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ASSESSMENT OF KNOWLEDGE AND PREVALENCE OF RISK FACTORS OF POLYCYSTIC OVARIAN SYNDROME AMONG UNDERGRADUATE WOMEN: A CROSS-SECTIONAL STUDY

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ABSTRACT

Purpose: *The study aims to assess the knowledge & prevalence of risk factors of polycystic ovarian syndrome among undergraduate women.*

Methods: *This is a 6-month community program-based cross-sectional prospective study carried out in 4 selected degree colleges of Kalaburagi. The students were enrolled in the study considering the study criteria and required data were collected. The knowledge of the participant was assessed by using PCOS knowledge assessment questionnaires.*

Results: *A total of 275 female participants of age 18-25 from 4 selected degree colleges of different quadrants of Kalaburagi were enrolled. The percentage of knowledge score in the pre-test was 42.16% and in the post-test was 80.76%. Self-assessment for risk factors of PCOS reveals that the highest 171 subjects (62.2%) were unpredictable to PCOS whereas 11 (4.0%) were at high risk of getting PCOS. The study reveals that there was a statistically very highly significant difference in mean knowledge score in faculty of study and diet ($P<0.001$).*

Conclusions: *The study concluded that participants had poor knowledge regarding polycystic ovarian syndrome. It is important to educate adolescent girls and young adults regarding PCOS and to be encouraged to follow a healthy lifestyle.*

INTRODUCTION

A recent gynecological concern is a polycystic ovarian syndrome (PCOS). It is classified as a hormonal or lifestyle disorder that is defined by the presence of at least one polycystic ovary (multiple cysts present), along with ovulatory dysfunction and excessive androgen secretion, in women of reproductive age groups. It is the most prevalent endocrine disorder among these women.[1] It manifests as a wide range of clinical features, including obesity, menstrual irregularities, and Hyperandrogenism, as well as other metabolic problems. In 1935, Stein-Leventhal syndrome was coined as a moniker for this illness and its description. To make a proper diagnosis, conditions including PCOS mimickers, congenital adrenal hyperplasia, Cushing syndrome, and ovarian masculinizing tumors must be ruled out. In terms of a frustrating experience for women and a difficult complicated illness for physicians, PCOS is a significant public health problem.[3-5] Depending on how PCOS is defined, prevalence estimates for this age group globally range from 2.2% to as high as 26%. To raise public

awareness and educate people about polycystic ovarian syndrome, September is recognized as PCOS Awareness Month.

The most inclusive criteria are the Rotterdam criteria, which include all combinations of PCOM, oligo-anovulation, and clinical or biochemical evidence of Hyperandrogenism that is otherwise unaccounted for. It is possible to diagnose PCOS in women with Hyperandrogenism who do not have anovulatory symptoms ("ovulatory PCOS"), which accounts for about 10% of cases, by using the Androgen Excess-PCOS Society (AE-PCOS) criteria (2006), which cover otherwise unexplained Hyperandrogenism with either oligo-anovulation or PCOM.[4-7]

The precise cause of PCOS is still unknown. Several theories have been postulated in the genesis of PCOS. Some of the well-known factors which may influence the onset Of PCOS are lifestyle changes, sedentary life, diet, and stress and toxins in the body. Need for awareness: It is currently recommended that PCOS should be appropriately treated as soon as possible because it has long-term negative consequences (threefold) on the health of women, including the development of diabetes, hypertension, cardiovascular disease, and hyperlipidaemias. Later in life, these ladies should be checked for these conditions. Adolescent obesity must be prevented and treated. Lifestyle changes should be encouraged. [8-11]

In a research report, the review of the literature provides an overview of what is currently known about a specific practice problem, including what is unknown. The major goal of this study is to evaluate undergraduate women's awareness and prevalence of polycystic ovarian syndrome risk factors.

METHODOLOGY

The study was a Prospective cross-sectional study carried out for 6 months at 4 selected degree colleges (VG Women's Degree College, Godutai Women's degree college, HKE College of Nursing, HKE College of Pharmacy) from different quadrants of Kalaburagi after obtaining permission letter from Principals of the colleges and consent letters from Students.

Inclusion criteria:

Undergraduate girls of the 18-25 years age group who had menarche more than 2 years before study & are willing to participate in the study were included in the study.

Exclusion criteria:

Undergraduate students who are not willing to participate in the study were excluded. Special conditions like pregnancy and other disease conditions like thyroid, type 1 and type 2 Diabetes mellitus, and Cushing's syndrome were excluded from the study.

Study procedure:

All the participants enrolled in the study were provided with personal data collection forms, knowledge assessment questionnaires and self-assessment questionnaires regarding PCOS and all the participants were instructed on how to fill the questionnaires and adequate time was given to fill up the questionnaires.

After the pre-test, participants were educated regarding PCOS importance of maintaining a healthy lifestyle and tips for early prevention of PCOS by means of various educational tools like PowerPoint presentations, and other video sources. Thereafter participants were provided PCOS educational leaflets and were asked to read them carefully. Then again the same questionnaire was distributed and responses were collected.

Statistical Analysis:

The data collected from the questionnaires are analyzed using statistical methods. Software from IBM SPSS 20.0 was used to evaluate statistical data. Data were gathered, put out on an Excel sheet, and a master chart was created. Tables and graphs were created using the master chart. Paired and unpaired t-tests as well as the ANOVA test were used for the quantitative data analysis. The chi-square test was used for statistical significance in qualitative data analysis. P-values under 0.05 were regarded as significant.

RESULTS AND DISCUSSION

Details of the participants of selected Degree Colleges:

We have selected 4 Degree colleges from different quadrants of Kalaburagi. The total strength of participants who completed the study was 275. Out of 275 participants who completed the study, SMT.Veeramma Gangasiri women's degree college 77(28%), Godutai Doddappa Appa women's degree college 76(27.6%), HKES College of Nursing 62(22.5%) , HKES MTRIPS College of Pharmacy 60 (21.8%).

Subjects' demographic details:

Age-wise distribution and the participant's course of study were given in Table 1 & 2 respectively. In the study, it was observed that among the total of 275 participants, a maximum number of participants 128 (46.5%) had the BMI category of underweight followed by normal BMI participants 121 (44.0%), 20 (7.3%) of participants had the BMI category of overweight, 5 (1.8%) of participants were in the BMI category of class I obesity and only 1 (0.4%) participant had seen BMI category was class II obesity, class III obesity participants were not seen in the study. The mean BMI of participants was observed 19.62 ± 4.09. In the study, out of 275 sample participants, 235 (85.5%) of the participants liked junk food and 40 (14.5%) of the participants were not like junk food.

In the study, it was observed that out of 275 study participants, the maximum number 228 (82.9%) of participants' age of menarche was 13-15 years. 27 (9.8%) of participants' age of menarche was ≤ 12 years and 20 (7.3%) of participants' age of menarche was ≥ 16 years. The mean age of menarche was 13.84. Coming to marital status, it is observed that among the total of 275 participants 268 (97.5%) of participants were unmarried and 7 (2.5%) of participants were married.

It is noticed that among the total of 275 participants, the maximum number of participants 224 (81.5%) had seen a low-risk level, 27 (9.8%) of participants had a moderate risk level and 22 (8.0%) of participants had a high-risk level. The mean W/H ratio of all participants was 0.75 ± 0.67.

Table 1: Age-wise distribution of participants

Age in years	Number of participants	Percentage
≤ 20	167	60.7
21-25	106	38.5
26-30	2	0.8
Total	275	100.0
Mean ± SD	20.11 ± 1.84	

Table 2: Course of study wise distribution of participants

Course of study	Number of participants	Percentage
B.A	41	14.9
B.com	72	26.3
B.sc	40	14.5

B.sc Nursing	62	22.5
B pharma	5	1.8
Pharm D	55	20.0
Total	275	100.0

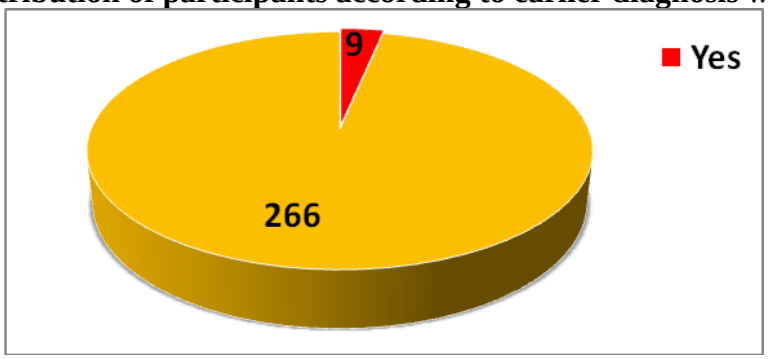
Distribution based on menstrual regularities & problems:

Menstrual cycle-wise distribution of participants was given in Table 3. In the present study, among 275 participants, 235 (85.5%) of participants do not have menstrual disorder and 40 (14.5 %) of participants had menstrual disorder. The distribution of participants according to earlier diagnosis of PCOS was given in Fig 1. The results reveal that 70 (25.4%) of participants' source of information on PCOS was their parents, followed by 67 (24.5%) of participants' source of information on PCOS was Health care professionals 57 (20.7%) of the participant's source of information of PCOS was mass media and 16 (5.8%) of participants source of information of PCOS was teachers. Whereas 65 (23.6%) of participants had no information about PCOS.

Table 3: Menstrual cycle-wise distribution of participants

Menstrual cycle	Number of participants	Percentage
Regular	235	85.5
Irregular	40	14.5
Total	275	100.0

Fig 1: Distribution of participants according to earlier diagnosis with PCOS



Awareness & Knowledge Assessment on PCOS:

In the study, 149 (54.2%) of participants had an earlier awareness of PCOS and 126 (45.8%) of participants do not have an earlier awareness of PCOS. knowledge assessment scores of pre and post-test were given in Table 4. The finings reveal that there was a statistically very highly significant difference of mean knowledge scores between the pre-test and post-test ($P<0.001$) Post-test knowledge score was significantly better as compared to the pre-test knowledge score. Therefore, structured health education on PCOS is effective for the improvement of knowledge regarding PCOS.

The distributiontion of participants according to self-assessment categories of PCOS was shown in Fig 2. Knowledge assessment scores with demographical profiles was given in Table 5. The study reveals that there was no statistically significant difference n mean knowledge score in age, year of study, age of menarche, marital status, and menstrual cycle ($P>0.05$). There was a statistically very highly significant difference of mean knowledge score in faculty of study and diet ($P<0.001$). In the faculty of study general science and paramedical science participants had significantly better knowledge of PCOD as compared to arts and commerce faculty participants In the diet, mixed and non-vegetarian participants had

significantly better knowledge in PCOS as compare to vegetarian participants. Effectiveness of Structured Education between Medical and Non-Medical Participants was given in Table 6.

Table 4: Comparison of knowledge assessment scores between pre and post-test

Knowledge assessment categories	Score interval	Pre-test	Post-test	Paired t-test value & P-value
		No. (%)	No. (%)	
Inadequate	0--10	122 (44.4%)	0 (0.0%)	t = 33.72 P = 0.000 VHS
Moderate adequate	11--20	153 (55.6%)	153 (55.6%)	
Adequate	21--25	0 (0.0%)	122 (44.4%)	
Total	--	275 (100.0%)	275 (100.0%)	
Mean ± SD	--	10.54 ± 4.90	20.19 ± 1.78	
Percentage of knowledge assessment score	--	42.16%	80.76	Difference = 38.6%

NS= not significant, S=significant, HS=highly significant, VHS=very highly significant

Fig 2: Distribution of participants according to self-assessment categories of PCOS

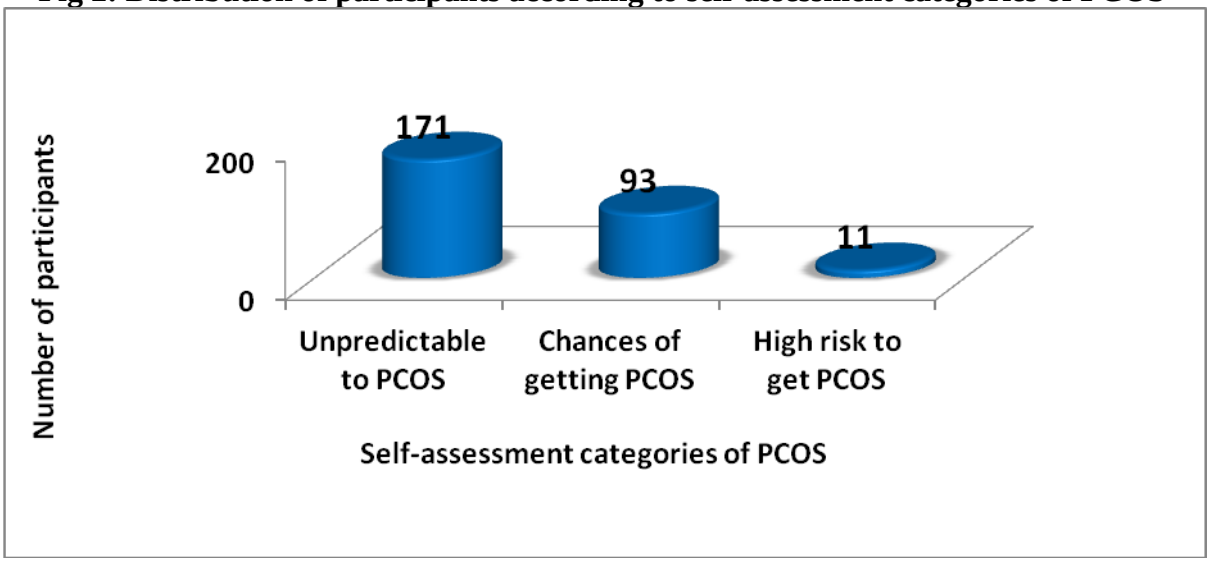


Table 5: Comparison of knowledge assessment scores with demographical profiles

Demographical profiles		Knowledge scores	Test value	P-value & significance
		Mean ± SD		
Age	**≤ 20**	10.56 ± 4.67 (41.9%)	F = 0.388	P = 0.679 NS
	21-25	10.45 ± 3.94 (41.8%)		
	26-30	13.5 ± 3.51 (54.0%)		
Year of study	**1st year**	10.71 ± 4.15 (42.8%)	F = 0.992	P = 0.372 NS
	2nd year	10.94 ± 5.18 (43.7%)		
	3rd year	9.24 ± 3.76 (36.96%)		
	4th year	16.62 ± 3.15 (66.5%)		
Faculty	**Arts & com.**	7.09 ± 4.63 (28.4%)	F = 63.42	P = 0.000 VHS
	General sc.	13.01 ± 3.75 (52.1%)		
	Paramedical sc.	12.95 ± 3.21 (51.8%)		
Age of menarche	**≤ 12 years**	12.12 ± 4.28 (48.4%)	F = 2.54	P = 0.083 NS
	13-15 years	10.38 ± 3.79 (41.5%)		
	≥ 16 years	9.92 ± 4.09 (39.7%)		

Marital status	**Married**	8.84 ± 4.32 (35.6%)	t = 1.048	P = 0.295 NS
	Unmarried	10.52 ± 4.91 (42.0%)		
Menstrual cycle	**Regular**	9.82 ± 4.02 (39.7%)	t = 0.789	P = 0.431 NS
	Irregular	10.61 ± 4.87 (42.4%)		
Diet	**Vegetarian**	8.58 ± 5.13 (34.3%)	F = 8.628	P = 0.000 VHS
	Mixed	11.86 ± 4.35 (47.4%)		
	Non-vegetarian	9.33 ± 5.28 (37.3%)		

NS= not significant, S=significant, HS=highly significant, VHS=very highly significant

Table 6: Comparison of Effectiveness of Structured Education between Medical and Non-Medical Participants

Categories	**No. of participants**	**Mean ± SD**				
		Pre test	**Post test**	**Difference Mean**	**T Test value**	**P Value & Significance**
MEDICAL	122	11.86±3.2	20.75±2.4	8.89	23.85	<0.001
NONMEDICAL	153	8.68±5.17	19.64±1.81	10.96	24.75	<0.001
TOTAL	275					

DISCUSSION

PCOS is the most recent gynecological pandemic, and if it is not properly managed, it can cause several health issues and have an impact on reproductive health. Increasing girls' understanding of PCOS can aid in early detection, prevention, and information acquisition. The purpose of the current study was to evaluate undergraduate women's awareness of and occurrence of polycystic ovarian syndrome risk factors. The pre-experimental one-group pre-test post-test design was used to perform the investigation. The study's subjects came from four carefully chosen colleges in various Kalaburagi quadrants. The total sample size was 275.

In the present study, among 275 participants, the maximum number of participants 167 (60.7%) belonged to the age group of ≤ 20 years, followed by 106 (38.5%) of participants who belonged to the age group of 21-25 years and 2 (0.8%) of participants belonged to the age group of 26-30 years. The mean age of participants was 20.11 ± 1.84. our findings were similar to a study carried out by Musmar et al [12]., which report that all the participants were within the age group (18–24) with a mean age of 20.2 ± 1.4.

In response to the question regarding the age of attainment of menarche, out of 275 study participants, a maximum number 228 (82.9%) of participants age of menarche was 13-15 years. 27 (9.8%) of participants' age of menarche was ≤ 12 years and 20 (7.3%) of participants' age of menarche was ≥ 16 years. The mean age of menarche was 13.84 ± 1.25 .our findings are similar to studies carried out by Nanjaiah R. et al [9]., which report that The mean age of menarche was 12.91 ± 1.026.

Our study that, the maximum number of participants 128 (46.5%) had the BMI category of underweight followed by normal BMI participants were 121 (44.0%), 20 (7.3%) of participants had the BMI category of overweight, 5 (1.8%) of participants were in the BMI category of class I obesity and only 1 (0.4%) participant had seen BMI category was class II obesity, class III obesity participants were not seen in the study. The mean BMI of participants was observed 19.62 ± 4.09. Our results were similar to those of a research conducted by Musmar et al. (12), which found that participants' weight ranged from 39.4 to

82 kg, with a mean of 58.2 9.4 kg, and that their computed BMI fell between 16.8 and 30.6, with a mean of 22.2 3.1.

In the present study, it is observed that among 275 participants, 235 (85.5%) of participants' menstrual cycle was regular and 40 (14.5%) of participants' menstrual cycle was irregular. These findings were similar to Nanjaiah R. et al [9]., 84.8% had regular periods and 15.2% had irregular periods.

The study's initial goal was to evaluate undergraduate women's knowledge of polycystic ovarian syndrome before and after the examination. The study results revealed that among 275 undergraduate women, a maximum of 153(55.6%) of participants were moderately knowledgeable in both pre-test & post-test, 122 (44.4%) of participants were inadequate knowledge in pre-test, whereas there were no participants seen as inadequate knowledge in post-test. Adequate knowledge participants were not seen in the pre-test, whereas in the post-test 122 (44.4%) of participants had adequate knowledge scores. The percentage of knowledge score in the pre-test was 42.16% and in the post-test was 80.76%. The difference in knowledge score between the pre-and post-test was 38.6%. It is similar to the study carried out by A., Sowmya & Fernandes et al [10] reported that the mean pre-test knowledge score was 57% and after Conducting a structured teaching program the score (Post-test) was 87%.

The second goal was to evaluate the impact of structured education on undergraduate female students' understanding of polycystic ovarian syndrome. According to the study's findings, among undergraduate women, the mean pre-test score was 10.54, with a standard deviation of 4.90, and the mean post-test score was 20.19, with a standard deviation of 1.78, with a mean difference of 9.65. 33.72 was the obtained "t" value., The study reveals that there was a statistically very highly significant difference in mean knowledge scores between pre-test and post-test (P<0.001). These findings are comparable with a study carried out by Devi G. et al **[14]**., According to the study's findings, teenage girls' mean pre-test scores were 6.8 with a standard deviation of 3.4 and their post-test scores were 21.3 with a standard deviation of 3. The average disparity was 14.8. At the 0.05 level, the resulting "t" value of 56.5 was statistically significant.

As a result, it has statistical significance (p0.005). It was deduced that the mean post-test knowledge level score was higher than the pre-test knowledge level score. The mean pre- and post-test knowledge levels among undergraduate women differ significantly. As a result, structured education has been shown to improve undergraduate women's knowledge of PCOS.

Our Study reveals that there was a statistically very highly significant difference in mean knowledge score in the faculty of study and diet (P<0.001) In the faculty of study general science and paramedical science participants had significantly better knowledge in PCOD as compared to arts and commerce faculty participants. In the diet, mixed and non-vegetarian participants had significantly better knowledge of PCOS as compared to vegetarian participants. These results are consistent with a study by Sunanda B et al. 13, which found that the students' sources of information, consumption of fast food, and dietary habits were all related to their level of understanding of PCOS.

CONCLUSION

In the present study, the results revealed that the prevalence of risk factors of polycystic Ovarian Syndrome (PCOS) is increasing but participants were not aware of PCOS, although its sign and symptoms were present in many of them. The majority of participants have been observed to have unhealthy lifestyles for various reasons such as craving for more carbohydrates & sugar, consuming more processed and junk food, and working or studying under extreme stress conditions.

The results showed that our study highlighted the need for participants to have accurate and adequate information about Polycystic Ovarian Syndrome & its early prevention. It is important to educate adolescent girls & young adults regarding PCOS & its myths and misbelieves, diagnosis, signs & symptoms, long-term complications & other lifestyle modifications & dietary alterations having this knowledge helps them in the early prevention of PCOS. Our study indicated the significant impact of health education intervention in improving the level of knowledge regarding PCOS. Females should consult a gynecologist at least once a year for better health status.

We concluded that the overall study shows the age group of adolescent girls & young adults needs to target to encourage them to practice healthy lifestyles and eating habits & bring about a positive change. After the post-education session, the level of knowledge regarding PCOS increased significantly. Through self-assessment questionnaires, participants assess their health condition and were aware of various risk factors for PCOS. Participants were educated regarding dietary alterations and healthy lifestyle modifications to reduce the risk factors for PCOS. Counseling by a pharmacist was provided for tips for the early prevention of PCOS. Some of the myths and misconceptions were cleared. This study concludes that our education program helped the participants to acquire a proper understanding and the need for early prevention of PCOS.

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