Prevalence and Knowledge of a Systemic Review on

Polycystic Ovarian Syndrome

B. Pharm (Honors) Project Report

A project report submitted to the Department of Pharmacy, Daffodil International University for the partial fulfillment of Bachelor of Pharmacy Degree

Submitted By
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November 2022

Acknowledgement

The first thing I want to do is give God the glory for allowing me to take this course, finish my project, and write up the results of my project so that I may graduate with a Bachelor of Pharmacy. I'd like to use this opportunity to express my deepest respect and gratitude to my esteemed advisor, Dr. Sharifa Sultana, Associate Professor and Associate Head of the Department of Pharmacy at Daffodil International University. Please accept my sincere condolences. I am writing to you as Professor Dr. Muniruddin Ahamed, Head of the Department of Pharmacy at Daffodil International University. To all those who have helped me in any way with my research, writing, and preparation for this project, I am very grateful.

Declaration

I, hereby sincerely certify that the research project titled "Prevalence and knowledge of a systemic review on polycystic ovarian syndrome," which is a requirement for the Bachelor of Pharmacy (B. Pharm) program at Daffodil International University, Bangladesh, was done by me with the help of my supervisor from July to October 2022. Hosna Ara Rupa ID: Department of Pharmacy, DIU, ID: 183-29-134.

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APPROVAL

This project, entitled "**Prevalence and Knowledge of a Systemic Review on Polycystic Ovarian Syndrome**," was turned in to the pharmacy department at Daffodil International University. Its style and contents were approved, and it was accepted as partially satisfying the requirements for the degree of Bachelor of Pharmacy.

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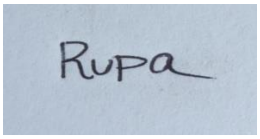

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Abstract

A diverse endocrine condition, polycystic ovarian syndrome (PCOS) is characterized by ovarian cysts, anovulation, and endocrine variance in women. According to estimates from the World Health Organization (WHO), PCOS affects more than 116 million women globally (3.4%). Depending on the criterion used, 6%-25% of reproductive-aged women are affected with polycystic ovary syndrome, which is now a well-known disorder. Genetics, neuroendocrine, lifestyle/environment, and obesity are among the risk factors that predispose people to PCOS. The pathophysiology of PCOS primarily focuses on hormonal disruption, insulin resistance, and hyperandrogenism, which cause poor folliculogenesis and increase the risk of related comorbidities such as endometrial cancer and type II diabetes. According to a study of the available information from throughout the world, the prevalence of PCOS may vary from 4% to 18% in general populations, but it may be as high as 26% in particular groups. This study gives a short summary of the clinical symptoms, risks, and pathophysiological treatments for anovulation, infertility, and PCOS.

Chapter: 1

Introduction

Chapter-1: Introduction

PCOS is a diverse endocrine illness that is characterized by the emergence of ovarian cysts, anovulation, and endocrine variation, all of which have a significant impact on the life of a woman [1]. Because of the disruption in the reproductive hormones, including LH and FSH as well as estrogen and testosterone, the normal menstrual cycle is disrupted, which can lead to irregular periods similar to oligo menorrhea and amenorrhea. An estimated 116 million women (3.4% of all women) around the world have polycystic ovary syndrome (PCOS), according to the World Health Organization (WHO) [2]. It is possible to diagnose**(Table1)** polycystic ovary syndrome (PCOS) when hyperandrogenism, monthly abnormalities, and cysts of variable sizes in the ovaries are present, despite the fact that major variances exist between individuals. This multifactorial syndrome typically manifests itself for the first time in adolescent patients who are at high risk for the development of a number of comorbidities, including obesity, type II diabetes, infertility, endometrial dysplasia, cardiovascular disorders, and mental disorders [3]. Because of the complexity of this disorder, many different sets of diagnostic criteria have been developed for the confirmation of PCOS. These diagnostic criteria are listed below in Fig. 1 [4,5]. Anti-Mullerian hormone (AMH), in addition to being one of the three diagnostic criteria, is also a marked hormonal indication that plays a significant role in the maturation and growth of ovarian follicles in women who have PCOS [6]. An excessive amount of AMH secretion impedes the growth of follicles, which ultimately leads to ovarian dysfunction.

Table 1. Diagnostic Criteria of Polycystic Ovary Syndrome.

Year	Institute	Consensus Criteria
1990	NICHD/NIH	Patient demonstrates both: 1. Clinical and/or biochemical hyperandrogenism, and 2. Oligo-ovulation or chronic anovulation
2003	ESHRE/ASRM (Rotterdam)	Patient demonstrates at least two of three criteria: 1. Oligo-or chronic anovulation 2. Clinical and/or biochemical hyperandrogenism 3. Polycystic ovarian morphology
2006	AES	Patient demonstrates both: 1. Clinical hyperandrogenism and/or biochemical hyperandrogenism, and 2. Oligo-anovulation and/or polycystic ovaries

NIH/NICH: National Institute of Health/National Institute of Child Health and Human Disease ESHRE/ASRM: European Society of Human Reproduction and Embryology/American Society for Reproductive Medicine; AES: Androgen Excess Society.

1.2.Etiology

PCOS is an oligogenic disorder, which means that it is caused by a combination of multiple genes and environmental factors interacting to cause a wide variety of clinical and biochemical manifestations [7]. In spite of the fact that its genetic cause is a mystery, polycystic ovary syndrome (PCOS) frequently runs in families. However, it is not clear how PCOS is passed down through families. Because there aren't any phenotypic data, it's hard to do a formal analysis of segregation. But new research shows that PCOS tends to run in families in a way that looks like an autosomal dominant patern [8]. Environmental variables (such as obesity) that contribute to polycystic ovary syndrome (PCOS) may be exacerbated by lifestyle factors (such as poor food and a lack of exercise). Weight loss and increased physical activity have been shown to improve PCOS-related fertility and metabolic symptoms [9].

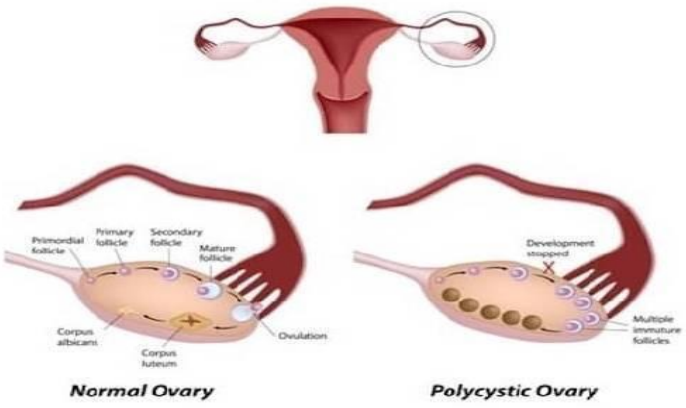


Figure 1: Polycystic ovarian syndrome

1.3:Epidemiology

PCOS is the endocrine condition that affects women most frequently between the ages of 18 and 44. [10] Depending on how the condition is defined, it affects anywhere from 2% to 20% of people in this age range. [8] Polycystic ovary syndrome (PCOS) is the most common cause of infertility due to a lack of ovulation, and it could be helpful in diagnosing inpatients with the condition. The condition that is now known as PCOS was first described in a medical journal that was published in Italy in the year 1721. [11] The prevalence of PCOS is determined by the diagnostic criteria that are selected. As of the year 2010, the World Health Organization (WHO) estimates that this

condition affects 116 million women around the world, which is 3.4% of all women. [12] Another estimation places the proportion of affected women in the reproductive-age population at 7%. [13] A different study that used the Rotterdam criteria discovered that approximately 18% of women had PCOS and that 70% of those women had not been diagnosed with the condition in the past .Due to a lack of large-scale scientific studies, the prevalence of PCOS also varies by country. For example, the prevalence of PCOS in India is reported to be 1 in 5 women[14].

There have only been a few studies that have looked into the differences in cardiometabolic variables amongst women of different races who have PCOS. There is also a paucity of information about the racial disparities that exist in metabolic syndrome and the risk of cardiovascular disease among adolescents and young adults who have PCOS. [15] The first study to look at racial differences in depth found that there are substantial racial differences in the factors that put people at risk for cardiovascular disease. African American adult women with polycystic ovary syndrome were much more likely to be obese and had a significantly greater prevalence of metabolic syndrome when compared to white adult women with the condition. [16] It is very important to keep looking into the differences between women of different races who have PCOS so that all women with PCOS can get the help they need.

There are signs of polycystic ovaries on ultrasonography in 8–25% of women who don't have the syndrome [17] [18]. It is found that 14% of women who take oral contraceptives have polycystic ovaries[19 .Ovarian cysts are another common side effect of IUDs that release levonorgestrel (IUDs)[20] .
Few studies have looked at how cardiometabolic factors are different for women of different races who have PCOS.

1.4: Signs and symptoms

Symptoms of PCOS include either absent or excessive menstruation, excess hair growth , acne, pelvic pain, infertility, and velvety dark skin patches. [9] Difficult to describe, the most common signs and symptoms (**Table 1**) of this metabolic, endocrine, and reproductive illness include: irregular or absent menstrual periods; ovarian cysts; enlarged ovaries; excess androgen; increased body fat; and hirsutism [10]. It has been associated with conditions such as type 2 diabetes, obesity,

OSA, cardiovascular disease, mental disorders, and endometrial cancer [11]. The follicles on each ovary grow at a rate of more than twice, thrice, or more than ten times the normal rate, which is what causes this condition. Differentiating between a woman with PCOS and the syndrome itself (polycystic ovaries) is crucial. PCOS is diagnosed when two of the three symptoms (PCO, anovulation/oligo-ovulation, and hyperandrogenism) are present. Therefore, a woman can have PCOS and not ovulate or have elevated testosterone levels without necessarily having PCOS. However, having PCO does not necessarily indicate that a person also has PCOS[12].Signs and symptoms of PCOS(**Table2**)[13].

Ovary enlargement and many cysts
Menstrual periods that don't follow a regular pattern
Pain in the pelvis
Hirsutism
Alopecia
Acne
Acanthosis
Acne scars
Sebonhoea

1.5: Pathophysiology

PCOS is caused by problems with the hypothalamic–pituitary axis, insulin secretion and action, and how the ovaries work. [8, 9] Even though no one knows what makes PCOS happen, it has been linked to insulin resistance and being overweight. The link with insulin function makes sense because insulin helps control how the ovaries work, and when there is too much insulin, the ovaries make androgens, which can cause anovulation. Stopping the growth of follicles is a clear sign that something is wrong with the ovary.

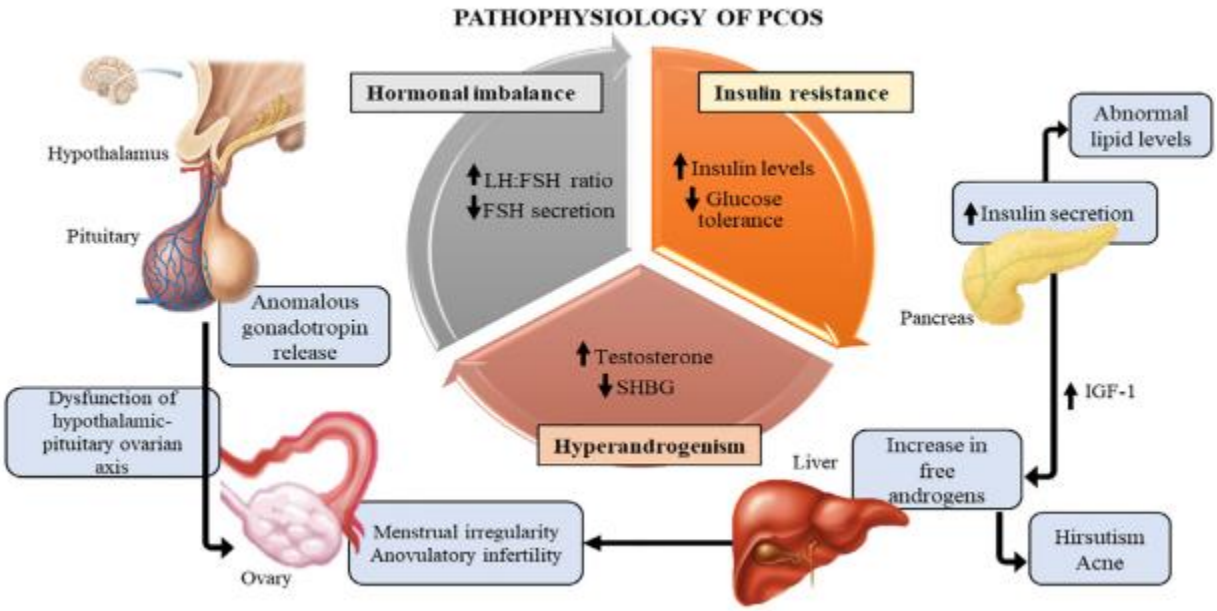


Figure2: Pathophysiology of PCOS

High levels of luteinizing hormone (LH) and gonadotropin–releasing hormone (GnRH) are signs of PCOS, while levels of follicular-stimulating hormone (FSH) are low or stay the same. As the level of GnRH goes up, the stimulation of the ovarian the cal cells makes more androgens [15].

Follicular arrest can be fixed by raising the level of FSH made by the body or by giving the body extra FSH[9]. Some studies suggest that PCOS is the main problem in young girls who are starting puberty and whose families have a history of the disorder. About 25% of people with PCOS have high levels of prolactin [16].

The goal of therapy is to lower insulin levels and stop the ovaries from making androgens, which will correct sex hormone–binding globulin (SHBG) levels. This rise in SHBG levels can be used to treat PCOS symptoms in a healthy way. Studies have shown that the thecal cells in people with PCOS make more testosterone, progesterone, and 17-hydroprogesterone than thecal cells in people who don't have PCOS. Patients with PCOS who have high levels of these cells have cytochrome P450 (CYP) 11A, 3-HSD2, and CYP17 genes [17]. Obesity is often a sign of PCOS, but it is not needed to make a diagnosis.

1.6: Diagnosis

PCOS can be found with three methods. In 1990, the National Institutes of Health (NIH) National Institute of Child Health and Human Development (NICHD) brought together a group of experts who came up with the first known criteria for PCOS [18]. Over the next 10 years, it was found that the shape of the ovaries was a key part of the diagnosis. A workshop was held in Rotterdam. It was put on by the European Society of Human Reproduction and Embryology (ESHRE) and the American Society for Reproductive Medicine (ASRM). During the workshop, the NICHD/NIH criteria were changed to include the shape of polycystic ovaries seen on pelvic ultrasound. Then, it was decided that only two of the three criteria needed to be met to make a PCOS diagnosis.

In 2006, the Androgen Excess Society (AES) proposed using the Rotterdam tool in conjunction with the NICHD/NIHS criteria. The AES describes PCOS as a condition predominantly characterized by androgen excess, combined with several combinations of phenotypic characteristics that may aid in a more precise diagnosis, such as hyperandrogenism, hirsutism, oligo-or anovulation ovulation, and/or polycystic ovaries [18].

Diagnostic Tools for Polycystic Ovary Syndrome

NICHD/NIH Criteria (1990)	ESHRE/ASRM Rotterdam Criteria (2003)	Androgen Excess Society (AES) Criteria (2006)
• Hyperandrogenism • Oligo-ovulation/anovulation • Exclusion of other related disorders	• Hyperandrogenism • Oligo-ovulation/anovulation • Polycystic ovaries	• Hyperandrogenism • Oligo-ovulation/anovulation • Polycystic ovaries • Exclusion of other related disorders

A workshop on evidence-based methods for polycystic ovarian disease was sponsored by the NIH in 2012. The expert panel came to the conclusion that each criterion had its own advantages and disadvantages, but that the use of many criteria was confusing and impeded the understanding of PCOS [19].

If PCOS is suspected, a complete medical history, physical exam, blood tests, and pelvic ultrasound should be performed. An increased body mass index (BMI), menstrual cycle irregularities, excessive hair growth in women, skin changes, and hypertension are all things that may be gleaned from a patient's medical history and examination by a doctor (BP). Blood is collected to analyze hormone, glucose, and cholesterol levels [20], and a pelvic ultrasound is used to identify ovarian cysts.

During the diagnostic phase, it is important to rule out other possible causes related to reproductive, endocrine, and metabolic diseases. Doctors should rule out adrenal hyperplasia, Cushing's disease, and hyperprolactinemia before diagnosing PCOS [5, 18]. There is an increased risk of myocardial infarction (MI), dyslipidemia, hypertension, anxiety, depression, endometrial cancer, and sleep apnea, and studies show that more than half of PCOS patients will develop prediabetes or diabetes following diagnosis. Also, women with PCOS who get pregnant should be made aware of the increased dangers of preeclampsia, diabetes, and abortion.

1.7:Therapeutic options for PCOS

Although the illness has not yet been cured by pharmacological therapy, various intervening drugs are used to treat the clinical symptoms of PCOS, as indicated in Fig. 3. [21]. Pharmacological

treatments and a change in lifestyle help to improve the overall situation. How you treat ovulatory dysfunction, hyperandrogenism, insulin resistance, and infertility depends on the symptoms and cause [22].

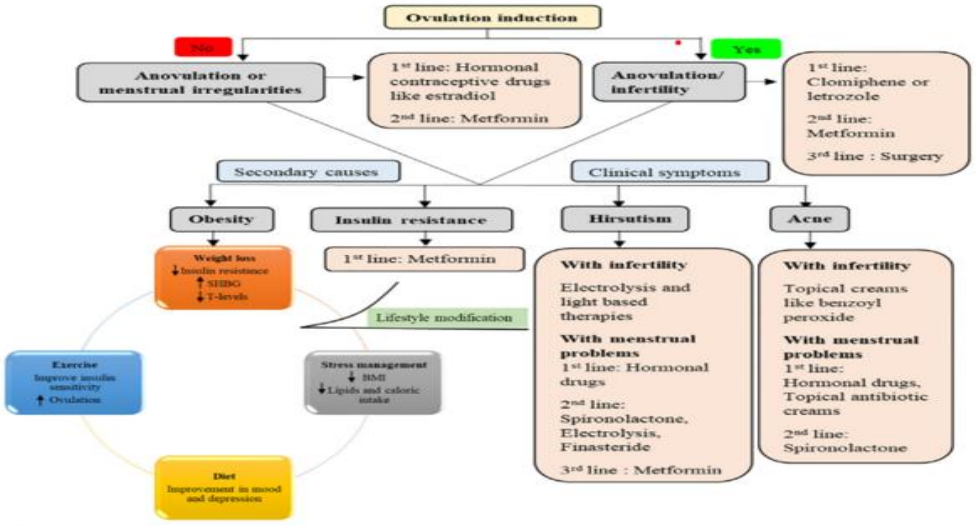


Fig. 3. A plan for the care of polycystic ovarian syndrome including methods for addressing anovulation, infertility, and related clinical problems.

1.8: Oral contraceptives (OCPs)

There are two types of OCPs: those that simply include progesterone and those that also contain estrogen (up to 50g) plus progesterone (norethisterone, desogestrel) [23]. They are the first line of defense for women with irregular menstrual cycles and a desire to avoid ovulation. Increasing SHBG levels is how OCPs lower blood androgens (Figure 4). [24]. Using OCPs lowers the danger of developing ovarian cancer in women with PCOS. However, there is a wide range of lipid profiles among OCP users, which may lead to metabolic abnormalities [25], despite the fact that OCP usage has little effects on insulin resistance. As a result, OCP deployment should be calibrated to the degree of risk involved and quickly halted in the event of a conflict.

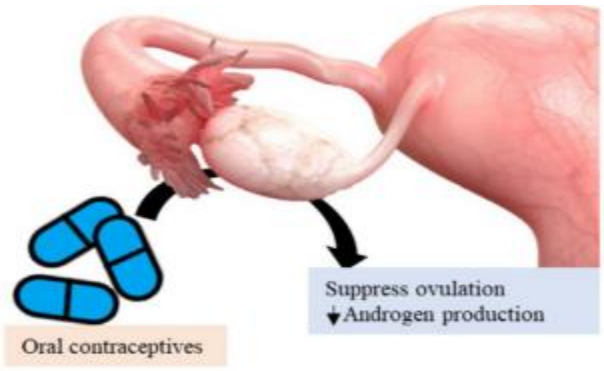


Figure 4:Mechanism of OCPs.

1.9: Antiandrogens

Spironolactone, flutamide, and cyproterone acetate are among the medications in this class that are favored as first-line treatments for hirsutism because they reduce androgen output by inhibiting androgen receptors [27]. At high concentrations, the aldosterone antagonist spirolactone has an antiandrogenic effect. Because spirolactone alone results in more frequent menstrual periods, it is typically used with OCPs to create a synergistic effect and address the issue [28]. Prostate cancer is treated with flutamide, an anti-androgen that is well tolerated. It treats hirsutism with the same efficiency as spironolactone. Flutamide is used with metformin because, when taken alone, it can be harmful to the liver [29]. An antiandrogen with strong progesterogenic properties is cyproterone acetate [30]. When combined with ethinylestradiol, cyproterone acetate is used as a treatment for hirsutism and acne. A 5-reductase inhibitor called finasteride reduces hirsutism scores[31]. Due to its teratogenic effects, finasteride's use in women is constrained. Women who are postmenopausal or who don't want to ovulate take it [32].

1.9.1. Insulin sensitizers

This class of medicine is commonly used to treat metabolic co-morbidities associated with PCOS by reducing insulin resistance and regulating insulin levels. By lowering the IR, the level of androgen will drop, which will cause the menstrual cycle to get longer[33].

1.9.2. Metformin

Metformin is a mass-produced biguanide used to treat insulin resistance and restore menstrual regularity in PCOS patients [34]. Metformin enhances glucose absorption and utilization, hence reducing insulin resistance in PCOS patients (23) In contrast to other insulin-regulating medicines, which cause either hypoglycemia or hyperglycemia as a side effect, it regulates the glucose level [35]. Metformin operates indirectly by lowering insulin levels in conjunction with a decrease in CYP17 cytochrome activity, which is implicated in the generation of androgens, and an increase in SHBG, resulting in a decrease in free testosterone levels [36]. PCOS individuals who use metformin experience a small improvement in their lipid profile [37]. The use of metformin during pregnancy has no teratogenic effects and lowers inflammation and pregnancy-related problems [38,39]. Combining clomiphene citrate with infertile PCOS patients was proven to boost ovulation and conception rates (29%). Metformin and antiandrogens like flutamide work well together in women with PCOS who are overweight, but flutamide has not been found to be safe for lab animals [40].

Improvements in hyperandrogenism were noted in PCOS women receiving dexamethasone and metformin treatment coupled with lifestyle changes [41]. Oocyte quality improved when metformin was added to the ovulation-inducing protocol for IVF PCOS patients (32). Metformin can stop women from getting the long-term illnesses that are linked to PCOS, such as endometrial cancer, type 2 diabetes, heart disease, and high blood pressure [42].

1.9.3. Thiazolidinediones

This class of drugs, sometimes known as glitazones, includes rosiglitazone and pioglitazone, which reduce the activity of the 11-ß-HSD enzyme, which converts cortisol [43]. They are the second-line medication of choice for PCOS patients who are insulin-resistant [44].As a result of PPAR-gamma being stimulated by TZDs, adipose tissue becomes more sensitive to insulin. TZDs are prescribed to women with PCOS who are clomiphene-resistant because they show promise in increasing ovulation and conception rates [45].By raising SHBG levels and changing the distribution of adipose tissue, TZDs reduce the levels of excess androgens. TZDs reduce the inflammatory mediators that diabetes and obese women's bodies exacerbate more [46]. Studies examining the combined effects of metformin and TZDs found no evidence of superiority; both drugs increased ovulation rates, insulin resistance, and menstrual cycle regulation [47]. Since

TZDs are category C medications, their usage should be monitored because it may put the developing fetus at danger in experiments with animals [48].

1.10. Ovulation-inducing substances

Clomiphene citrate (CC) is the medicine of choice for treating sterile anovulatory women [49]. By blocking the estrogen receptor through a negative feedback mechanism, CC increases FSH levels. It is recommended for the therapy of anovulatory PCOS patients. However, pregnancy rates vary greatly by BMI, with BMI less than 30 increasing the pregnancy rate and vice versa [50]. With clomiphene, there is a 8% chance of having more than one baby, but there is no risk of hyperstimulation [51].

Patients who do not react to clomiphene citrate or who do not respond to clomiphene treatment for anovulation may benefit from tamoxifen's comparable mechanism of action [52]. Tamoxifen has a beneficial effect on the endometrium and cervical mucus, in contrast to clomiphene. Combination trials of clomiphene and tamoxifen demonstrated a considerable increase in the pregnancy rate [53]. This is likely attributable to tamoxifen's positive impact on the uterine lining. Clomiphene and tamoxifen had equivalent effects on ovulation and conception rates [54].

Letrozole is an off-label aromatase inhibitor that blocks the mechanism for turning testosterone into estrogen and promotes FSH, which helps in folliculogenesis [55]. Letrozole has an advantage over clomiphene since it does not deplete estrogen receptors and does not have an antiestrogenic effect on the endometrium [56]. Letrozole therefore works similarly to clomiphene in ovulation induction and is a preferable medication alternative [57]. According to studies, letrozole is superior to CC in treating anovulatory infertility in PCOS individuals [58]. When the two aromatase inhibitors, letrozole and anastrozole, were compared[59], the rate of pregnancy was higher with letrozole than with anastrozole.

For anovulatory infertile PCOS women, gonadotropins like recombinant FSH and human menopausal gonadotropin (HMG) are the second line of treatment [60]. Patients with PCOS can benefit from low-dose FSH medication for ovulation induction and increased pregnancy rates[61]. According to an interventional investigation, the low-dose step-up HMG strategy produced

favorable outcomes. Gonadotropins may be too expensive to provide during timely intercourse, so intrauterine insemination or invitro fertilization are used instead [62,63].

For women with PCOS who are clomiphene-resistant or do not respond to clomiphene to induce ovulation, laparoscopic surgery is a second-line surgical option [64].By using a laser or diathermy, laparoscopic ovarian drilling (LOD) ruptures the ovary several times [65].LOD lowers the chance of multiple pregnancies and ovarian hyper stimulation. despite the fact that ovarian adhesion in women is a long-term risk factor for LOD [66]. The ovary is further harmed by ovarian drilling since it reduces the size and volume of the ovarian tissue. However, research has shown that depletion in ovarian size in PCOS women indicates good ovarian function [67].

Without any related risks, in-vitro fertilization (IVF) is advised as a third-line therapy option for treating infertility in PCOS women[68]. In PCOS women getting IVF, adjuvant metformin therapy for a brief length of time improves pregnancy rates. IVF is hard to do, has bad side effects (mostly overstimulating the ovaries), and costs a lot of money to treat [69].

1.11. Lifestyle Modification

Since PCOS is a chronic condition with a higher likelihood of having associated comorbid conditions like type II diabetes, changing one's lifestyle is the most important and practical course of action for PCOS sufferers [71]. Studies have shown that dietary, physical activity, and attitudinal modifications have a positive effect on body weight, insulin resistance, and testosterone levels [72].

1.12.Additional Cosmetic Procedures

In addition to oral contraceptives and anti-androgens, laser or electrolysis therapy can be used to permanently reduce hair in hirsutism sufferers. Laser therapy works best on those with light complexions and dark hair since it depends on the contrast between light and dark for the optimum result. The laser instrument should be made to treat darker skin tones if the user has darker skin. Topical minoxidil can be used to treat male pattern hair loss, and enflorane hydrochloride 13.9% cream can be used to stop hair from growing.

Chapter-2

Purpose of the Study

Chapter-2: Purpose of the Study

PCOS, often known as polycystic ovarian syndrome, is a complicated hormonal disorder. PCOS has been linked to a number of health issues, including erratic menstrual periods, increased hair growth on the face and body, acne, obesity, decreased fertility, and an increased chance of developing diabetes.

- Knowledge about disease of PCOS
- Identify risk factors that place PCOS women at high risk for cardimetabolic and condition related PCOS
- To know sign and symptoms complications
- List the different diagnostic criteria for PCOS
- knowledge the pathophysiologic theories of PCOS
- knowledge the different treatment modalities in the management of PCOS and potential psychopharmacologic medication interactions
- Give an overview of polycystic ovarian syndrome's epidemiology.
- Prevention and Drugs monitoring of PCOS.
- Compile data for further uses.

Chapter-3

Methodology

Chapter-3:Methodology

3.1. Search strategy

Data for this overview came from publications published between 2001 and 2021 and from electronic databases including Google Scholar, Scopus, PubMed, Science Direct, and Web of Science, among others.

3.2. Inclusion Criteria & Exclusion criteria

The articles were searched with the keywords: ‘’PCOS’’, PCOS treatment, sign and symptoms etc. All human and animal studies investigating the pharmacology of drugs were included in this review article.

3.4. Data analysis

To study and create the objects, an exploratory reading of the numerous articles was done while evaluating the work's title and abstract. After finishing the exploratory analysis, read just the papers that discussed How PCOS occur in the human body and prevent PCOS in the human body. Making a primary word file, working on paraphrasing, and using Grammarly before producing a final review paper.

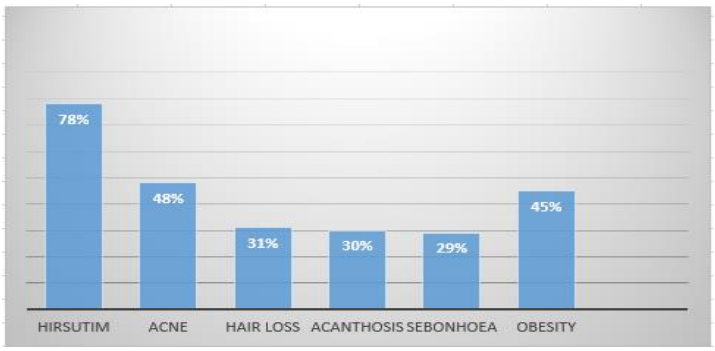
Chapter-4

Result & Discussion

Chapter-4: Result & Discussion

Result & Discussion

PCOS is the endocrine condition that affects women most frequently between the ages of 18 and 44[73]. Depending on how the condition is defined, it affects anywhere from 2% to 20% of people in this age range[74]. Polycystic ovary syndrome (PCOS) is the most common cause of infertility due to a lack of ovulation, and it could be helpful in diagnosing inpatients with the condition[75] .The condition that is now known as PCOS was first described in a medical journal that was published in Italy in the year 1721[76].



Graph 1: Clinical symptom prevalence rates in polycystic ovary syndrome (PCOS) patients

The prevalence of PCOS is determined by the diagnostic criteria that are selected. As of the year 2010, the World Health Organization (WHO) estimates that this condition affects 116 million women around the world, which is 3.4% of all women. [77] Another estimation places the proportion of affected women in the reproductive-age population at 7%. [78] A different study that used the Rotterdam criteria discovered that approximately 18% of women had PCOS and that 70% of those women had not been diagnosed with the condition in the past[79] .Due to a lack of large-scale scientific studies, the prevalence of PCOS also varies by country. For example, the prevalence of PCOS in India is reported to be 1 in 5 women[71]. A total of one hundred (100) PCOS-stricken females participated in the research. Figure 1 shows that the majority of the women in each of the two groups were between the ages of 18 and 25. More than two-thirds of PCOS women were married at the time of diagnosis. 70% of the first group and 58% of the second group were rural dwellers.

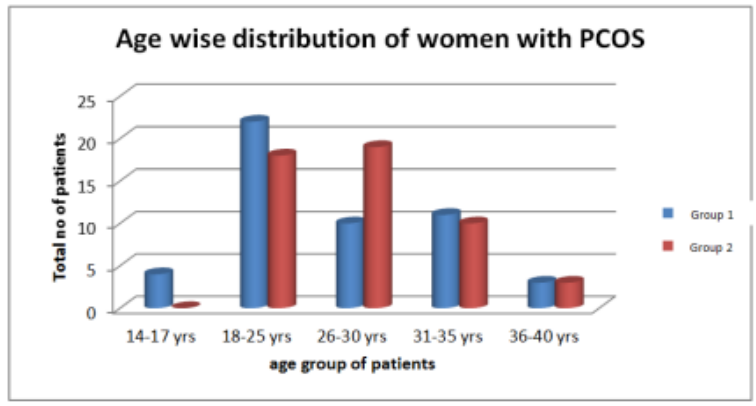


Figure 1: Age wise distribution of patients with PCOS.

There have only been a few studies that have looked into the differences in cardiometabolic variables amongst women of different races who have PCOS. There is also a paucity of information about the racial disparities that exist in metabolic syndrome and the risk of cardiovascular disease among adolescents and young adults who have PCOS. [75] The first study to look at racial differences in depth found that there are substantial racial differences in the factors that put people at risk for cardiovascular disease. African American adult women with polycystic ovary syndrome were much more likely to be obese and had a significantly greater prevalence of metabolic syndrome when compared to white adult women with the condition. [76] It is very important to keep looking into the differences between women of different races who have PCOS so that all women with PCOS can get the help they need. To calculate the socioeconomic status we used revised kuppuswamy scale we had 54% in group 1 and 52% of women with PCOS in group 2 who were in the lower middle class (Figure 2) [23].

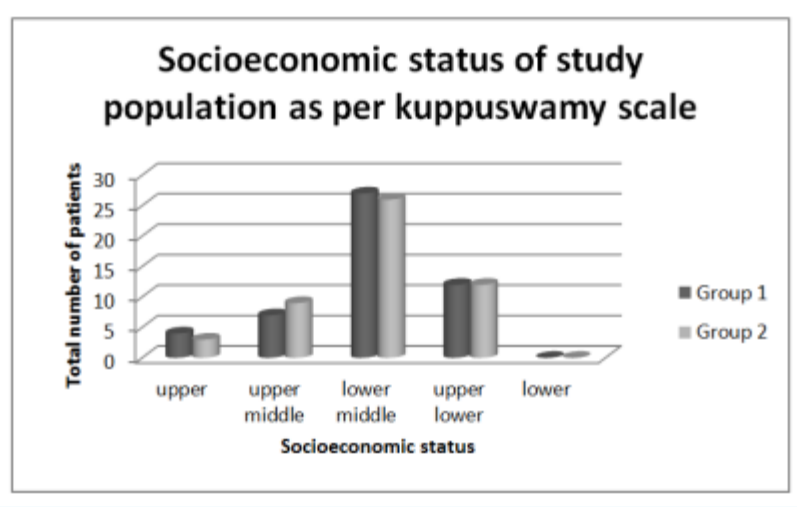


Figure 2: Socioeconomic status of women with PCOS as per revised kuppuswamy scale.

Only 5 out of every 100 PCOS patients in the study had a family history of the condition. The majority of the women experienced menstrual irregularities with cycles lasting anywhere from 60 to 90 days.flows for about a week and a half. All participants had recently been diagnosed with PCOS and were in the treatment-free phase.The majority of these women experienced dysmenorrhea and heavy bleeding.There are signs of polycystic ovaries on ultrasonography in 8–25% of women who don't have the syndrome [79]. It is found that 14% of women who take oral contraceptives have polycystic ovaries .Ovarian cysts are another common side effect of IUDs that release levonorgestrel (IUDs)[80] .Few studies have looked at how cardiometabolic factors are different for women of different races who have PCOS**.**

Chapter-5

Conclusion

Chapter-5: Conclusion

Conclusion

The review emphasizes the complexity of PCOS. It's not easy to get to the heart of the mechanism and put it into words. As a result, no treatment can be touted as a silver bullet because it only addresses the syndrome's clinical symptoms. Herbal remedies and other forms of medicinal of the plants being considered for treatment purposes. The long-term health of patients can be improved with more research into the advanced and the drugs that affect it. Changes in one's way of life may help reduce PCOS-related symptoms.

Chapter-6

Reference

Chapter-06: Reference

Reference

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