes & Vascular Disease*, 13(3), 115–123. doi:10.1177/1474651413495571



Section II: Defining PCOS through the years

To better understand what PCOS is, it is important to know how PCOS is defined and categorized. Although it is called polycystic ovary/ovarian syndrome, PCOS is not primarily defined by ovarian cysts.⁸ Rather, PCOS is defined by the presence of at least two of three diagnostic criteria. These diagnostic criteria have been defined three separate times—by the National Institutes of Health (NIH) in 1990, by the European Society of Human Reproduction and Embryology (ESHRE) and the American Society for Reproductive Medicine (ASRM) in 2003 (also known as the Rotterdam criteria), and by the Androgen Excess and PCOS Society (AE-PCOS) in 2006. In 2012, NIH endorsed the 2003 Rotterdam criteria for PCOS. See the various definitions below:

Criteria	NIH 1990	ESHRE/ASRM (Rotterdam) 2003	AE-PCOS 2006	NIH 2012 acceptance of Rotterdam 2003
Hyperandrogenism	✓	✓	✓	✓
Ovarian dysfunction	✓	✓	✓	✓
Polycystic ovarian morphology		✓	✓	✓
	2 of 2 required	2 of 3 required	2 of 3 required	2 of 3 required
Exclusion of conditions that mimic PCOS	✓	✓	✓	✓

Specific disorders with signs and symptoms that overlap with those of PCOS must be ruled out for an accurate PCOS diagnosis. These include hyperprolactinemia, non-classic congenital adrenal hyperplasia, and Cushing's syndrome. Because of the diagnostic challenges involved with PCOS, primary care providers might recommend seeing a gynecologist, which is a doctor who specializes in the health of a woman's reproductive system, an endocrinologist, which is a doctor who specializes in hormones, or a reproductive endocrinologist, which is a doctor who specializes in a woman's reproductive system, hormones, and infertility.

Section III: Signs of PCOS

Dermatological Features



Hirsutism



Balding



Acne



Oily skin



Skin discoloration
(acanthosis nigricans)

High levels of androgens typically lead to various dermatological symptoms.^{9,10} These include hirsutism (coarse and dark hair on the body areas where men typically grow hair—e.g., the face, abdomen, chest, and back), acne, and balding/alopecia. In adolescents, some of the dermatological symptoms may be caused by puberty rather than PCOS.

Menstrual Disorders



Amenorrhea



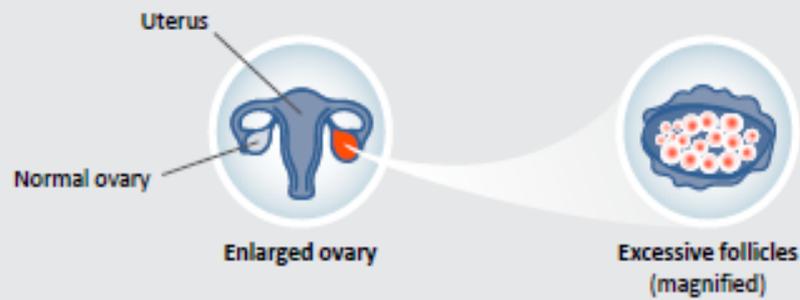
Oligomenorrhea



Menorrhagia

Menstrual disorders may vary, from complete absence of menstruation (amenorrhea) to menstruation delayed to 35 days or more (oligomenorrhea) to heavy bleeding (menorrhagia). Women with irregular menstrual periods have a 91% chance of having PCOS.¹¹ Those with PCOS are 15 times more likely to report infertility.¹²

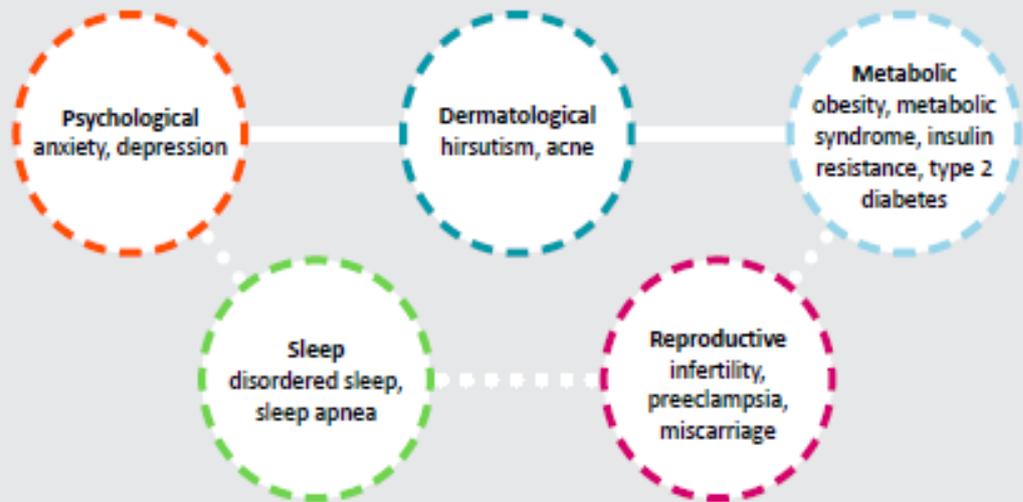
Polycystic Ovaries



Excessive follicles, which is defined as 25 or more follicles that are 2 mm to 10 mm in a single view of a transvaginal ultrasound, may be present in PCOS. Additionally, increased ovarian volume, an ovary that is more than 10 mL, may be present.

a. Health implications

PCOS Affects Many Areas of a Woman's Life



b. An international disease in many forms

Between 5% and 26% of women are affected by PCOS, depending on the diagnostic criteria applied.^{4,13} Women throughout the lifespan are at risk of being affected by PCOS, and women from all regions of the world—including Australia,¹⁴ China,¹⁵ Denmark,¹⁶ Greece,¹⁷ India,¹⁸ the Netherlands,¹⁹ Spain,⁴ the United Kingdom,²⁰ and the U.S.¹—have reported cases of PCOS. There are conflicting results concerning differences in PCOS rates by race, but severity and expression of symptoms may vary based on environmental factors.^{21,22} Understanding differences in symptoms among different racial and ethnic groups can help with the diagnosis:

- Relatively mild in White women
- Higher body mass index (BMI) in White women, especially in North America and Australia
- More severe hirsutism in Middle Eastern, Hispanic, and Mediterranean women
- Increased central adiposity, insulin resistance, diabetes, metabolic risks, and acanthosis nigricans (dark discoloration in body folds and creases) in Southeast Asians and indigenous Australians
- Lower BMI and milder hirsutism in East Asians
- Increased prevalence of metabolic syndrome in Black adolescents and young adults with PCOS compared with their White counterparts²³
- Higher BMI and metabolic features in Africans

c. Across the lifespan

Women who are affected by PCOS are at risk for chronic disease progression, which carries significant public health implications across the lifespan:

Adolescence



Diagnosing PCOS in adolescents is difficult because PCOS and puberty have similar features. These include irregular menstrual cycles and acne. For an accurate diagnosis, adolescents should have all three elements of the Rotterdam criteria for PCOS. Hyperandrogenemia is the main marker for PCOS in adolescents.⁷ Oligomenorrhea or amenorrhea should be present for at least 2 years after the first period. Forty percent of adolescents with menstrual irregularity have polycystic ovaries.

Reproductive age



Fertility issues and hirsutism are the primary issues for women at reproductive ages. Infertility is caused by high levels of androgen and luteinizing hormones, which can lead to irregular menstrual cycles and anovulation, which is an absence of ovulation during a menstrual cycle.²⁴ Women with PCOS have three to four times the rate of pregnancy-induced hypertension and preeclampsia.²⁴ There is also a significantly increased risk of endometrial cancer in women with PCOS.²⁵

Late reproductive to menopausal age



In addition to endometrial cancer, women over 54 years of age with PCOS were found to have a significant risk of ovarian cancer, though the risk for breast cancer is not significantly increased by having PCOS.²⁵ Older women with PCOS have a fourfold to sixfold increase of diabetes compared with women without PCOS.⁷ Older women with PCOS also have more severe hirsutism, in addition to an increased number of metabolic and cardiovascular risk factors.²⁶

d. Obesity and cardiovascular risks

The metabolic abnormalities caused by PCOS, specifically increased abdominal fat and insulin resistance, contribute extensively to increased risk of type 2 diabetes and cardiovascular disease. For women with PCOS, 50–80% have insulin resistance,⁵ 61% are overweight or obese,²⁷ and 50% become prediabetic or diabetic before age 40.²⁸

e. Psychosocial implications

In addition to physical symptoms, women with PCOS are at an increased risk of experiencing mental health issues, including anxiety and depression associated with infertility, obesity, and hirsutism.²⁹

1. **Anxiety.** Anxiety has been found to be significantly higher in women with PCOS compared with controls.^{30–32} PCOS may introduce an additional layer of complexity to the psychological profile and should be considered when evaluating the mental health of women.
2. **Depression.** The prevalence and risk of depression and depressive disorders in women with PCOS are 40–64%, significantly higher than in women without PCOS.^{33,34} Women with PCOS are four times more likely to be at risk for depression compared with women without PCOS.³⁵

f. Coping with worries about having PCOS

If you've been told you have PCOS, you may feel frustrated or sad.³⁶ Also, you may feel relief that there are reasons and possible treatments for the symptoms you have been having such a hard time dealing with—e.g., keeping a healthy weight, hirsutism, acne, or irregular periods. It can be difficult having a diagnosis without an exact cure. However, it's important for women with PCOS to know they are not alone. Finding a support network and a health care provider who knows a lot about PCOS and is someone you feel comfortable talking with is very important. Even though results may take a long time, it is important to keep working on a healthy lifestyle and not let PCOS get you down. Many women with PCOS report that talking with a counselor about their concerns can be helpful.³⁶

Section IV: Risk factors and preventive measures

What factors increase the likelihood of developing PCOS? There are four main risk factors:

a. Genetics

If a close family member, such as a sister or mother, has the condition, you have an increased, but not guaranteed, chance of developing PCOS.^{37,38} Even without a family history of PCOS, there are other risk factors that can lead to its development.



b. Diet

Additionally, diet has been found to be a contributing factor for PCOS. Fats and proteins from one's diet can form advanced glycation end products (AGEs) when exposed to sugar in the bloodstream.³⁹ These compounds are known to contribute to increased bodily stress and inflammation, which have been linked to diabetes and cardiovascular disease.⁴⁰ PCOS patients already have an increased likelihood for metabolic syndrome, cardiovascular issues, and diabetes. *Thus, it's best to limit exposure to AGEs. Animal-derived foods that are high in fat and protein are generally AGE-rich and prone to more AGE formation during cooking. In contrast, foods that are low on the glycemic index—such as vegetables, fruits, whole grains, and milk—contain relatively few AGEs, even after cooking.*⁴⁰



c. Lifestyle

Everyday habits greatly affect the development and severity of PCOS.

- Obesity is widely recognized as aggravating PCOS, so managing a healthy weight, especially abdominal circumference, is recommended.⁴¹
- Exercise helps to reduce many PCOS symptoms, such as depression, inflammation, and excess weight. Aim to incorporate exercise into your lifestyle.⁴¹ The Centers for Disease Control and Prevention (CDC) recommends 150 minutes (2 hours and 30 minutes) of moderate-intensity exercise per week or 75 minutes of high-intensity exercise per week and incorporating strength training 2 days per week.⁴²
- In addition to exercise, increase daily activity by taking the stairs, going on short walks, and stretching throughout the day. No matter the movement, stay consistent and choose an enjoyable activity.
- Women may want to limit inflammatory foods—such as dairy products, foods with gluten, and foods high in glycemic load, such as potatoes, white bread, and sugary desserts—as much as possible.⁴³ But if those foods do not cause bodily aggravation, then there is no need to eliminate them completely.

d. Environmental exposure risks

Environmental exposures to endocrine-disrupting chemicals may lead to female reproductive health issues, including PCOS. Research shows that endocrine-disrupting chemicals may pose the greatest risk during prenatal and early postnatal development, when organ systems are developing. Endocrine-disrupting chemicals can be found in many of the everyday products we use, including some plastic bottles and containers, liners of metal food cans, detergents, flame retardants, food, toys, cosmetics, and pesticides. Limiting personal exposure to endocrine-disrupting chemicals may benefit reproductive health.⁴⁴

Long-term medical follow-ups

It's important to follow up regularly with your health care provider and make sure you take all the medications prescribed to regulate your periods and lessen your chances of developing additional chronic diseases. Because women with PCOS have a higher chance of developing diabetes and having other health problems,⁴⁵ your health care provider may suggest having a:

- Blood sugar test once a year
- Hemoglobin A1C test (a test that tells how high your blood sugar has been the past 2–3 months) once a year or a glucose tolerance test every few years
- Vitamin D level test
- Thyroid function test



Section V: Further information for health care providers and researchers

a. Lack of awareness and diagnoses

The existence of multiple diagnostic criteria has made it difficult for health care providers to accurately and consistently diagnose women with PCOS.⁴⁶ This in turn causes patients to be dissatisfied with the diagnostic experience. In an international survey of 1,385 women, only 35% of women were satisfied with their diagnostic experience.⁴⁷ And 84% of women were dissatisfied with the information provided by their health care providers about PCOS and its symptoms.⁴⁷

Some health care providers are less aware of the various diagnostic criteria and phenotypes of PCOS.⁴⁷ Increased awareness of PCOS, its causes, and its symptoms may help the process of diagnosis and bring appropriate subsequent care. As a resource for patients and health care providers, there are international evidence-based guidelines for the assessment and management of PCOS published by researchers at Monash University in Australia. They fully endorse the Rotterdam PCOS diagnostic criteria in adults, which help serve as a PCOS diagnostic tool for medical professionals.²²



b. Possible phenotypes

Phenotypes are the observable characteristics of an individual. Women with PCOS can have any combination of the following phenotypes: excess androgen levels, ovarian dysfunction, and polycystic ovarian morphology. The table below depicts the possible phenotypes from the different combinations²:

Phenotype	Hypersandrogenism	Ovarian dysfunction	Polycystic ovarian morphology
Type A	✓	✓	✓
Type B	✓	✓	
Type C	✓		✓
Type D		✓	✓

Type A is the most severe phenotype, and D is the least severe phenotype. Types A and C are the most prevalent phenotypes.⁴⁸

c. Treatment options

Currently, there is no cure for PCOS, but symptoms can be managed with lifestyle changes and medications. Increasing daily activity—along with eating a high-fiber, low-sugar diet with lots of vegetables, whole grains, and fruits—will help to reduce excess weight and maintain a healthy waist circumference.⁴¹ Also, avoiding or reducing intake of processed foods, trans fats, and saturated fats helps to maintain stable blood sugar levels.⁴⁹ Consider consulting a nutritionist or dietitian. Furthermore, quitting smoking (or never starting) will also improve overall health.

In addition to these lifestyle changes, there are medications that can help with the management of PCOS, which should be tailored to each individual's risk profile, desires, and treatment goals.⁵⁰

- Low-androgen oral contraceptives that contain drospirenone or progestin-only pills, known as minipills⁵¹
- An inositol supplement (myo-inositol, D-chiro-inositol, or a combination of the two), which can help manage PCOS symptoms, such as hirsutism, acne, difficulty conceiving, etc.⁵²
- Metformin
- Lipid-lowering agents for women with lipid abnormalities



Section VI: Economic impact

The cost associated with PCOS derives from treatment of symptoms, including type 2 diabetes (\$1.77 billion), menstrual dysfunction (\$1.35 billion), and hirsutism (\$622 million).⁵³ In comparison, the U.S. health care system spends \$237 billion every year to treat diabetes and \$199 billion on heart disease and stroke.⁵⁴ A team of researchers published a study on the economic impact of PCOS in 2005; see the reference immediately below.** (This was the most up-to-date study on the economic impact at the time of the publication of this booklet.)

\$4.36 billion

Estimated annual cost of PCOS to the U.S. health care system in 2005**

** Azziz, R., Marin, C., Hoq, L., Badamgarav, E., & Song, P. (2005). Health care-related economic burden of the polycystic ovary syndrome during the reproductive life span. *Journal of Clinical Endocrinology and Metabolism*, 90(8), 4650–4658. doi:10.1210/jc.2005-0628

Section VII: How NIH is addressing PCOS



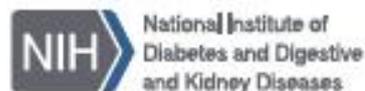
PCOS has been addressed by several institutes across the National Institutes of Health (NIH), including the *Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)*. Through its intramural and extramural organizational units, NICHD

supports and conducts a broad range of research to learn more about the causes of PCOS, its risk factors, and its possible treatments. Though research has demonstrated that PCOS has not just reproductive but also metabolic and mental health manifestations, NICHD funds PCOS research with a particular focus on reproductive health. See more at <https://www.nichd.nih.gov/health/topics/pcos>.



The National Institute of Environmental Health Sciences (NIEHS) has also provided significant contributions in the field of PCOS through its funding support in intramural and extramural research. The studies funded by NIEHS focus on environmental factors that

may play a significant role in the development of PCOS. These include exploring the role of estrogen signaling dysfunction in PCOS development,^{55,56} the origin of theca cells and the effects of irregular differentiation,^{57,58} and environmental factors and genetic predispositions for PCOS through a large multiphase study involving twin sisters.^{59,60} NIEHS efforts focus on causes and origins of PCOS and the development of treatments and preventive measures.



The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) is studying the effects of lifestyle changes on prediabetes metabolic syndrome and insulin resistance, for which PCOS is a risk factor.



On December 21, 2017, the U.S. Senate passed S. Res. 336 by unanimous consent, recognizing the seriousness of PCOS. The resolution encourages States, territories, and local governments to support increasing awareness of PCOS; educate women, girls, health care professionals, and the general public; improve efforts to diagnose and treat PCOS; and improve the quality of life and outcomes for women and girls with PCOS. The resolution also recognizes the need for further research, improved treatment and care options, and a cure for PCOS, acknowledging the struggles affecting all women and girls afflicted with PCOS residing within the U.S.

Section VIII: Conclusion

NIH has conducted valuable research on PCOS. Yet there are critical gaps remaining in the understanding of this disorder, such as the connections of comorbidities to PCOS. Women with PCOS make up the largest group of women at risk for developing type 2 diabetes and cardiovascular disease. They are also at a threefold greater risk for developing uterine cancer. In addition, women with PCOS are at higher risk for mental health disorders—such as anxiety and depression. Because of the serious effects that PCOS can have on many aspects of health, collaborative research efforts will be essential for advancing diagnosis and treatments and reducing the suffering of women with this disorder.

Resources

There are many efforts to address PCOS across the country, including efforts by the American Society for Reproductive Medicine, the American College of Obstetricians and Gynecologists, and the Androgen Excess and PCOS Society. Another noteworthy organization is PCOS Challenge: The National Polycystic Ovary Syndrome Association. It is a 501(c)(3) nonprofit support and advocacy organization for women and girls with polycystic ovary syndrome. PCOS Challenge's mission is to raise public awareness of PCOS and help PCOS patients overcome their symptoms and reduce their risk for life-threatening related diseases, such as diabetes, cardiovascular disease, and cancer. The organization's goal is for PCOS to be treated as a public health priority. Through its national advocacy initiatives, the PCOS Challenge shines light on the need for increased awareness, improved and expanded access to care, and increased funding for PCOS research. It funds efforts to help fight PCOS and organizes the country's largest conference dedicated to education and raising awareness, which typically occurs in mid-September.

The PCOS Awareness Association (PCOSAA) holds another conference around the same time annually. PCOSAA is a worldwide nonprofit dedicated to advocacy for PCOS. The organization and its volunteers are raising awareness of this disorder and providing educational and support services to help people understand what the disorder is, teach people how it can be treated, and decrease the impact of its associated health outcomes.



World PCOS Day is September 1 and marks the start of PCOS Awareness Month. If you see an abundance of teal in September, note that it is the awareness color for the condition.

Section IX: Definitions

The following definitions were taken or adapted from the NCI Dictionary of Cancer Terms, the NCI Dictionary of Genetics Terms, the MedlinePlus Medical Dictionary, or NICHD:

amenorrhea – The absence of a woman’s monthly menstrual period. Occurs when a woman does not get her period by age 16 or when she stops getting her period for at least 3 months and is not pregnant.

androgen – A type of hormone that promotes the development and maintenance of male sex characteristics. Testosterone is one main type of androgen.

cardiovascular disease – A broad term for problems with the heart and blood vessels. These problems are often caused by atherosclerosis and occur when fat and cholesterol are built up in blood vessel (artery) walls.

cyst – A closed, saclike pocket of tissue that can form anywhere in the body. It may be filled with fluid, air, pus, or other material. Most cysts are benign (not cancerous).

dyslipidemia – High levels of lipids (triglycerides or cholesterol) in the blood.

estrogen – A type of hormone that helps the body develop and maintain female sex characteristics and the growth of long bones. Estrogens are made by the body but can also be made in a laboratory. They may be used as a type of birth control and to treat symptoms of menopause, menstrual disorders, osteoporosis, and other conditions.

etiology – The cause or origin of a disease.

follicle – A sac or pouchlike cavity formed by a group of cells. In the ovaries, one follicle contains one egg. In the skin, one follicle contains one hair.

follicle-stimulating hormone (FSH) – A hormone made in the pituitary gland. In females, it acts on the ovaries to make the follicles and eggs grow. In males, it acts on the testes to make sperm. Also called follitropin.

hirsutism – The growth of coarse dark hair above the lips or on the chin, chest, abdomen, or back that resembles male-pattern hair growth.

hyperandrogenism/hyperandrogenemia – Ovarian overproduction of testosterone, leading to the development of male characteristics in a woman.

insulin/insulin resistance (IR) – Insulin is a hormone produced by the pancreas. It is needed to help cells

absorb glucose (sugar) for energy and to control the amount of sugar in the blood. Insulin resistance occurs when cells in key metabolic tissues—liver, muscle, and fat—use insulin less effectively than normal. As a result, a person’s blood sugar level rises above a normal range, placing the person at risk for health problems such as diabetes and kidney, eye, heart, and nerve disease.

lutinizing hormone (LH) – A hormone made in the pituitary gland. In females, it acts on the ovaries to make follicles release their eggs and to make hormones that get the uterus ready for a fertilized egg to be implanted. In males, it acts on the testes to cause cells to grow and make testosterone. Also called interstitial cell-stimulating hormone and lutropin.

menorrhagia – Heavy menstrual periods or excessive bleeding.

oligomenorrhea – Having infrequent menstrual periods—specifically, having periods that occur more than 35 days apart.

perimenopause – The time before menopause that may begin several years before one’s last menstrual period. Signs of perimenopause include more frequent periods at first and then occasional missed periods, periods that are longer or shorter, and/or changes in the amount of menstrual flow.

phenotype – The observable characteristics in an individual resulting from the expression of genes and influences of the environment; the clinical presentation of an individual with a particular genotype.

theca cells – Endocrine cells associated with ovarian follicles that play an important role in fertility by producing the androgen needed for ovarian estrogen production.

type 2 diabetes – The most common form of diabetes, a disease in which the body’s ability to produce or respond to the hormone insulin is impaired, resulting in elevated levels of glucose (sugar) in the blood. Type 2 diabetes is strongly associated with insulin resistance and with subsequent dysfunction in normal pancreatic insulin production. Risk factors for developing type 2 diabetes include obesity, older age, belonging to certain racial or ethnic minority groups, and the presence of other diseases, such as PCOS.

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نهديكم أطيب التحيات ...

م/ تقويم لغوي

كتابكم ذو العدد ٢٣٦ في ٢٩/٧/٢٠٢١، نعيد اليكم اطروحة طالبة الدراسات العليا/ الدكتوراه (رنا رزاق حميدي) والموسومة بـ(اثر متلازمة تكيس المبايض المتعدد على نوعية الحياة للنساء في سن الانجاب في مستشفيات مدينة الحلة) بعد تقويمها لغوياً واسلوبياً من قبل (م.د.احمد روضان سلمان) وهي صالحة للمناقشة بعد الأخذ بالملاحظات المثبتة على متنها.

للتفضل بالتسلم ... مع الاحترام

// المرافقات //

- اطروحة دكتوراه.
- إقرار المقوم اللغوي.

أ.د. أسامة عبد الكاظم مهدي

معاون العميد للشؤون العلمية

٢٠٢١/١/٥

الدراية

لا صر ١٥/١٥

// نسخة منه الى //

- مكتب السيد العميد المحترم... للتفضل بالاطلاع مع الاحترام.
- م.د.احمد روضان سلمان .. للعلم لطفاً.
- الشؤون العلمية.
- الصادرة



هاله

الخلاصة

الخلفية: بين النساء في سن الإنجاب ، تعد متلازمة تكيس المبايض هي أكثر حالات الغدد الصماء شيوعاً والسبب الأكثر شيوعاً لقلّة الخصوبة بسبب انقطاع الإباضة. يصيب ما يصل إلى (٨٪ - ١٠٪) من النساء في سن الإنجاب في جميع أنحاء العالم.

الهدف من الدراسة: قياس تأثير متلازمة تكيس المبايض على نوعية الحياة للمرأة.

المنهجية: دراسة وصفية شملت مائة وخمسين امرأة. المعلومات التي تم جمعها عن طريق الاستبيان خلال الفترة من الأول من مارس حتى الأول من مايو ٢٠٢٠.

النتائج: (٤٨٪) بفئة عمرية (٢٤-٣٠) سنة غالبية النساء متزوجات بنسبة (٨٨٪) من العينة المدروسة ، والغالبية حاصلين على تعليم ثانوي وبكالوريوس (٧٦.٧٪). فيما يتعلق بالمهنة (٥٤.٧٪) مشغولون. فيما يتعلق بالصحة الإنجابية ، كان (٦١.٤٪) يحاولن الإنجاب و (٢٤.٧٪) من النساء يعانين من مشاكل في الخصوبة ، و (٣٢.٧٪) لديهن دورات غير منتظمة. أما بالنسبة للأمراض المزمنة ، فإن (٦٧.٣٪) لا يعانون من أي أمراض مزمنة. بينما (١٤٪) من النساء مصابات بارتفاع ضغط الدم. فيما يتعلق بالأعراض التي تم الإبلاغ عنها ، أبلغ (٢٢.٧٪) من النساء عن زيادة الوزن و (١١.٣٪) أبلغن عن زيادة الشعر. فيما يتعلق بمستوى جودة الحياة حسب كل مجال من مجالات جودة الحياة. أظهرت النتائج أن المستوى الضعيف مرتبط بـ (مجال الشعرانية ٦٥.٣٪ ، مجال السمنة ٥٥.٣٪ ، مجال العقم ٤٩.٣٪) ، المستوى المتعادل متعلق بـ (المجال النفسي ٦٨٪ ، مجال عدم انتظام الدورة الشهرية ٤٦٪ ، مجال الرضا الجنسي ٤٣.٣٪).

الخلاصة والتوصيات: في الختام ، فإن الشعرانية ، والحيض غير المنتظم ، وصعوبات الإباضة (قلّة الخصوبة) ، والسمنة ، واضطرابات التمثيل الغذائي جميعها لها أثر سلبي على نوعية الحياة المتعلقة بالصحة عند النساء المصابات بمتلازمة تكيس المبايض. أوصت هذه الدراسة بأن تكون هذه النتيجة بمثابة دعوة لنا للاستيقاظ لتحديد الأهداف واعتماد الحلول التي يمكن أن تساعد النساء المصابات بهذه المتلازمة على تحسين نوعية الحياة المتعلقة بالصحة .



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المرتبطة بالصحة للنساء في سن الانجاب في مستشفيات
مدينة الحلة

أطروحة مقدمة الى

مجلس كلية التمريض / جامعة بابل

وهي جزء من متطلبات نيل درجة الدكتوراه فلسفة علوم
في التمريض

تقدم بها

رنا رزاق حميدي

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ربيع الآخر / ١٤٤٣ هجري

تشرين الثاني / ٢٠٢١ ميلادي

