e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2024; 16(4); 711-715

Original Research Article

A Hospital Based Epidemiological Assessment of the Awareness of Polycystic Ovarian Syndrome in Adolescents

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Received: 13-02-2024 / Revised: 15-03-2024 / Accepted: 24-04-2024
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Conflict of interest: Nil

Abstract

Background: Polycystic ovarian syndrome (PCOS) is an endocrine disorder that commonly affects adolescent girls. Awareness and accurate diagnosis are crucial initial steps in managing PCOS, as they can significantly enhance the patient's quality of life. This study aimed to evaluate the level of knowledge about PCOS among medical students.

Methods: A survey involving 200 female students in Vardhaman Mahavir Medical College and Safdarjung Hospital, Delhi, India was conducted to assess their knowledge of polycystic ovarian syndrome across various medical colleges. Participants were enrolled from the 1st, 2nd, and 3rd years of study, and data were collected using a structured questionnaire. Duration of study for one year.

Results: In the study, 51% of the girls had a normal BMI, 19.5% were overweight, 16.5% were obese, and 13% were underweight. Symptoms reported included acne (33.5%), irregular menstrual cycles (16%), hirsutism (5%), and infertility (2%). Regarding awareness of PCOS, 33% of participants learned about it from teachers, 19% from friends, 11.5% from doctors, 3.5% from newspapers, and 5% from the internet. Alarmingly, 28% of adolescent girls were unaware of PCOS.

Conclusions: The findings suggest a need for comprehensive education about PCOS in medical curricula, which could enhance awareness and promote lifestyle modifications among adolescents. Early and accurate diagnosis during youth is critical in managing this disorder effectively.

Keywords: PCOS, endocrinological disorder, BMI

Introduction

Polycystic ovarian syndrome (PCOS) is a prevalent reproductive endocrinological disorder affecting approximately 6-8% of women of reproductive age [1]. Its clinical manifestations vary widely and can emerge early during the transition from girlhood to womanhood. Many of these features may initially appear transient during puberty but often stabilize as adolescence progresses.

Early diagnosis is crucial to prevent both immediate and long-term consequences associated with the syndrome. PCOS is typically diagnosed by exclusion and has undergone several revisions in its definition. The National Institute of Health (NIH) criteria from 1990 were updated in 2003, and the Rotterdam criteria [2] have since been universally adopted. In 2006, the Androgen Excess Society (AES) introduced a consensus statement defining PCOS primarily as a hyperandrogenic condition. This definition underscores the presence of clinical and/or biochemical signs of hyperandrogenism alongside other characteristic features of PCOS [3].

The global prevalence estimates of PCOS exhibit significant variability, ranging from 2.2% to as high as 26% [4-6]. In India, while there is limited research specifically on PCOS, observational studies conducted by endocrinologists, gynaecologists, and dermatologists cover a wide array of aspects related to the condition. The prevalence of obesity and diabetes mellitus is also increasing in India, mirroring trends seen in many industrialized

countries, driven by urbanization and changes in lifestyle. Often, young individuals do not seek medical attention until they experience late-stage consequences of PCOS. Most prevalence studies in India have been conducted in hospital settings, though recent studies among adolescents in schools have reported PCOS prevalence rates ranging from 9.13% to 36% [7, 8].

Studies have found that there was a gap in the knowledge of students about PCOS and its symptoms and signs, and that lifestyle preferences may predispose to PCOS [9]. Delay in the diagnosis of PCOS may lead to metabolic and reproductive abnormalities associated with it [10]. other studies have found that the prevalence of having signs and symptoms of PCOS was on the increase without a change in the level of awareness among female students, even though many of them had suffered from the syndrome. In addition, most of the students do not visit their doctors when suffering from PCOS symptoms and signs [11].

Methods

The survey was conducted on 200 medical students of 1st, 2nd and 3rd year of Vardhaman Mahavir Medical College and Safdarjung Hospital, Delhi, India by using simple random sampling technique. Duration of study for one year

The data was collected by using structured knowledge questionnaire on PCOS.

The investigator obtained permission from the students, prior to the data collection and assured confidentiality to the subject to get their cooperation and explained the purpose of the study. The results were analyzed.

Data collection was as follows:

- Age
- Weight in kg and height in cm to calculate BMI
- Type of diet- Vegetarian or mixed diet
- Irregularity of menses
- Signs of hyperandrogenism-Hirsutism or acne
- Source of information-Teacher, doctor, friend, paper or internet
- Type of consultation-Dermatologist or gynaecologist or any other
- No. of diagnosed cases

Operational definitions

- Adolescent girls- 10-19 years (for present study 18-19 years).
- Young girls- 20-24 years.
- Body mass index-

Normal: BMI =18-22.9 kg/m2,

Underweight: BMI <17.9 kg/m2,

Overweight: BMI >23 kg/m2,

Obese: BMI >25 kg/m2 for girls above 18 years

Results

In present study, 62.5% girls were young girls in the age group of 20-24 years while 37.5% girls were adolescent girls in the group of 18-19 years. Adolescent girls were from 1st or 2nd year. Young girls were from 2nd or 3rd year. A few were from 4th year when they learn PCOS in syllabus.

Table 1: Demographic details and adolescent problems distribution.

Variables		No. of participants	%
Age group	18-19 years	75	37.5
	20-24 years	125	62.5
BMI	<17.9 kg/m^2 underweight	26	13
	18-22.9 kg/m^2 normal	102	51
	>23 kg/m^2 overweigh	39	19.5
	>25 kg/m^2 obese	33	16.5
Type of diet	Mixed (veg and non-veg)	98	49
	Vegetarian	102	51
Problems in adolescent	Irregularity of menses	32	16
	Hirsutism	10	5
	Acne	67	33.5

In present study, 51% girls had normal BMI, 19.5% were overweight, 16.5% were obese while 13% were underweight. Overweight and obese girls are more prone for PCOS. Counselling was given and weight reduction was advised. Also, hormonal profile for thyroid, hyperandrogenism was suggested.

In present study, 51% girls were consuming pure vegetarian diet while 49% girls were consuming mixed (vegetarian and non-vegetarian) food. Advice regarding healthy food was given.

Table 2: Source of information about PCOS.

Source of information about PCOS	No. of participants	Percent
Teacher	66	33
Friend	38	19
Doctor	23	11.5
Paper	7	3.5
Internet	10	5
No information	56	28

In present study, 33.5% girls had acne, 16% had irregularity of menses, 5% had hirsutism. Hormonal profile for hyperandrogenism was suggested.eg. Serum Testosterone, Serum DHEAS. If these levels were high, the girls were referred to endocrinologist for further management. In present study, 33% adolescent and young 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. 28% adolescent and young girls were unaware of PCOS.

Table 3: Type of doctor attended.

Type of doctor attended	No. of girls	Percent
Dermatologist	19	9.5
Gynaecologist	9	4.5
Ayurvedic	2	1
Homeopathic	2	1

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.

Table 4: Prevalence of PCOS.

	No. of girls	Percent
Consultation with doctor	32	16
Investigations done	18	9
Proved PCOS	12	6

In this study, 9.5% girls consulted dermatologist for either hirsutism or acne, 4.5% consulted gynaecologist for irregularity of menses, 1% girls sought ayurvedic treatment while 1% opted for homeopathy. Amongst 16% girls who consulted a doctor, 9% girls did ultrasonography and blood investigations. Amongst them, 6% girls were diagnosed as having PCOS. So, prevalence of PCOS in present study is 6%.

Discussion

The present study was conducted on 200 medical students by using simple random sampling technique. In current study, 62.5% girls were young girls in the age group of 20-24 years while 37.5% girls were adolescent girls in the group of 15-19 years. Sunanda B et al revealed that 85% of the samples were in the age group of 21-25 years, 75% of the samples were Christians, 82% of the samples were consuming mixed diet, and 92% samples had regular menstrual cycle [12]. Sills S et al found that from 657 participants, the majority (63%) were between 26-34 years [13]. Moghul S found that the increasing trend of PCOS is predominantly seen in the age group 15 to 30 years [14].

In present study, 51% girls had normal BMI, 19.5% were overweight, 16.5% were obese while 13% were underweight. Sanchez N et al found that 32% were obese [15]. In present study, 51% girls were consuming pure vegetarian diet while 49% girls were consuming mixed (vegetarian and non-vegetarian) food.

In present study, 33.5% females had acne, 16% had irregularity of menses,5% had hirsutism. Sanchez N et al found that 32% were obese, 21% had acne, and 7% were hirsute (all associated with elevated testosterone levels and PCO appearance on ultrasound [15]. Joshi et al found that history of oligomenorrhea had a positive predictive value of 93.3% and negative predictive value of 86.7% to detect a possible case of PCOS [16].

In present study, 33% adolescent and young 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. 28% adolescent and young girls were unaware of PCOS. 72% girls were aware of PCOS while 28% were unaware of PCOS. Sunanda B et al found that

76% of the samples were with average knowledge and 10.7% with good knowledge regarding polycystic ovarian syndrome [12]. Sills ES et al found that more than 97% (n =638) of the respondents were familiar with PCOS, while 1.9% had not been told about PCOS, and <1% were uncertain [13].

Sills ES et al found that those subjects between age 26-34 were significantly more aware of PCOS than any other age group [13]. Gul S et al found that only 20 out of 177 women had any knowledge about this syndrome. Out of these 20 women 11 were those who had degrees in Medical Sciences.6 Gul S. et al found that 10% of women knew about this disorder [17].

In this study, 9.5% girls consulted dermatologist for either hirsutism or acne, 4.5% consulted gynaecologist for irregularity of menses, 1% girls sought ayurvedic treatment while 1% opted for homeopathy. Sills ES et al found that Physicians were the most common provider of PCOS information for all study participants, irrespective of age [13]. In current study amongst 16% girls who consulted a doctor, 9% girls did ultrasonography and blood investigations. Amongst them, 6% girls were diagnosed as having PCOS. So, prevalence of PCOS in present study is 6%. Sanchez N et al found that the prevalence of PCOS in adult women aged 18-45 years in the US is estimated to be 6.6% [15].

Joshi B et al found that globally, prevalence estimates of PCOS are highly variable, ranging from 2.2% to as high as 26% [16]. Joshi B et al found that the prevalence of PCOS was 22.5% by Rotterdam and 10.7% by Androgen Excess Society criteria.6 Joshi B et al demonstrated that PCOS is an emerging disorder during adolescence and screening could provide opportunity to target the group for promoting healthy lifestyles and early interventions to prevent future morbidities [16].

Shetty D found that around 10% of Indian women are affected with Polycystic Ovary Syndrome, commonly known as PCOS [18]. Choudhary N et al found that prevalence of PCOS in Indian adolescents is 9.13% [19]. Vaidya R et al found that according to World Health Organization, there are PCOS affected 116 million women worldwide in 2012 (3.4% of women) [20]. Lakshmi KS et al found that the prevalence of PCOS at a tertiary care hospital was 32% [21].

Radha P et al found that the rates of polycystic ovarian syndrome are high among Indian women compared to their Caucasian counterparts, with an estimated prevalence of 9.13% in Indian adolescents [22]. Radha P et al found that 20% of participants were diagnosed with PCOS. The proportion of PCOS was higher in urban population in comparison to rural counter parts [22].

Conclusion

From this study, it is concluded that 72% of girls were aware of PCOS while 28% of girls were unaware of PCOS. Prevalence of PCOS in present study is 6%. Most common source of information about PCOS was teacher as the girls were medical students. Girls who had irregularity of menses and signs of hyperandrogenism should be investigated and must be managed accordingly. Early diagnosis of PCOS and its prompt treatment will help the girls to improve quality of life and prevent further health hazards.

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