Perceived Effects and Prevention of Polycystic Ovary Syndrome among Women Living in Ilorin-South LGA, Kwara State, Nigeria

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Abstract

Background: Women of reproductive age are susceptible to polycystic ovarian syndrome (PCOS), one of the most prevalent hormonal disorders. The disease begins at puberty and symptoms could fluctuate over time. This condition is characterized by disruption of follicular development, which affects the ovaries and ovulation. This study aimed to identify obesity and infertility as perceived effects, while checking a healthy diet as perceived prevention of polycystic ovary syndrome among women living in the study area.

Methods: A descriptive survey was conducted with 258 respondents. The instrument used for gathering data was tested and verified questionnaire. The data obtained were tested using chi-square analysis.

Results: The study revealed that obesity ($\chi 2$ =42.837) and infertility ($\chi 2$ =76.729) are significant perceived effects of polycystic ovary syndrome and healthy diet ($\chi 2$ =39.442) is a significant perceived prevention of polycystic ovary syndrome @ 0.05 alpha level.

Conclusion: The study concluded that there is a need for proactive interventions to reduce menace caused by PCOS. The study suggests that women should eat healthy to help manage PCOS, reduce weight and improve fertility.

Keywords: Perceived, effect, prevention, polycystic, ovary and syndrome

Introduction

Polycystic ovary syndrome (PCOS) is a hormonal condition that affects women of reproductive age. This condition mostly begins during the adolescent phase of human development; however, symptoms may fluctuate over time (World Health Organization, 2023). Polycystic ovary syndrome is characterized by a condition that affects the ovaries and ovulation and disrupts follicular development. In a typical menstrual cycle, an ovarian follicle matures and releases an egg during ovulation. However, in PCOS, these follicles may not mature adequately, resulting in the absence of a dominant follicle that would typically release eggs. Polycystic ovary syndrome has three distinct characteristics: cysts in the ovaries, which are fluid-filled sacs or pockets that develop within or on the surface of an ovary; elevated levels of

male hormones, specifically testosterone; and irregular menstrual periods.

The term "polycystic" signifies the presence of multiple cysts, each containing an immature egg. Consequently, ovulation is hindered because the eggs do not reach maturity. The absence of ovulation leads to a disruption in estrogen levels, a collection of hormones that are pivotal for the growth and regulation of female reproductive tissues, as well as for the menstrual cycle. Progesterone, a steroid hormone, plays a crucial role in the female reproductive system. Additionally, there is a follicle-stimulating hormone, a gonadotropin that stimulates reproductive organs, and a luteinizing hormone that also aids in regulating the reproductive system. Estrogen and progesterone levels will be lower than normal, whereas testosterone levels will be greater than normal (Watson, 2019).

Polycystic ovary syndrome is a complicated and multifaceted disorder, with varied and often indistinct characteristics. It has the potential to give rise to health-related issues, including hormonal imbalances, irregular menstrual periods, hirsutism (excessive and unwanted hair growth in areas typical for male hair growth, such as the chest, face, and back), elevated androgen levels, anovulation (a condition where the ovaries do not release an egg during the menstrual cycle), and the presence of cysts in the ovaries. Polycystic ovary syndrome (PCOS) is a significant contributor to infertility, globally attributed to its association with irregular ovulation resulting from irregular menstrual cycles. Despite its profound impact on women's fertility, the exact cause of PCOS remains unknown. However, the detection mode may include family history, physical examination, increased awareness, and blood tests for diagnosis. Understanding and recognizing PCOS is crucial for determining its benefits for a healthy lifestyle as well as its effects on women's longevity and quality of life (Haq et al., 2017).

There are several types of polycystic ovarian syndrome, including pill-induced, insulin-resistant, inflammatory, and hidden-cause forms. Among these, insulin-resistant PCOS is highly prevalent and is attributed to factors such as smoking, pollution, excessive sugar consumption, and trans fat. Pill-induced PCOS is closely associated with the use of birth-control pills. One of the most prevalent hormonal disorders affecting women of reproductive age is PCOS, a serious health issue. Up to 70% of cases go undetected, and the illness is thought to affect 8–13% of women of reproductive age (World Health Organization, 2023).

Polycystic ovary syndrome (PCOS) is an important reproductive disorder, which is classified as a metabolic disorder due to its impact on the ovaries. This metabolic disorder arises from disruptions in various metabolic processes in the body. While PCOS primarily manifests with features related to the reproductive system, it is concurrently associated with metabolic irregularities affecting multiple organ systems. Notably, PCOS is linked to metabolic dysfunction, including insulin resistance, hyperinsulinemia, and

abnormalities in glucose metabolism, thereby reducing the risk of type 2 diabetes mellitus. Approximately 40% of affected women suffer from insulin resistance and produce high levels of insulin to prevent this problem, which contributes to improved production and activities of hormones, such as testosterone (National Health Service, 2022).

While PCOS can affect any woman during their reproductive ages, research indicates that certain populations may be more susceptible, including those with a family history (hereditary factors), elevated insulin levels leading to increased androgen levels, and individuals who are obese or overweight. Obesity can disrupt hormonal equilibrium in women with PCOS because adipose tissue (fat cells) has the capacity to generate and release hormones, including estrogen. The surplus adipose tissue in obese individuals can contribute to imbalances in hormones, exacerbating the symptoms of PCOS. Understanding the factors contributing to the development of PCOS is crucial for promoting the overall physical and mental well-being of affected women. It is important to note that PCOS is a chronic illness with no known cure; medicinal interventions are meant to control and lessen its symptoms and effects (Royal College of Obstetricians & Gynecologists, 2022).

The influence of obesity and hirsutism on self-esteem is profound and shaped by societal perceptions, concerns about body image, and internalized stigma. These factors can cause psychological distress, strain interpersonal relationships, and induce social anxiety. Discussing the connection between obesity and self-esteem requires sensitivity, given that obese women may encounter judgment, discrimination, and negative stereotypes, fostering emotions of shame and diminished self-worth. The societal idealization of thinness as a beauty standard further contributes to distorted body image perceptions and discontent. Mental health issues and social stigma can result from PCOS's biological and psychological repercussions, especially those linked with obesity, hirsutism, body image, and infertility (World Health Organization, 2023). Certain ethnic groups, such as South Asians and Hispanics, exhibit a higher prevalence of PCOS, and individuals within these ethnicities are more likely to face increased complications, especially those related to metabolic issues such as abdominal obesity, type 2 diabetes, and cardiovascular diseases.

Each symptom of PCOS ranges from mild to severe, and not all women experience all of the symptoms. Some women are unable to conceive, have menstrual issues, or both (National Health Service, 2022). The prevalence of PCOS has been steadily increased, posing significant health challenges to women worldwide. In Nigeria, as in numerous countries, PCOS presents challenges for women related to fertility, hormonal equilibrium, and overall health. Despite the prevalence of PCOS in Nigeria, comprehensive documentation is lacking, and the available data are limited. Underdiagnosis or underreporting may

occur due to insufficient awareness, healthcare infrastructure, and routine screening for PCOS in the country. However, based on the Rotterdam criteria, two investigations conducted in Nigeria found that the prevalence of polycystic ovarian syndrome was 18.1% and 12.2% (Akpata et al., 2018).

Polycystic ovary syndrome is linked to several enduring health issues that affect both physical and emotional well-being, such as type 2 diabetes, infertility, and obesity, possibly leading to low self-esteem, sleep apnea, hypertension, cardiovascular diseases, and endometrial cancer, and is also linked to depression and anxiety (Center for Disease Control, 2022). The management of PCOS often involves addressing both the reproductive and metabolic aspects. Lifestyle modifications, such as maintaining a healthy diet, weight management, and regular physical exercise, are commonly recommended to improve insulin sensitivity and manage metabolic issues. Medications, such as those that address insulin resistance, may also be prescribed. Early diagnosis and appropriate management are important for reducing chronic health risks and conditions associated with PCOS. By eating a balanced diet, exercising frequently, and leading a healthy lifestyle, many women with PCOS can effectively manage their symptoms and long-term health risks without the need for medical intervention (Royal College of Obstetricians & Gynecologists, 2022)

More than half of all PCOS patients are overweight or obese (Wang & Mol, 2017). Therefore, the main recommendation for PCOS patients is to lose weight, because a healthy, balanced diet and regular exercise can increase metabolism, enhance insulin sensitivity, and facilitate safe weight loss (Dai & Jiang, 2021). A healthy diet, regular exercise, and avoidance of smoking are the most effective ways to prevent and manage PCOS, although the cause is unknown. Physical activity and a healthy diet are key elements in PCOS prevention, addressing various aspects of the condition. Lifestyle interventions, including diet modification, increased physical activity, and avoidance of alcohol and smoking, are first-line treatments recommended for PCOS symptoms. Reducing the starting weight by up to 5% has been shown to improve the response to ovulation and reproductive drugs and help restore regular menstruation (Day et al., 2018).

Regular physical activity can assist in weight management, enhance insulin sensitivity, decrease hyperandrogenism, improve menstrual function, and positively impact the quality of life. While specific recommendations for type, intensity, frequency, and duration remain uncertain, guidelines suggest aiming for at least two rounds of weight training and 150 minutes of moderate-intensity aerobic activity weekly. Combining physical activity with dietary and behavioral interventions provides a safe and empowering strategy for women with PCOS to manage their health. Additionally, avoiding smoking and limiting alcohol intake are crucial for the prevention of PCOS, as excessive alcohol consumption can negatively

affect reproductive and metabolic health. Embracing a comprehensive lifestyle approach, encompassing dietary choices, physical activity, and avoiding harmful habits, is pivotal for preventing PCOS and promoting women's overall health and well-being. Maintaining a healthy lifestyle is particularly beneficial for those under medical supervision. Being aware of the importance of adopting a healthy lifestyle from an early age will reduce both disease incidence and its long-term effects (Kaundal et al., 2023)

Statement of the Problem

Addressing the symptoms of PCOS, such as fertility challenges, facial hair growth, and weight gain, can contribute to both emotional and physical stress and foster conditions such as anxiety and depression. Women without PCOS tend to exhibit higher self-esteem and lower levels of mental, social, and emotional stress. However, the researcher noted a significant prevalence of PCOS among individuals in the Ilorin South, revealing a lack of comprehensive understanding and awareness of the condition. This deficiency may result in delayed diagnosis, insufficient management, and heightened health risks, exacerbated by limited access to healthcare facilities equipped to diagnose and manage PCOS, thus hindering timely intervention. The perceived impact of PCOS on quality of life, spanning physical, emotional, and social dimensions, remains insufficiently documented among women in the Ilorin South Local Government Area (LGA). Additionally, the knowledge and adoption of preventive measures for PCOS involving lifestyle adjustments and early intervention requires exploration to inform targeted health promotion initiatives within the Ilorin-South LGA.

The cultural and societal context of the lorin South LGA has played a significant role in shaping the perception of PCOS and its prevention. Cultural beliefs, traditional practices, and social norms can influence women's health-seeking behaviors, understanding of reproductive health issues, and willingness to adopt preventive measures. Exploring these perspectives is crucial for tailoring interventions that align with the local context and addressing potential barriers to awareness and preventive practices. Despite the increasing recognition of PCOS as a significant reproductive and metabolic disorder, there is a lack of comprehensive understanding about how women in this region perceive the impact of PCOS on their lives. Additionally, the absence of targeted preventive measures and awareness campaigns further compounds the issue, potentially leading to delayed diagnosis and inadequate management of PCOS.

Hence, the present study aimed to investigate the impact of PCOS on reproductive health and its associated complications. Simultaneously, the study aimed to raise awareness among women living in Ilorin South and scrutinize potential preventive interventions that can be implemented to improve and safeguard the overall health of women. By conducting a thorough investigation into the multifaceted repercussions of PCOS on reproductive well-being, this

study provides valuable insights that may inform strategies for mitigating the adverse effects of PCOS and fostering a more comprehensive approach to women's health. By exploring preventive measures, this study seeks to identify practical interventions that can be adopted to enhance women's health and well-being, ultimately providing a foundation for targeted health promotion initiatives. This study tested the following hypotheses:

Research Hypotheses

H_{o1}. There is no statistically significant effect of obesity on polycystic ovary syndrome among women living in Ilorin South LGA, Kwara State.

H_{o2}. There is no statistically significant effect of infertility on polycystic ovary syndrome among women living in Ilorin South LGA, Kwara State.

H_{o3}. There is no statistically significant effect of a healthy diet on polycystic ovary syndrome prevention among women living in Ilorin South LGA, Kwara State.

Methodology

This study employed a descriptive design. The researcher chose this design to define the problem clearly, gather pertinent data, and present findings requiring representative samples. The population of this study comprised 62,679 women of reproductive age (National Population Commission, 2006). Ilorin South LGA is geopolitically divided into 11 wards: Akanbi I (5000), Akanbi II (7000), Akanbi III (6500), Akanbi IV (7031), Akanbi V (4100), Balogun Fulani I (6100), Balogun Fulani II(7125), Balogun Fulani III (5500), Okaka I(5200), Okaka II (3923), and Oke Ogun (5195).

A multistage stratified, proportionate, and convenience sampling procedure was adopted. A stratified sampling technique was used to select five of the 11 wards in the Ilorin South Local Government. This was done by writing the names of each of the 11 local governments on small pieces of paper, and then five were picked randomly. A proportionate sampling technique was used to select 1% of the women in each of the wards selected (Table 1). Convenience sampling was used to select women willing and available to participate in the study.

Table 1

Sample Size of the Study

S/N	Name of ward	Population of Women	1% of Population (Sample)	Population of Sample
1.	Okaka I	5200	52.00	52
2.	Okaka II	3923	39.23	39
3.	Akanbi I	5000	50.00	50
4	Balogun Fulani I	6110	61.10	61
5.	Balogun Fulani III	5500	55.50	56
	Total	25773	257.83	258

The primary data collection tool was a self-designed questionnaire comprising two sections. It utilized a four-point Likert scale ranging from Strongly Agree to Strongly Disagree. Also, the questionnaire was reviewed by three experts, who thoroughly evaluated the items in connection to the research questions and variables. Their feedback was instrumental in finalizing the instrument.

The split-half technique was used to assess the instrument's dependability. This approach evaluates the internal consistency of a test such as a questionnaire by measuring the degree to which each component of the test contributes equally to the outcome being examined. Twenty questionnaires were given to respondents at Kwara State College of Education, which was outside the study area but had similar features, to assess the reliability of the study. The analysis of Cronbach Alpha produced a coefficient of 0.78. Each participant completed the questionnaire in their respective ward. To minimize the risk of losing the instruments, the researcher and assistants collected the questionnaires promptly. Following collection, the data were coded, organized, and analyzed using suitable statistical methods. Chi-square inferential statistics were employed to assess all proposed null hypotheses at the 0.05 alpha level.

Results

H_{01}. There is no statistically significant effect of obesity on polycystic ovary syndrome among women living in Ilorin South LGA, Kwara State.

Table 2 displays the computed chi-square value of 42.837, which is higher than the critical value of 16.92. The null hypothesis, which claimed that obesity would not significantly affect polycystic ovarian syndrome in women residing in Ilorin South LGA, Kwara State, was rejected because the computed value was higher than the critical value. This suggests that obesity is a major consequence of polycystic ovarian syndrome in women in the Kwara State's Ilorin South LGA.

Table 2

Chi-square Analysis on Obesity as an Effect of Polycystic Ovary Syndrome

Variable	N	Df	Cal. χ^2 value	Crit. χ^2 value	P value	Remark
Obesity as an effect of polycystic ovary syndrome	258	9	42.837	16.92	0.000	H_{01} Rejected

H_{02}. There is no statistically significant effect of infertility on polycystic ovary syndrome among women living in Ilorin South LGA, Kwara State.

Table 3 displays the computed chi-square value of 76.729, which is higher than the critical value of 16.92. The null hypothesis, according to which polycystic ovarian disease will not significantly affect infertility in women residing in Ilorin South LGA, Kwara State, was rejected because the computed value was higher than the critical value. This suggests that polycystic ovarian syndrome has a major impact on infertility in women residing in Kwara State's Ilorin South LGA.

Table 3

Chi-square Analysis on Infertility as an Effect of Polycystic Ovary Syndrome

Variable	N	df	Cal. χ^2 value	Crit. χ^2 value	P value	Remark
Infertility as an effect of polycystic ovary syndrome	258	9	76.729	16.92	0.000	H_{02} Rejected

H_{03}. There is no statistically significant effect of a healthy diet on polycystic ovary syndrome prevention among women living in Ilorin South LGA, Kwara State.

Table 4 displays the computed chi-square value of 39.442, which is higher than the critical value of 16.92. Since the estimated $\chi 2$ value is greater than the critical value, the null hypothesis that healthy food would not significantly prevent polycystic ovarian syndrome among women living in Ilorin South LGA, Kwara State, is rejected. This suggests that women in Kwara State's Ilorin South LGA might greatly reduce their risk of developing polycystic ovarian syndrome by maintaining a balanced diet.

Table 4

Chi-square Analysis on Healthy Diet as a Means of Preventing Polycystic Ovary Syndrome

Variable	N	df	Cal. χ^2 value	Crit. χ^2 value	P value	Remark
Healthy diet as a means of preventing polycystic ovary syndrome	258	9	39.442	16.92	0.000	H_{04} Rejected

Discussion of Findings

Hypothesis one revealed that obesity has a significant effect of polycystic ovary syndrome among women living in Ilorin South LGA, Kwara State, Brazil. This finding is in line with a study by Lim (2020), who stated that obesity emerges as a prominent risk factor and exacerbating element in the context of PCOS, influencing both its onset and severity. Numerous epidemiological studies, including a notable one by Lim (2020), consistently demonstrated a strong association between obesity and PCOS. This research elucidates the increased risk of developing PCOS among individuals with higher body mass indices, establishing obesity as a significant contributor to the syndrome. The active endocrine role of adipose tissue is pivotal in understanding the obesity-PCOS connection.

Hypothesis two revealed that infertility has a significant effect on polycystic ovary syndrome among women living in Ilorin South LGA, Kwara State. This finding is in agreement with the report of Zegers-Hochschild (2017), who stated that infertility is one of the most distressing consequences of PCOS in many women who desire to have children. Infertility is defined as the inability to conceive after 12 months of regular unprotected sexual intercourse. The prevalence of infertility in women with PCOS varies depending on the diagnostic criteria and population studied but is estimated to range from 20% to 90% (Bozdag, 2016). Additionally, anovulation is the main cause of infertility in PCOS, which means that the ovaries do not release an egg every month. Anovulation disrupts the hypothalamic-pituitary-ovarian (HPO) axis, which regulates hormonal signals that control the menstrual cycle (Goodarzi, 2021).

Hypothesis three revealed that a healthy diet is a significant means of preventing polycystic ovary syndrome among women living in Ilorin South LGA, Kwara State. This finding agrees with a study by Marsh et al. (2020), which supports the notion that a low-GI diet can positively affect insulin resistance and improve glycemic control in individuals with PCOS. Low-GI foods include beans, lentils, oats, barley, quinoa, apples, pears, berries, and nuts (Marsh et al., 2020). Another dietary approach that may help people with PCOS is an anti-inflammatory diet. This diet emphasizes foods with anti-inflammatory properties, such as omega-3 fatty acids, antioxidants, and phytochemicals. These foods can help reduce inflammation, oxidative stress, and hormonal imbalances associated with PCOS.

Conclusion

Therefore, this study concluded that among women, obesity is a health consequence of polycystic ovarian syndrome, which needs to be well managed. Women may experience reproductive health problems such as infertility due to polycystic ovary syndrome. Women can effectively prevent polycystic ovarian syndrome by maintaining a healthy diet. The following recommendations were made.

Recommendations

1. Women should manage their stress levels by engaging in stress-reducing activities such as yoga, meditation, and other activities that can help in relaxing because stress can worsen PCOS symptoms and contribute to weight gain.
2. Women should seek medical advice from health professionals who specialize in reproductive health and change certain lifestyles to help manage PCOS and improve fertility.
3. Women should adopt a healthy and balanced diet by consuming fruits, vegetables, and lean protein and avoiding processed food, sugary beverages, and food high in saturated fats to prevent PCOS.

Conflict of Interest Disclosure

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