

**AWARENESS REGARDING POLYCYSTIC OVARIAN SYNDROME (PCOS) IN
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ABSTRACT

Background: Many diseases of women are often left undiagnosed due to lack of awareness regarding women health issues. This often affects their fertility, leads to pathological complications and ultimately affecting their quality of life. Awareness programmes and education to Indian women can be highly beneficial in reducing morbidity and mortality rates in India. **Methods:** Survey of 174 girls, studying in 1st, 2nd, 3rd, final year and internship of a medical college in Maharashtra was taken. The survey was done to assess the level of awareness and knowledge regarding Polycystic ovarian syndrome and its complications. A pre-tested and pre-validated questionnaire was used for interviewing the participants, at their convenience. The data collected were analysed through percentages and frequencies using Excel.

Results: Out of 174 respondents, only 152 participants were aware of the term PCOS. Out of those who knew the term PCOS, 76% had correct knowledge about the hormonal changes caused by PCOS. Most of them had gained information regarding PCOS from a wide spectrum of sources. The worsening effects of obesity and sedentary lifestyle was well known to the respondents. Most of the respondents had regular menses, while 13.2% accepted that they were suffering from irregular menses, but had never screened themselves for PCOS. Knowledge regarding correct diagnostic tool for detection of PCOS was lacking among 88.8% respondents. **Conclusion:** Endorsement of screening programmes and risks due to undiagnosed PCOS by celebrities can considerably change the perspectives of the population at risk.

KEYWORDS: PCOS, Medical Students, Awareness, Obesity.**INTRODUCTION**

Polycystic ovary syndrome (PCOS) is one of the most common hormonal disorders among women of reproductive age.^[1] PCOS is a set of symptoms related to a hormonal imbalance that can affect women and girls of reproductive age. PCOS symptoms can include absence of ovulation, high androgen levels, ovarian cysts, acne, insulin resistance, and obstructive sleep apnoea,^[2] moreover with its association with other lifestyle diseases, it is also the cause of significant cardiovascular and metabolic morbidity.^[3] PCOS was first reported by Stein and Leventhal in 1935, described as symptoms complex with amenorrhea, hirsutism, and enlarged ovaries with multiple cysts.^[2] Polycystic means "many cysts," and PCOS often causes clusters of small, pearl-sized cysts in the ovaries. The cysts are fluid-filled and contain immature eggs.^[1]

Globally, prevalence estimates of PCOS are highly variable, ranging from 2.2% to as high as 26%.^[4] Only a few researchers have studied the prevalence of PCOS in India.^[3] A prevalence of 22.5% by Rotterdam criteria, was found in a community-based study of adolescents and young adolescents, done in Mumbai.^[4] A pilot cross-sectional study conducted in Tamil Nadu assessed young adolescent females and found a prevalence of 18 per cent for PCOS.^[5] According to a study conducted in the state of Karnataka, a prevalence of 9.1% in an educated population of medical and dental college students, when assessed on the basis of modified version of Cronin questionnaire.^[6] A recent study to assess the prevalence and risk factor profile of polycystic ovary syndrome (PCOS) was done in Haryana, India, which revealed 71% of the women with PCOS resided in urban regions and 29% in rural regions. The difference may be attributed to lifestyle and dietary factors. Ignoring PCOS may put women at risk of serious long-term health

consequences that are difficult to manage.^[7] In 2006, the Androgen Excess Society (AES) suggested that the NICHD/NIHS criteria could be used with modifications that included the Rotterdam tool.^[8]

According to the Rotterdam criteria, a clinical diagnosis of PCOS requires that a patient present with two of the following symptoms.

- Oligo-ovulation or anovulation,
- Hyperandrogenism, clinical (including signs such as hirsutism) or biological (including a raised free androgen index or free testosterone)
- Polycystic ovaries visible on ultrasound.^[9]

The consensus-based diagnostic criteria for PCOS in the Rotterdam criteria have defined the disease and, as such, have been valuable both clinically and scientifically.^[10]

Awareness of PCOS symptoms and complications is essential for early treatment and to prevent further serious complications of it. A population-based cross-sectional study was conducted in all over Saudi Arabia, in 2016, about PCOS awareness. The level of awareness of PCOS among Saudi population was 56.7%, while 43.3% of Saudi female were not aware or do not have prior knowledge about PCOS. Among people who had prior knowledge of the disease; 15.3% were already PCOS patient, 21.3%, 10.4%, 10.8%, and 3.0% have known about PCOS via internet, patients, doctors, and books, respectively.^[11] Majority of the female dental students belonging to a dental college in Chennai had a vague idea about PCOD as only 29.29% of the students were aware of how PCOD develops.^[12] Survey of 200 girls done to assess the knowledge on the polycystic ovarian syndrome among the medical students of different colleges studying in 1st, 2nd, and 3rd year, revealed that being medical students, main source of information was teacher. Still 28% of girls were unaware about PCOS when they are in first or second year. So, 72% girls were aware of PCOS while 28% were unaware of PCOS.^[13]

India has witnessed a sudden rise in PCOS and infertility cases in the last couple of years and that is only the tip of the iceberg. Lack of knowledge, rampant obesity, increase in a sedentary lifestyle and lack of exercise seem to be major factors leading to this rise.^[14] Awareness and accurate diagnosis are the first step in managing PCOS as it improves quality of life of the patient. The aim of the study was to assess the different levels of awareness on PCOS among the medical students studying in a medical college of Maharashtra.

RESULTS

During the study interval 174 responses to the questionnaire were registered.

Demographics: There were, 13.22% in the group of 17-19 years girls, while 52.87%, 29.31% and 4.6% girls

were in the age group of 19-21 years, 22-24 years and 25-27 years respectively. The study included 43 (24.7%) of 1st year students, 49 (28.2%) of 2nd year students, 43 (24.7%) 3rd year students, 12 (6.9%) and 27 (15.5%) 4th year students and intern girls respectively. (Table 1) Ninety three (53.4%) participants fell within the range of normal BMI (Body Mass Index). Only 25 (14.4%) of the participants were underweight, while, 33 (18.9%) and 23 (13.2%) of the total 174 participants were overweight and obese respectively. Overweight and obese girls are more prone for PCOS.

RESPONSES AND DISCUSSION

Though 152 respondents (1st year= 31 (72.1%), 2nd year= 45 (91.8%), 3rd year= 41 (95.3%), 4th year= 9 (75%) and interns= 26 (96.2%)) had heard about PCOS, (Table 1) only 145 respondents could correctly define the disease. On asking to portray a clinical picture of PCOS, 145 respondents (95.4%) could correctly do so. (Table 1) A cross sectional Indian survey on outpatients visiting a hospital in Maharashtra, reported that among 500 participants, only 38% of the women were aware of the term PCOS.^[14] Of them who were aware of the term PCOS, most respondents (76.3%) answered increased testosterone and LH + decreased FSH would be consistent with PCOS patients, followed by decreased testosterone + decreased oestrogen (13.2%) and decreased LH + decreased TSH (10.5%). When asked about the source of information, 61 respondents (40.1%) claimed internet. Being a medical student, 50 (32.9%) respondents claimed doctors to be their source of awareness. While, rest of the respondents (26 (17.1%), 13 (8.6%) and 2(1.3%)) gained their part of awareness from friends, books and relatives respectively. (Figure 4) A survey regarding awareness of PCOS in the students of different medical colleges of Maharashtra revealed that 33% girls had information about PCOS from teacher, 19% got information from friend, 11.5% got information from a doctor, 3.5% got information from newspaper while 5% got information from internet.^[13]

Table 1: Year of MBBS wise classification of awareness of the term PCOS and ability to define PCOS.

Year of MBBS (Total=174)			Heard of PCOS		Correct definition of PCOS (out of participants who have heard of PCOS)	
Year of MBBS	Count	%	Yes (n=participants studying in the respective years)	%	Number	% of correct definition
1st Year	43	24.7	31	72.1	28	90.3
2nd year	49	28.2	45	91.8	44	97.8
3rd Year	43	24.7	41	95.3	41	100.0
4th Year	12	6.9	9	75.0	7	77.8
Internship	27	15.5	26	96.3	25	96.2

Seventy respondents (46.1%) out of all the respondents who had heard about PCOS (n=152), had an idea that PCOS is hereditary. (Table 2) A review article on PCOS and role of hereditary predisposition suggested that apart from environmental factors, many candidate genes are involved in the etiology of the PCOS.^[15] A study done in North Staffordshire Hospital Centre on post-menarcheal and premenopausal women who presented with a variety of symptoms of PCOS concluded that both autosomal and X-linked dominant modes of inheritance have been suggested to explain the observed familial clustering of cases of PCOS.^[16] A significantly higher proportion of female respondents 146 (96.05%) believed that obesity can be a predisposing factor for PCOS and 150 (98.7%)

participants also agreed that obesity leads to hormonal imbalance like insulin resistance. Most of the students (97.4%) agreed that regular exercise and healthy, nutritious diet does help in increasing the metabolic rate, which in turn helps in decreasing the risk of developing PCOS in future. (Table 2) A descriptive-comparative study was conducted on 65 women with PCOS and assessed on the basis of questionnaire-based interview, which revealed a significant relationship between PCOS and inappropriate diet, low physical activity, sedentary lifestyle and obesity.^[17] According to 132 (86.8%) female students, keeping a check on regularity of menses can help in early diagnosis of PCOS. (Table 2).

Table 2: Responses of Questionnaire regarding awareness of PCOS.

Awareness regarding PCOS (Out of 152)		
	Yes	%
Is PCOS hereditary?	70	46.1
Can obesity play the role of risk factor for PCOS?	146	96.1
Obesity can cause insulin resistance and further hormonal disbalance	150	98.7
Can keeping a check on regularity of menses result in early diagnosis of PCOS?	132	86.8
PCOS women ovulate less frequently than normal female	133	87.5
Can PCOS be a reason of infertility?	138	90.8
Delayed diagnosis can result in anxiety and depression because PCOS causes many undesirable changes in woman.	149	98.0
PCOS with obesity increases the chance of gestational hypertension, gestational diabetes, preterm labour and infant mortality	141	92.8
PCOS promotes unwanted hair growth, acne and scalp hair loss	148	97.4
Exercising regularly along with healthy diet will increase the body's metabolic rate and decrease the risk of having metabolic rate.	148	97.4
Keeping a check on PCOS or treating PCOS can reduce chances of getting the cancer in future.	3	2.0
Correct clinical picture of a patient with PCOS	145	95.4
Are your menses regular?	132	86.8

The participants were also asked about their regularity of menses, in which, 20 female students (13.2%) accepted that they were suffering from irregularities of menses. (Table 2) Out of the 152 female students who proceeded in the study, 133 respondents (87.5%) agreed that PCOS women ovulate less frequently than normal women and 138 respondents (90.8%) agreed that PCOS can lead to infertility. Most common cause of PCOS leading to infertility was considered by the participants as increase

in androgen (n=79), followed by increase in androgen and decrease in progesterone, decrease in progesterone only, increase in progesterone only, increase in androgen and progesterone, decrease in androgen and increase in progesterone followed by decrease in androgen and progesterone. A higher proportion of participants felt that delayed diagnosis of the syndrome, might cause increased unwanted changes in the woman's body, leading to anxiety, depression and other psychological

disorders. (Table 2) A survey done on women visiting the outpatient of a hospital in western India, concluded that out of the 190 women who were aware of the term PCOS, the most common presentation for PCOS was asymptomatic (n =79) followed by irregular menses, infertility, obesity, hirsutism followed by psychological disorders.^[14] A very low proportion of females (2%) thought that keeping a check on PCOS signs and symptoms or even treating PCOS, can reduce the risk of developing cancer in the near future. (Table 2).

Pelvic ultrasound was considered the choice of diagnostic test by 65 respondents (42.8%), while Transvaginal ultrasound was the choice of diagnostic test for 17 respondents (11.2%). A mass of 70 respondents were not sure about the correct choice of diagnostic test for PCOS. When imaging to assess for polycystic ovaries, transvaginal ultrasound is considered the gold standard due to the optimal visualization it provides of the internal structure of the ovary, particularly in obese patients.^[18]

CONCLUSION

Though most of the girls are aware of the term PCOS, many of them had least knowledge regarding the syndrome, resulting in delayed diagnosis of their own disease. Belonging to the high-risk age group of PCOS, awareness campaigns should inform the facts regarding the physiological and physical changes caused by PCOS. Being medical students, stress factors and sedentary lifestyle is more prevalent among them, and thus, practice of exercise and healthy food intake should be encouraged. Activities related to health problems of women organised at school or college level will help in increasing the awareness among students, leading to decreased morbidity of prevalent women health issues, including PCOS. Endorsement of screening programmes and risks due to undiagnosed PCOS by celebrities can considerably change the perspectives of the population at risk.

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