

Scientific Inquiry and Review (SIR)

Volume 7 Issue 1, 2023

ISSN (P): 2521-2427, ISSN (E): 2521-2435

Homepage: <https://journals.umt.edu.pk/index.php/SIR>



Article QR



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DOI: <https://doi.org/10.32350/sir.71.01>

History: Received: September 5, 2022, Revised: December 1, 2023, Accepted: December 2, 2022, Published: March 15, 2023

Citation: Rafique A, Salma U, Saleem HGM. Measuring the awareness of polycystic ovarian syndrome (PCOS) among Women in Punjab, Pakistan. *Sci Inq Rev.* 2023;7(1):1–16. <https://doi.org/10.32350/sir.71.01>

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Conflict of Interest: Author(s) declared no conflict of interest



UMT

A publication of
The School of Science
University of Management and Technology, Lahore, Pakistan

Measuring the Awareness of Polycystic Ovarian Syndrome (PCOS) among Women in Punjab, Pakistan

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ABSTRACT

Polycystic ovarian syndrome (PCOS) is the most prevailing endocrine disorder among women of reproductive age, worldwide. Its prevalence is 52% in Pakistani women and the rate of infertility is gradually increasing. It can be treated through early diagnosis, management of symptoms, and a healthy lifestyle. This cross-sectional study aimed to determine the level of awareness and knowledge regarding PCOS in the women of Punjab, Pakistan. For this purpose, a total of 350 women between the ages of 16 and 50 years were included in the current study. The data was obtained through a questionnaire and analyzed through SPSS (version 25). The results determined that 56% of women were found to have the knowledge of PCOS, while 44% had never heard about it. Furthermore, about 67% of 196 PCOS-aware women were unaware of its signs and symptoms. Moreover, in 14% of the cases, a friend was the source of knowledge regarding PCOS. Whereas, approximately 10% of these women had heard about the syndrome through education, 9% through their family, 7% through various media such as newspapers, television, and social media, and 17% through other sources including general physicians and gynecologists. It was concluded that only 33% of the participants who claimed to have heard of PCOS were aware of its symptoms, whereas 67% were unaware of them. A total of 152 women, out of 350, had never heard about PCOS.

Keywords: endocrine disorder, infertility, healthy lifestyle, polycystic ovarian syndrome (PCOS), women of reproductive age

1. INTRODUCTION

Polycystic ovary syndrome (PCOS) is known worldwide as a common syndrome affecting the women of reproductive age and causing

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reproductive, endocrine, and metabolic abnormalities. PCOS is delineated as a heterogeneous disorder associated with hormonal changes, a deranged reproductive system, and complications related to the metabolic system [1]. It is a heritable disorder which affects women throughout their lifetime and can be transferred to the next generation, although the underlying genetic factors remain unknown [2]. Hyperandrogenism, ovaries with multiple cysts, and impaired ovaries are the key features of PCOS. This disorder affects both developed as well as developing countries. Its prevalence ranges from 4-12% in the general population of women of reproductive age across the world [3].

Throughout puberty, the prevalence of PCOS continuously increases and reaches 26% by the age of 15. Insulin resistance or pre-diabetes and Type 2 diabetes are prevalent in women with PCOS living in Asia. Insulin resistance and high levels of insulin are two common precursors of Type 2 diabetes and have a high prevalence in South Asian women. Type 2 diabetes is inherited in the form of a complex genetic trait that interacts with other factors and contributes to developing PCOS [4]. Symptoms commonly associated with PCOS are irregular or missed periods due to anovulation, ovaries consisting of multiple cysts, non-appearance of ovulation, high level of androgens [5], oligomenorrhea, amenorrhea, prolonged erratic menstrual bleeding [6], infertility [7], hirsutism [8], acne [9], mood swings including depression and anxiety [10], and family history with Type 2 diabetes [11].

Three distinct clinical phenotypes were suggested by the Rotterdam and AE-PCOS Society namely Frank PCOS (oligomenorrhea, higher level of androgens, and PCO), ovulatory PCOS (PCO, higher level of hyperandrogenism and normal menstruation), and non-PCO PCOS (oligomenorrhea, hyperandrogenism, and normal ovary). A fourth phenotype, that is, mild or normoandrogenic PCOS is also recognized by the Rotterdam criteria, which is characterized by oligomenorrhea, PCO, and typical androgen concentrations [12].

In addition to other classical symptoms, stress is highly coexistent with PCOS. Stress in PCOS can be of various types namely psychological distress, mental disorders, anxiety, emotional disarray, and depression [10]. Along with definitive mental stress, 'metabolic stress' is also quite common in women with PCOS. Indeed, metabolic stress is the most influencing stress in PCOS. It is often referred to as the stimulant behind all the emotional and anxiety-related consequences in women with PCOS [13].

A characteristic of the ovaries in PCOS is rapid transition from primitive follicles to growing follicles with rising numbers of follicles from 2 mm to 3 mm and then from 3 mm to 4mm [14-16]. Adolescent girls with PCOS features often require the management of their symptoms before the diagnosis of PCOS. The management of adolescents with a confirmed diagnosis of PCOS should include its awareness and lifestyle interventions [17]. The diagnosis of girls with signs and symptoms indicating PCOS includes family history and a complete physical examination. Typically, laboratory examination includes thyroid profile as well as the determination of prolactin, total testosterone, androstenedione, sex hormone-binding globulin (SHBG), and dehydroepiandrosterone (DHEA). Furthermore, adrenal imaging tests can be used for diagnosis depending on clinical examination, physical examination, and initial laboratory results [18].

Mohamed conducted a quasi-experimental study on 300 women that included implementing and designing a helpful instructional guideline about endometriosis. The study shows an important result, indicating an improvement in females' awareness about it. [19]. Belenkaia (2019) showed that polycystic ovarian syndrome (PCOS) is recognized as one of the most common endocrine diseases in women, universally. On the other hand, this term does not capture the variety of medical symbols linked with this syndrome. Menstrual abnormality and medical features of androgen excess, which are common place in women with PCOS, are not included under the definition of PCOS, which is limited to polycystic ovarian morphology (PCOM) [20].

2. METHODOLOGY

2.1. Study Design

A cross-sectional study was conducted focusing on assessment-based questions and the provision of education about PCOS.

2.2. Locality Setting

Data was collected from the various cities of Punjab, Pakistan.

2.3. Duration

This study was completed in October 2021.

2.4. Sample Size

A total of 350 questionnaires were distributed among women.

2.5. Sample Technique

It is a questionnaire-based study.

2.6. Inclusion Criteria

Women between the ages of 16 and 50 years were included in the current study.

2.7. Exclusion Criteria

Women aged less than 16 years or more than 50 years were excluded.

2.8. Data Collection Procedure

Data was collected through a questionnaire developed beforehand. The questionnaire was constructed in parts related to demographics, information sources, understanding of signs and symptoms, risk factors, prevalence, and etiology.

2.9. Data Analysis

Data was tabulated and analyzed through Microsoft Excel and IBM SPSS Statistics (version 25). Chi-square test was used to statistically analyze the comparison between categorical variables, that is, variables that only take a finite number of distinct values. The results were reported in terms of frequencies and percentages calculated for each question in the questionnaire.

3. RESULTS

3.1. Demographic Characteristics

Table 1. Demographic Characteristics

| Description | Frequency | Percentage |
|-------------|-----------|------------|
| Age | | |
| 15-25 years | 196 | 56 |
| 26-35 years | 78 | 22 |
| 36-45 years | 41 | 11.7 |
| 46-55 years | 35 | 10 |
| Locality | | |
| Urban | 250 | 28.6 |
| Rural | 100 | 71.4 |

| Description | Frequency | Percentage |
|------------------------|-----------|------------|
| Education Level | | |
| School | 45 | 12.9 |
| College | 162 | 46.3 |
| University | 141 | 40.3 |
| Other | 2 | 6 |
| Marital Status | | |
| Married | 152 | 43.5 |
| Single | 198 | 56.6 |
| Occupation | | |
| Employee | 77 | 22.5 |
| Household | 90 | 25.5 |
| Student | 183 | 52.3 |

Demographic characteristics are tabulated in Table 1. The table shows that 196 (56%) women were from the age group of 15-25 years, 78 (22%) were from the age group of 26-35 years, and 41 (11.7%) were from the age group of 36-45 years. It also shows that 100 (28.6%) women belonged to the rural areas of Punjab, while the rest of the 250 (71.4%) women belonged to urban areas. Furthermore, 162 (46.3%) women were enrolled in college and 141 (40.3%) were university going. Whereas, 198 (56.6%) were single.

3.2. Knowledge Regarding PCOS

Knowledge regarding PCOS is tabulated in Table 2. The majority of the women, that is, 56% responded positively to questions regarding PCOS awareness. However, 44% had never heard of PCOS and did not know anything about it.

3.3. Diagnosis of PCOS

The number of women diagnosed with PCOS is tabulated in Table 3. It shows that 82.9% of women had not been diagnosed with PCOS, while 17.1% of them had been diagnosed with the disease.

The results in Table 4 show that there is a significant association between PCOS diagnosis and menstrual problems in women (p -value is less than 0.05 which is significant). According to the above table, 32 women faced skipped periods problem and 16 faced irregular menstrual cycles.

Table 2. Knowledge and Awareness regarding PCOS

| Questions | Yes | No | Do not know |
|--|----------------|----------------|----------------|
| Have you ever heard of PCOS? | 196 (56%) | 154 (44%) | N/A |
| Do you know the symptoms of PCOS? | 116 (33.1%) | 234 (66.9%) | N/A |
| Do you think PCOS is linked with Diabetes Mellitus Type 2? | 70 (20%) | 81 (23%) | 199 (56.9%) |
| Do you think PCOS has a negative impact on the quality of life in the form of stress, anxiety etc? | 85 (24.3%) | 83 (23.7%) | 182 (52%) |
| Do you think untreated PCOS can cause infertility in women? | 94 (26.9%) | 59 (16.9%) | 197 (56.3) |
| Do you think obesity increases the risk of developing PCOS? | 119 (34%) | 54 (15.4%) | 177 (50.6%) |
| Do you think unpleasant mood is also a risk factor for PCOS? | 105 (30%) | 62 (17.7%) | 183 (52.3%) |
| Is ultrasound a best way for the detection of PCOS? | 97 (27.7%) | 59 (16.9%) | 194 (55.4%) |

Table 3. Diagnosis of PCOS

| Description | Yes | No |
|---|-------|-------|
| Have you ever been diagnosed with PCOS? | 82.9% | 17.1% |

Table 4. Association between PCOS Diagnosis and Menstrual Problems in Women

| | History of PCOS Diagnosed Patients with Menstrual Problems | | | | | |
|---|--|-----------------------------|-----------------------------|--------------------|---------------------------|----------|
| | Yes/No | Irregular menstrual periods | Skipped one or more periods | Excessive bleeding | Clots of blood in periods | <i>p</i> |
| Have you ever been diagnosed with PCOS? | No | 290 | 0 | 0 | 0 | 0.00 |
| | Yes | 0 | 16 | 32 | 5 | |

Table 5. Association between WHO Obesity Criteria and Number of Diagnosed Patients

| | | Have you ever been diagnosed with PCOS? | | <i>p</i> -value |
|----------------------|-------------|---|----|-----------------|
| | | Yes | No | |
| WHO Obesity Criteria | Underweight | 36 | 2 | 0.00 |
| | Normal | 199 | 11 | |
| | Overweight | 44 | 39 | |
| | Obese | 11 | 8 | |

The results show that there is an association between WHO obesity criteria and the number of diagnosed patients (*p*-value is less than 0.05 which is significant). Following the WHO obesity criteria, 36 underweight, 199 normal, 44 overweight, and 11 obese women were diagnosed with PCOS.

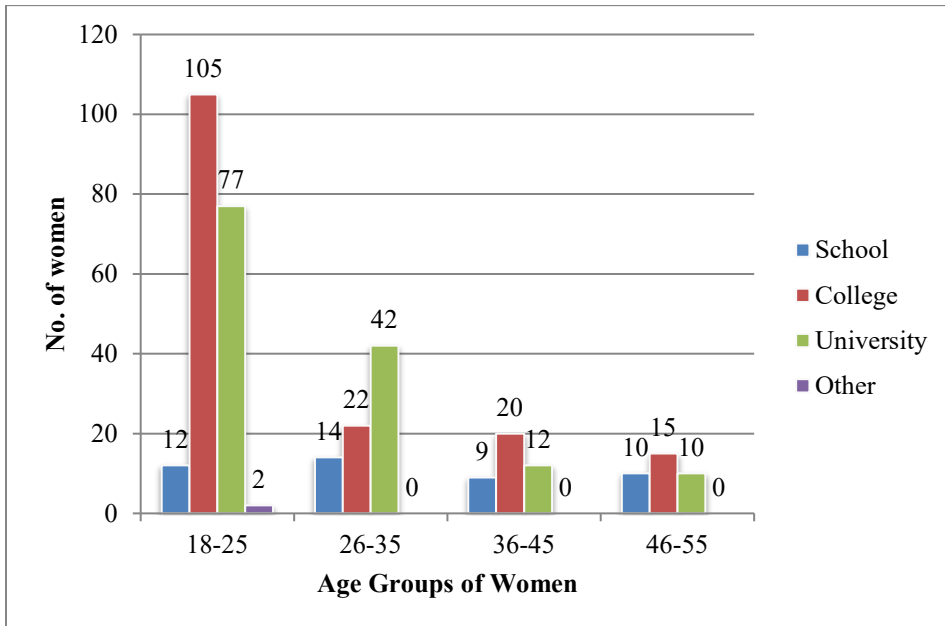


Figure 1. Age Groups of Women and their Education Level

Figure 1 depicts that most women in the age group 18-25 were college educated. While, most women had university education in the age group 26-35. Whereas, most women were college educated in the age group 36-45. Finally, most women in the age group 45-55 were also college educated.

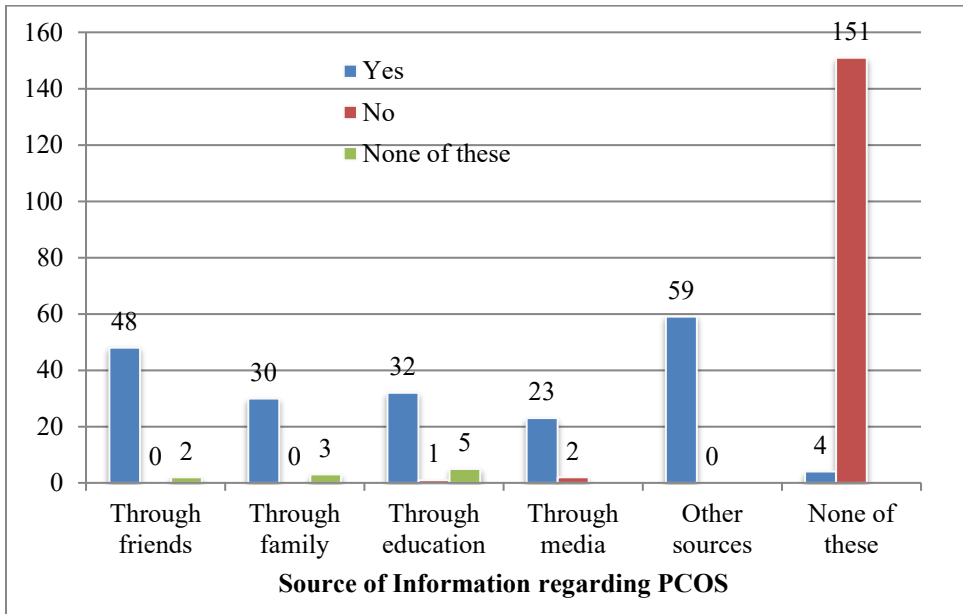


Figure 2. PCOS Awareness in Women and their Source of Information

Figure 2 depicts that out of the 196 women who had heard of PCOS, 48 heard about it through friends, 30 through family, 32 through education, 23 through media, and 59 through other sources.

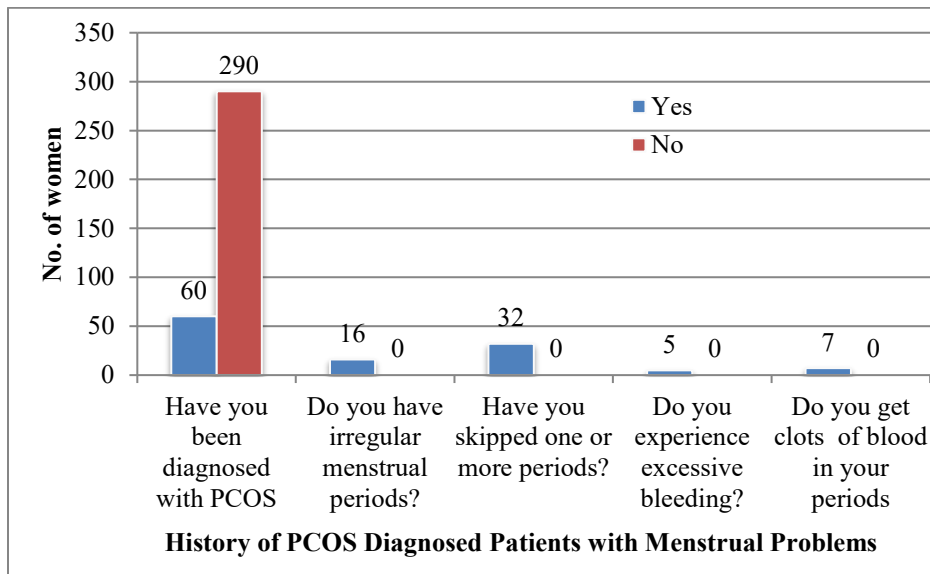


Figure 3. PCOS Diagnosis and Menstrual Problems in Women

Figure 3 depicts that 32 women had faced skipped periods problems and 16 had faced irregular menstrual cycles.

4. DISCUSSION

Sunanda recorded that 85% of women (in their study?) were in the age group of 21-25 years, while 82% of them enjoyed a diet incorporating diverse food groups, and 92% had an orderly menstrual pattern [21]. Sills noticed that more than half (63%) of 657 women involved were in the age range of 26-34 years at the time. Approximately 60% of them were normal according to the WHO criteria of obesity. Nearly 24% were overweight and 6% fell in the obese category. Conversely, 11% of women were underweight [22]. Sanchez noticed that 32% of women were obese in their study [23].

Moreover, about 56% of women under observation had heard of PCOS. On the contrary, 44% of them had never heard of the disease and were unaware of its symptoms, risk factors, treatment options, and severity of consequences. Furthermore, 67% of women, who had heard of PCOS, did not know about its symptoms. Approximately 33% of women were aware of the symptoms of the disease. A survey by Scott estimated that more than 50% of the 657 women involved were fully aware of the syndrome. In this regard, as shown by the analysis, doctors were the primary source of knowledge for 63.5% of women [23].

Out of the 196 women who had heard of PCOS previously, the source was a friend in 14% of cases. Whereas, 10% of them had heard of the syndrome through education, 9% through their family, and 7% through different media including social media, newspaper, and television. Furthermore, 17% of women said that their source of information was their general physician or gynecologist. Sunanda observed poor awareness of PCOS in 76% of women, whereas 10.7% had thorough information of the disease [21]. Sills concluded that over 97% of respondents were acquainted with POCS, while 1.9% had not been briefed about the disease [23]. Sills also noticed that all respondents who were 26 to 34 years of age were comparatively more informed of the condition than those belonging to other age groups [23]. Gul reported that 20 out of 177 participants were conscious of this condition. Of these 20 participants, 11 had qualifications in biological sciences [24].

In the current study, only 14% of women considered irregular menstrual

cycles as something which should not be neglected. Almost 51% didn't know that obese women are at a higher risk of developing PCOS than others, whereas 15% said that obesity has no role in causing the disease. Almost 53% of women didn't know that unpleasant mood is a risk factor for PCOS, while 18% said that it is not related to the disease. Approximately 17% of women didn't know that infertility can be induced because of an untreated PCOS. Only 15% identified hirsutism to be a condition that cannot be ignored and that could lead to PCOS. These problems, that is, menstrual irregularity, hirsutism, and obesity, which are often neglected by women, are associated with elevated testosterone levels and PCO appearance on ultrasound [22]. Joshi concluded that a record of infrequent menstrual periods showed a 93.3% positive probability of the disease and an 86.7% negative probability to identify its potential occurrence [24].

Among 60 women diagnosed with PCOS, 41.7% believed in physical activity. Approximately 31% were aware that physical exercise can improve PCOS related condition. Many women with the disease experience the feelings of hopelessness and insecurity because of their inability to conceive, the size of their bodies, and excessive facial hair. This has a huge effect on the psychological health of women with PCOS. Scott's research suggested distress in 66.5% of women due to PCOS, while this analysis found 32% of women as apprehensive because they were not fully informed about the nature of the disease and if they would be able to control it. About 19% of women feel distressed as the out of form body and the decreased quality of life obstruct their emotional stability, which is also affected by chemical shifts in PCOS [23]. Maiya stated that ranked resistance training helped to reduce the cyst's thickness, improved fertilization, as well as the conceiving rate, as compared to an experimental group [25]. A similar survey by Nidhi found that therapeutic meditation system in PCOS patients minimizes the feelings of depression [26].

In the current study, about 64% of women didn't know that androgen levels are significantly raised during PCOS. Furthermore, approximately 12% chose unaltered androgen, whereas 9% chose low androgen levels as blood test confirmation for the disease. The androgen abundance and PCOS community developed the newest testing manual in 2006. According to this manual, hyper-androgenism and dysfunctional ovaries (oligoavulation or anovulation and/or cysts in ovaries) are the salient features of the disease [27]. Approximately 40% of women were positive that the treatment of

PCOS is possible. Nearly 12.5% declared it as an untreatable disease. About 47.5% didn't know if any treatment for PCOS exists or not.

The treatment of PCOS can be initiated through increased physical activity and regular exercise. Changes in routine are regarded as the first line therapy for women diagnosed with the disease [28]. In a relevant study, Sills found that 99% of women showed interest in other possible treatments of their condition, rather than using fertility medication or contraceptives [23]. Unawareness in women regarding PCOS is a result of the lack of knowledge and poor education about this matter. Illiteracy is also one of the leading causes of the lack of awareness about such a sensitive issue.

4.1. Conclusion

Based on the survey findings, it was concluded that a significant portion of women, approximately 33% of those who claimed to have heard of PCOS, demonstrated an understanding of the syndrome and its associated symptoms. However, it was concerning to note that the majority, constituting 67% of these women, lacked awareness regarding the signs and symptoms of PCOS. Moreover, a substantial number of participants, specifically 152 out of the total 350 women surveyed, acknowledged never having heard of PCOS before.

Healthcare professionals should play a crucial role as primary sources of information about PCOS for women. Targeted educational campaigns can bridge the knowledge gap and enhance awareness, leading to improved understanding, early detection, and management of PCOS.

4.2. Recommendations

Exercise plans that are well-designed for PCOS patients should be introduced. Physicians should promote regular physical activity apart from providing need-based exercise plans. Gynecologists should coordinate with physiotherapists to ensure that PCOS patients are provided with more befitting workout plans. Academicians should educate young students about PCOS, its risk factors, causes, prognosis, symptoms, diagnosis, and available treatment options. These efforts can make early detection of PCOS more likely.

Women who have a BMI above 23 should be informed about its dangers and risks. They should be advised to lose weight in order to maintain a healthy body and mind. Women exhibiting signs of hyper-androgenism or

menstrual irregularities should be checked up to ensure the early detection of the syndrome. Timely identification of the disease combined with immediate therapy enhances the quality of life and helps to avoid health risks. This study can be used to explore the obstructions women face in lifestyle improvements such as regular physical exercise, weight control, following a healthy diet plan, and keeping their menstrual cycle in check. This survey can also be used to observe the effects of these improvements in a test group of women.

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