

Understanding status of PCOS in Nagpur city: A survey based study

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Abstract

Objective: To study the status of Polycystic Ovarian Syndrome (PCOS) in nagpur city along with the creation of its awareness.

Materials and Methods: This questionnaire based survey was conducted in Nagpur city which included the female subject between 12-60 years of age. A questionnaires consisting of 27 questions related to PCOS prepared in accordance with the available literature and gynecologist's opinion. Questionnaires were circulated and collected data were analyzed.

Results: Present study revealed that participants surveyed from age group I (12-20 yrs), II (21-40 yrs) exhibit most while group III (41-60 yrs) exhibit less symptoms similar to that of PCOS. In addition, age group II participants found to have diagnosed PCOS condition.

Conclusion: Age group I may be most susceptible while group II is at high risk for the development of PCOS and associated problems.

Keywords: Polycystic Ovarian Syndrome (PCOS), Questionnaire, Hirsutism, Hyperandrogenism.

Introduction

Polycystic Ovarian syndrome (PCOS) or Polycystic Ovarian Disorder (PCOD) is a triangle of Obesity, Amenorrhoea and Hirsutism.¹ PCOS is also referred to as the 'Syndrome O' due to Overproduction of insulin, Over-nourishment, Ovulatory disruption and Ovarian confusion. Women with PCOS have higher rates of endometrial cancer, cardiovascular disease, dyslipidemia, type-2 diabetes mellitus and infertility.² It is a complex condition characterized by elevated androgen levels, menstrual irregularities, multiple small ovarian cysts, obesity, acne, hypertension, diabetes, hirsutism, and infertility.^{2,3} It is the most common lifestyle disorder affecting approximately 2-8% women in between 18-44 years of (reproductive) age worldwide and having 9.13% prevalence rate in India.^{4,7}

polycystic ovaries, menstrual irregularity, genetic predisposition, sedentary lifestyle, obesity, intrauterine exposure, lack of physical exercise, the use of oral contraceptives, long term use of the seizure medicines, hypertension, diabetes, smoking, and alcoholism.⁸

PCOS can be diagnosed by observing above symptoms and laboratory investigations. Treatment for PCOS comprises of non pharmacological and pharmacological approach. The former approach includes identification of condition and lifestyle modification while the latter involves the use of oral contraceptives, antiandrogens, antidiabetic, anti-obesity and statins. A surgical procedure which is a final option for cure involves ovarian drilling.⁹⁻¹⁴

Studies on PCOS are performed only in hostel girls of reproductive age (15-44 year) from same residence but not in the age group more than 45 years and from different localities.⁸ Hence, the aim of present study was to know the status of PCOS in females (12-60 years) of Nagpur city along with the creation of awareness among the population regarding the occurrence, cause, and risk factors of PCOS.

Materials and Methods

The questionnaire survey was conducted in females of 12-60 years of age to check the status of PCOS in Nagpur city. The voluntarily participated females are categorized into three different age groups which are as follows:

Table 1: Total numbers of participants surveyed

S. No.	Age Groups (years)	Category/group	Total no. of participants surveyed
1.	12 - 20	I	141
2.	21 - 40	II	128
3.	41 - 60	III	38

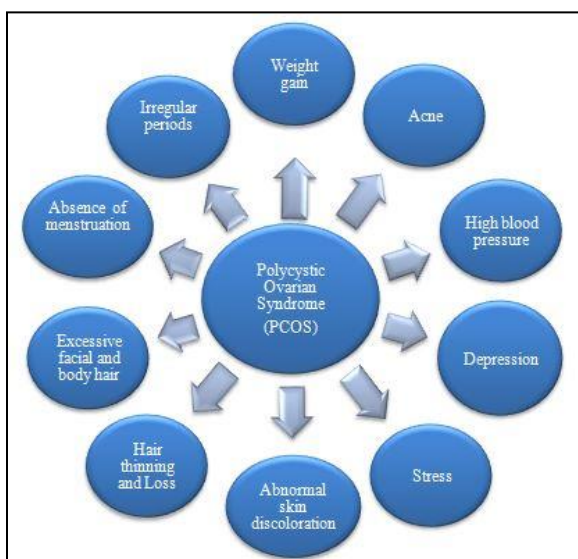


Fig. 1: Signs and symptoms of polycystic ovarian syndrome

PCOS may be caused due to several factors like hyperandrogenism, neuroendocrine abnormalities,

In this survey study, questionnaire containing 27 questions relevant to PCOS was prepared and given to the individual (girl student and women) volunteer from various

localities of Nagpur city. Individuality was assured when the participant filled the survey questionnaire using paper and pen method along with her signature. The medical history of the participants was recorded using the questionnaire to know whether the participant had been previously diagnosed or identified with a PCOS. The questionnaire was prepared in accordance with the available literature and gynecologist's opinion covering all the questions relevant to different age groups.

Females were categorized in three different age groups to know which age group is highly susceptible or at risk for the occurrence of PCOS. Menstrual irregularity was assessed as a usual cycle length of less than 21 days or more than 35 days. Participant's demographics and outcomes were kept confidential to protect privacy. During the survey an awareness of PCOS and some common female problems were created, and after the data collection results were analyzed manually.

Participants consent

Informed consent was obtained from all individual participants included in the study. Willingly participating females in between 12-60 year of age from different schools, colleges and married women (including working and housewives) were included (n=320) in this study. The participants below 12 and above 60 years were excluded. The participants who filled the incomplete questionnaire forms were also excluded from the study.

Results

Participants having menstrual irregularities

Among the surveyed participants, 25.8%, 17.57% and 11.71% from age group I, II and III respectively found to possess the menstrual irregularities. Group I has a higher percentage of menstrual irregularity than II and III as shown in Fig. 2.

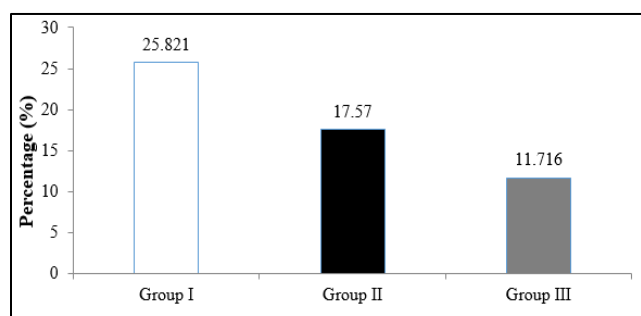


Fig. 2: Graph indicating percentage of participants having menstrual irregularities.

Participants having acne and skin pigmentation

As shown in Fig. 3, out of the total analyzed participants, 30.98%, 31.782% and 24.99% from group I, II and III respectively found to possess the acne and skin pigmentation problem. The age group I and II show nearly equal percentage of acne problem which is greater than group III.

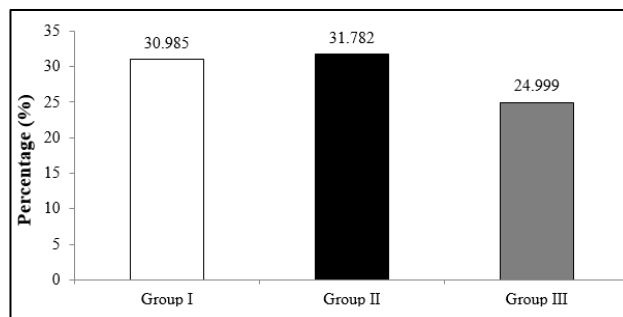


Fig. 3: Graph indicating percentage of participants having acne problems and skin pigmentation problem

3. Participants having Hirsutism

As shown in Fig. 4, Data analysis results revealed that, hirsutism was completely absent in group III while group II had 11.62% of hirsutism which is greater than group I (7.74%).

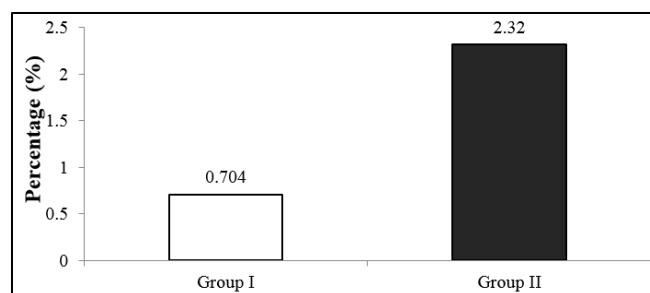


Fig. 4: Graph indicating percentage of participants having hirsutism

4. Participants having PCOS

Data analysis shows that the group II (3.906%) has a greater percentage of diagnosed PCOS participants than group I (0.704%). On the contrary not a single female had PCOS problem in group III (Fig. 5).

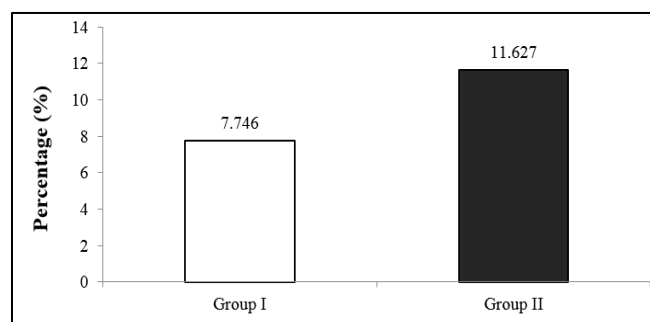


Fig. 5: Graph indicating percentage of participants having PCOS

5. Participants having a mood disorder

Among the participants surveyed from all the age group I, II and III, and found to have the mood disorder (Fig. 6). Group II (23.241%) has more percentage of the mood disorder than the group I (19.014%) and III (19.736%).

PCOS self assessment form:⁶⁻⁸

Questionnaire for PCOS		
This survey is aimed to study the present status of PCOS (Polycystic Ovarian Syndrome) along with its awareness and future prospects. The information provided by you will be kept confidential with us and utilized for the benefit of society. We request you to fill the required details and answer the questions correctly.		
Age - Yrs)-	Weight - Kg	Height Feet and Inches
BMI-	Marital status-	Number of child-
Age at first menses-	Annual family income-	Mob. No.
Workplace-		Date:
Sr. No.	Questionnaire	√ Tick the response
1.	I crave for carbohydrates and sugar	Yes <input type="checkbox"/> / No <input type="checkbox"/>
2.	I feel extremely hungry, irritable, sleepy, or fatigued after eating sweets.	Yes <input type="checkbox"/> / No <input type="checkbox"/>
3.	I have / had continuous weight gain.	Yes <input type="checkbox"/> / No <input type="checkbox"/>
4.	I have always had difficulty with losing weight.	Yes <input type="checkbox"/> / No <input type="checkbox"/>
5.	My waistline is greater than 35 inches.	Yes <input type="checkbox"/> / No <input type="checkbox"/>
6.	I have / had acne problems in the past.	Yes <input type="checkbox"/> / No <input type="checkbox"/>
7.	My menses (periods) are unpredictable.	Yes <input type="checkbox"/> / No <input type="checkbox"/>
8.	My menstrual cycle last longer than 35 days.	Yes <input type="checkbox"/> / No <input type="checkbox"/>
9.	My menses are very heavy or last longer than a week	Yes <input type="checkbox"/> / No <input type="checkbox"/>
10.	Yet, I don't have a menses.	Yes <input type="checkbox"/> / No <input type="checkbox"/>
11.	I have excess hair growth on my face <input type="checkbox"/> breasts <input type="checkbox"/> and upper thighs <input type="checkbox"/>	
12.	I have pubic hair that grows up my abdomen and around the navel.	Yes <input type="checkbox"/> / No <input type="checkbox"/>
13.	I have hair loss problem	Yes <input type="checkbox"/> / No <input type="checkbox"/>
14.	I have symptoms of hypoglycemia.	Yes <input type="checkbox"/> / No <input type="checkbox"/>
15.	I have a family history of: Cardiovascular disease <input type="checkbox"/> Diabetes <input type="checkbox"/> Gestational diabetes <input type="checkbox"/> Obesity <input type="checkbox"/> Hypertension <input type="checkbox"/> and PCOD <input type="checkbox"/>	
16.	I have high <input type="checkbox"/> or low <input type="checkbox"/> level of thyroid hormone	
17.	My Serum FSH and LH level is normal	Yes <input type="checkbox"/> / No <input type="checkbox"/>
18.	I have noticed skin color or pigmentation changes	Yes <input type="checkbox"/> / No <input type="checkbox"/>
19.	I use to work /study under extreme stress conditions	Yes <input type="checkbox"/> / No <input type="checkbox"/>
20.	I have high level of: Testosterone <input type="checkbox"/> , Cholesterol <input type="checkbox"/>	Yes <input type="checkbox"/> / No <input type="checkbox"/>
21.	I use oral contraceptive pills	Yes <input type="checkbox"/> / No <input type="checkbox"/>
22.	I have problems of skin <input type="checkbox"/> or Ovarian cyst <input type="checkbox"/>	Yes <input type="checkbox"/> / No <input type="checkbox"/>
23.	I have problem of: Depression <input type="checkbox"/> mood swing <input type="checkbox"/> fertility <input type="checkbox"/>	
24.	I have / had difficulties in getting pregnant first <input type="checkbox"/> or subsequent <input type="checkbox"/> child	
25.	I have / had problem of miscarriage	Yes <input type="checkbox"/> / No <input type="checkbox"/>
26.	My siblings suffer from PCOS.	Yes <input type="checkbox"/> / No <input type="checkbox"/>
27.	I have Post Menopausal Symptoms (PMS).	Yes <input type="checkbox"/> / No <input type="checkbox"/>
All the information provided above is correct with voluntary participation.		
Date:	Signature of participant _____	
Thanks for participation.....		
Date:	Signature of evaluator _____	
Priyadarshini J. L. College of Pharmacy, MIDC, Hingna Road Nagpur, 440016		

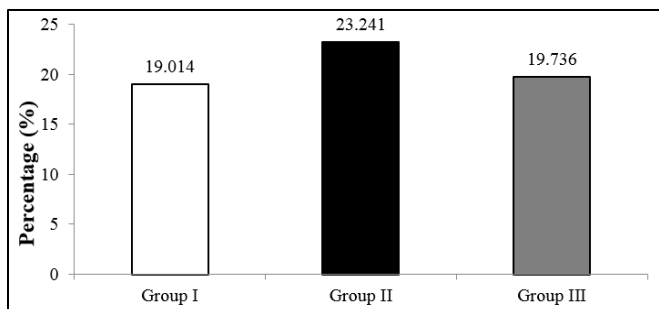


Fig. 6: Graph indicating percentage of participants a mood disorder

6. Participants having weight problems

As shown in the Fig. 7, the age group II and III has 46.87% and 47.36% weight abnormality respectively, while group I (58.77%) has the greatest percentage of the weight abnormality problem.

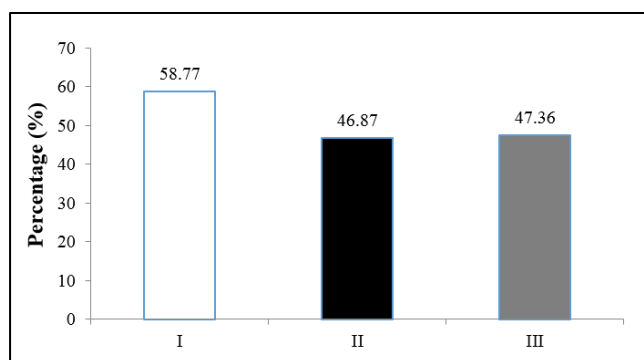


Fig. 7: Graph indicating percentage of participants having weight problems

7. Participants having stress conditions

As shown in Fig. 8, age group I, II and III, 33.33%, 40.31% and 26.31% of participants respectively found to be suffering from a stress condition. Group II has a higher percentage of stressed participants than I and III.

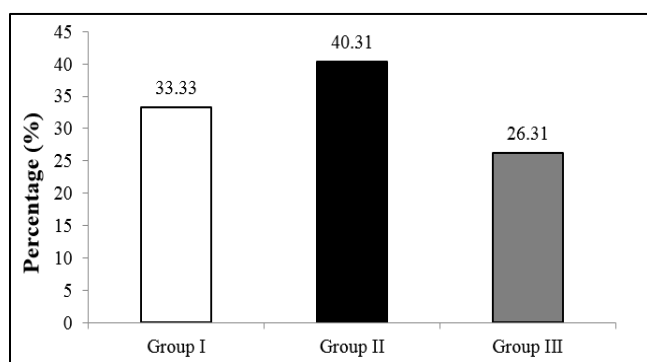


Fig. 8: Graph indicating percentage of participants having stress conditions

8. Participants having fertility issues

Among the participants from age group I and II, 1.807% and 18.42% of participants found to have the fertility issues which was completely absent in group III (Fig. 9).

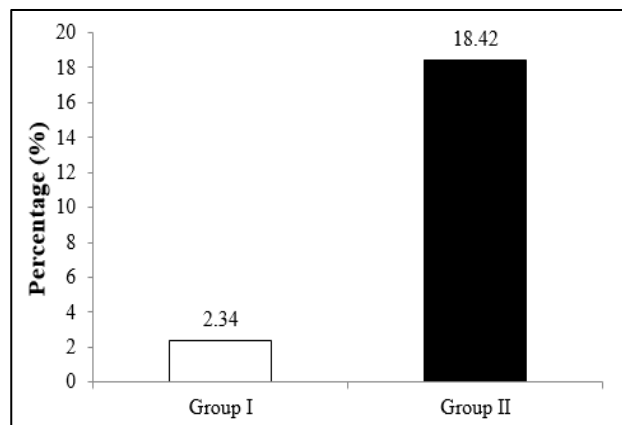


Fig. 9: Graph indicating percentage of participants having fertility issues

9. Participants having hair loss problems

Among the total number of participants from age group I, II and III, 59.57%, 64.34% and 63.15% of participants were presented with hair loss problems (Fig. 10). Group III has great while group II has the greatest percentage of hair loss than group I.

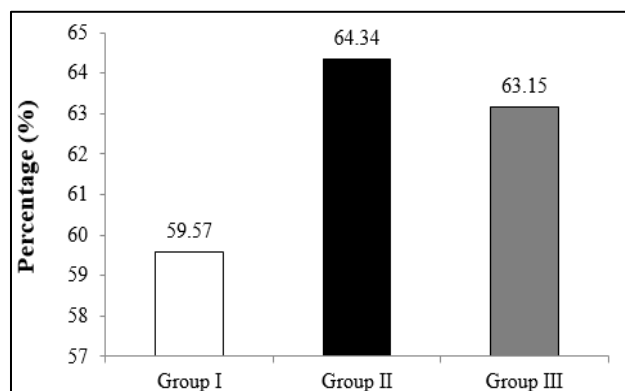


Fig. 10: Graph indicating percentage of participants having hair loss problems

10. Participants having hormonal imbalance (testosterone, cholesterol)

As shown in figure 11, among the total number of participants surveyed, 0.7092% and 0.77513% of participants from age group I, and II respectively found to have testosterone imbalance and 2.8368 %, 3.10078% and 10.5263% of participants have cholesterol imbalance from age group I, II and III respectively.

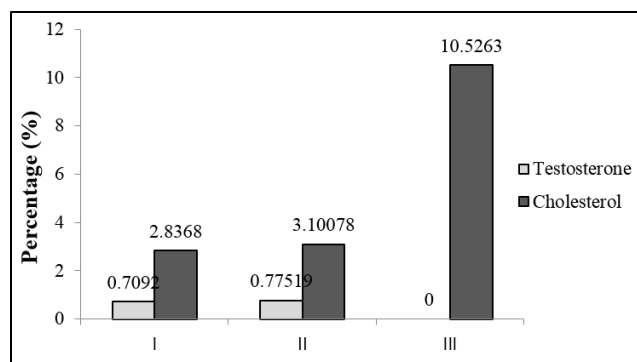


Fig. 11: Graph indicating percentage of participants having hormonal imbalance

11. Participants having a family history of the diabetes

Among the total number of participants from age group I, II and III, 15.602%, 24.031% and 7.984% of participants found to have the family history of the diabetic condition. As shown in figure 12 group II posses more diabetic population than others.

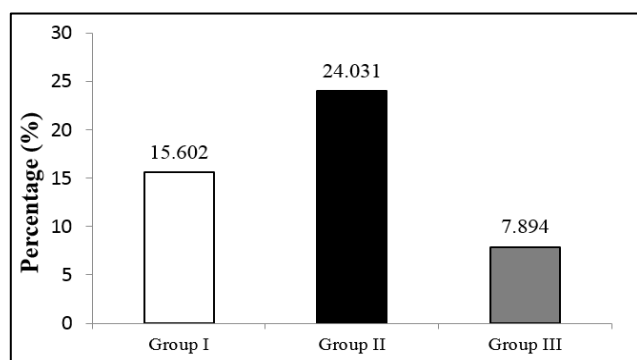


Fig. 12: Graph indicating Percentage of participants having a family history of diabetes

12. Total number of participants having a family history of CVS disorder

Among the participants from age group I, II and III, 6.38%, 11.62% and 18.42% of participants found to have the family history of cardiovascular disorder. As shown in Fig. 13, CVS disorders are lowest in group I, moderate in group II and highest in group III.

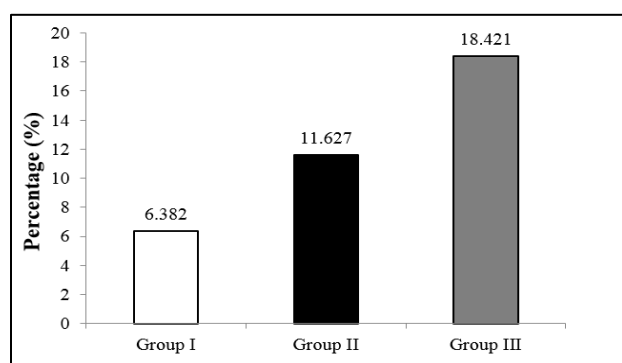


Fig. 13: Graph indicating percentage of participants having CVS disorders

Discussion

In recent years, life style modification has tremendously increased the prevalence of PCOS amongst women, which leads to various complications including cancer, CVS disorder, infertility. Signs and symptoms of PCOS include menstrual irregularity, hair growth problem, diabetes, weight abnormality, acne, skin pigmentation, stress, mood disorder, and hormonal imbalance etc.^{2,3} The appearance of these symptoms indicates the possibility of presence PCOS. Hence, the questionnaire was prepared based on the above related symptoms. The response was recorded and collected from willingly participating 320 females of which 307 were analyzed and 13 were excluded due to incompleteness of the form.

The problem of PCOS can be seen at any stage of reproductive age, hence, participants were divided into 3 groups, group I-12 to 20, II-21 to 40 and III-41-60 year of age.¹⁵

The present study showed that age group I possess high percentages of menstrual irregularity, acne, skin pigmentation, and weight abnormality problems as compared to the other groups. These symptoms are exactly similar to the PCOS symptoms, hence it can be suggested that females from this group are prone for the development of PCOS.

Our survey results indicate that, the symptoms like acne, skin pigmentation, hirsutism, mood disorder, weight abnormality, stress, hair loss, and diabetic condition are more common in age group II, hence in terms of symptoms this age group may be susceptible to the presence of PCOS. In fact the patient having PCOS diagnosed by gynecologist was found to be more in this group.

Group III found to show the highest percentage of CVS disorders and cholesterol level, whereas mood disorder and hair loss problems were equivalent to group I. The menstrual irregularity and other problems are less while the PCOS, testosterone level and infertility problems were absent in group III, which may be due to the lifestyle and older age or menopause.

Conclusion

The survey study revealed that most of the females participated in this survey exhibited symptoms similar to that of the PCOS. The participants of age 12-40 years are found to be at a high risk for the occurrence of PCOS, at present or in future. The prevalence of the PCOS is high in 20-40 year of age, whereas females during the age more than 40 years may suffer from the CVS and lipid disorder which may be critical in the future if untreated. This study helped to identify the status of PCOS in the selected region along with the creation of awareness in society for future prospect.

Present study needs to be extrapolated in the future with increased number of participants from different regions and statistical analysis.

Authors contributions

P. N. Amale designed the study and prepared the manuscript. V. M. Barethia and S. A. Deshpande acquired and analyzed the data. All authors read and approved the final manuscript.

Acknowledgement

We are thankful to the Dr. Ankita Barethia (Gynecologist) for her advice and support.

Funding source

This study was not supported financially

Conflict of interest

There is no potential conflict of interest to declare

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How to cite this article: Amale P, Deshpande S, Barethia V. Understanding status of PCOS in Nagpur city: A survey based study. *Indian J Pharm Pharmacol* 2019;6(3):93-8.