Original Research Article

Rural Women's Insights into Polycystic Ovary Syndrome (PCOS): A Study on Knowledge, Attitude, and Practice in Puducherry

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Abstract:

Introduction: PCOS, or polycystic ovarian syndrome, is an endocrine condition. Unlike other ovulation diseases, which occur when the ovaries are defective or non-functioning, this syndrome is characterised by prolonged anovulation and ovarian dysfunction. The risk factors that predispose females to PCOS include lifestyle or nutrition, environmental contaminants, genetics, intestinal dysbiosis, neuroendocrine changes, and obesity. By resulting in hyperinsulinemia, oxidative stress, hyperandrogenism, decreased folliculogenesis, and irregular menstrual periods, these variables may exacerbate the metabolic syndrome. This was the first time that rural Puducherry women of reproductive age had taken part in a study like this one that examined their knowledge, attitudes, and practices around PCOS.

Methodology: Descriptive cross-sectional study was done for this study between August 2023 and December 2023. Women between the ages of 15 and 49 were included in the research. The study took place over a six-month period in the urban and rural field practice regions of a tertiary care hospital in the department of community medicine of Puducherry district. Multistage sampling technique was adopted. A pretested semi structured questionnaire was used and a total of 287 subjects were enrolled for the study

Results: Total no of study participants enrolled for the study were 287. Around 54.7% had heard of PCOS (polycystic ovarian syndrome), and 14.6% had heard of androgen male hormone. Only 95 participants (33.1%) were aware that patients with PCOS have tiny multiple cysts in their ovaries; 90 participants (31.4%) believed that obesity is a contributing factor to PCOS; and 43 participants (15.3%) realised that pre-diabetes, a condition marked by a decrease in the body's ability to use insulin, may be a cause of PCOS. Regarding practices, 9(3.1%) read nutrition labels and 8(2.8%) incorporate low- fat foods into diet. Only 24(8.4%) eat 5 servings of fruits and vegetables per day and 17(5.9%) decreased the amount of refined sugar in their diet

Conclusion: Women in rural Puducherry have inadequate understanding, attitudes, and practices surrounding PCOS. In conclusion, a multi-faceted approach involving medical education, community outreach, collaborative efforts, and diversified research methodologies is essential to address the inadequacies in understanding, attitudes, and practices regarding PCOS among women in rural Puducherry. By implementing these recommendations, a positive impact on PCOS awareness, early diagnosis, and overall women's health can be achieved.

Introduction

Polycystic ovary syndrome (PCOS) is a common metabolic and reproductive disorder affecting women of childbearing age. Before being referred to as polycystic ovarian syndrome, or PCOS for short, this disorder was first known as "Stein-Leventhal syndrome" and then polycystic ovary disease, or PCOD [1]. Women who are of reproductive age suffer greatly from this heterogeneous endocrine and metabolic condition, which is marked by ovarian cysts, oligo or anovulation, and hyperandrogenism [2–4]. Obesity, insulin resistance, and hypercholesterolemia are metabolic issues linked to PCOS that can result in serious side effects such type 2 diabetes and cardiovascular disease [5] Reproductive problems like infertility, late menopause, and even endometrial cancer can

result from PCOS. Because of risk factors such central obesity, high blood pressure, atherosclerotic dyslipidaemia, and insulin resistance, PCOS also increases the risk of metabolic syndrome in women.Long-term effects including type 2 diabetes, heart disease, sleep apnoea, and psychological issues like anxiety and depression are frequent in women with PCOS because of these risk factors [6].

Nonetheless, it has been demonstrated that leading a healthy lifestyle, which includes losing weight, exercising often, and eating a balanced diet, might enhance metabolic health in PCOS-affected women and avert subsequent issues [7,8]. The first line of treatment for PCOS should be a change in lifestyle, according to the advice of specialists from the American College of Endocrinology, and the American Association of Clinical Endocrinologists [9]. Additionally, it is advised for women with PCOS to reduce five to ten percent of their body weight, maintain a nutritious diet, and engage in regular exercise [10].

It has been noted that more knowledge of the condition improved the treatment of PCOS's detrimental effects. According to Colwell and associates, women with PCOS were inspired to adopt preventative measures and felt empowered about their illness after participating in a clinical research trial [11].A greater grasp of PCOS in women might greatly enhance one's comprehension of the disorder. This might provide access to early therapy that would have a higher likelihood of success. Women of reproductive age living in rural Puducherry have never before participated in such a survey, which involved knowledge, attitude and practice regarding PCOS. Therefore, this offers a great chance to assess rural women's knowledge, attitudes, and views regarding PCOS. This might lead to a deeper comprehension of the fundamental factors behind the disease's high frequency in this demographic. Therefore, the study's objective was to assess the knowledge, attitude and practices pertaining to PCOS among rural Puducherry women.

Study Methods

Study design and setting

This study was a descriptive cross sectional study conducted from August 2023 to December 2023. Women in the age group of (15-49 years) were included in the study. The study setting was Urban and rural field practice areas of department of community medicine of a tertiary care hospital, Puducherry district and duration was 6 months.

Sampling method and sampling size

Considering that 17.92%[12] of the women having a good knowledge, attitudeand practice on PCOS as per a study from Karnataka , with 95% confidence

interval, 5% absolute precision, the sample size was calculated using the below given formula

$N=Z2P(1-P)/d2$

Z= Z-score for 95% CI = 1.96

3.84 x 17.92 x 82.07/ (5) 2 = 225.89

Considering non-response rate of 10%,

Minimum sample size required for the study was 248 subjects

Sampling Method

A multi-stage sampling technique was followed in this study. The cumulative population all selected villages was estimated to be 15,668. First stage five villages were selected by using simple random sampling technique and in stage two, population proportion to size (PPS) method was used to determine the number of study participants to be chosen from each village.

Study Tools

For this study, a closed-ended, self-guided, pretested, structured questionnaire was employed. There were two sections to the questionnaire. The respondents' demographic information was gathered in the first part. There were questions regarding PCOS knowledge in the second part. Tamil was used to translate the research tool from English. The questionnaire was translated both forward and backward**.**

Validation of questionnaire and pilot study

The questionnaire was examined by a group of professionals made up of academicians, doctors, and researchers for face and content validation. Based on the questionnaire's content relevancy, clarity, simplicity, and ambiguity, these experts evaluated it.

To confirm the validity of the questionnaire, a pilot research with 30 participants was conducted following a revision that took into account the expert panel's feedback. Cronbach's alpha coefficient, which was 0.861 in the knowledge component and 0.871 in the health-related practice section, was used to calculate the internal consistency.

Data Analysis

Excel (Microsoft Corporation, 2018) sheet was used to code the data, and IBM SPSS version 27 (IBM Corp., 2020) was used for the analysis that followed. Measures of central tendency were calculated for continuous data, while frequencies and percentages were determined for categorical variables. When comparing continuous variables, the Wilcoxon Mann-Whitney test was employed, with the results expressed as mean ±. Results were reported as absolute values and percentages for the analysis of the categorical variables, which was done using the Chi-Square test of independence

Ethical Considerations

The Scientific Research Ethics Committee of MGMCRI College, SBV University Puducherry provided ethical rules and principles that this study was carried out in compliance with. Every participant gave their informed permission, and the study's procedure covered data collection, analysis, and publication, complied with all applicable ethical guidelines.

Results

Table 1: Demographic Characteristics

Demographic Characteristics	
Age in years	Frequency & Percentage
15-20	11(3.8)
21-30	82(28.6)
31-40	100(34.8)
41-50	94(32.8)
Total	287(100)
Education Status	Frequency & Percentage
Diploma/Graduate	95(33.1)
High school	74(25.8)
Illiterate	52(18.1)
Middle school	52(18.1)
Primary school	14(4.9)
Total	287(100)
Occupation	Frequency & Percentage
Professional	23 (8.0)
Semi-Professional	9 (3.1)
Skilled	28 (9.8)
Semi-Skilled	35 (12.2)
Unskilled	21 (7.3)
Unemployed	171 (59.6)
Religion	Frequency & Percentage
Christian	1 (0.3)
Hindu	286 (99.7)
Total	287(100)
B.G Prasad Classification	Frequency & Percentage
Class I	26(9.0)
Class II	76(26.5)
Class III	69(24.0)
Class IV	80(27.9)
Class V	36(12.6)
Total	287(100)
Marital Status	Frequency & Percentage
Married	261(90.9)
Separated	2(0.7)
Unmarried	24(8.4)
Total	287(100)

Table 2: Knowledge regarding PCOS

Knowledge regarding PCOS	Yes	Not sure	No
Have you Heard the term "Polycystic Ovary Syndrome (PCOS)" or Polycystic Ovary disorder?	157(54.7)	13(4.5)	117(40.8)
Have you heard about androgen (male) hormone	42(14.6)	25(8.7)	220(76.7)
In PCOS there is increased level of androgen hormone	33(11.5)	30(10.5)	224(78.0)
Patient suffering from PCOS have small multiple cysts in their ovaries	95(33.1)	22(7.7)	170(59.2)
Obesity may cause PCOS	90(31.4)	23(8.0)	174(60.6)
Pre-diabetes condition (due to decrease insulin action in body) may cause PCOS	44(15.3)	25(8.7)	218(76.0)
Irregular of absence of menstrual cycle is a symptom of PCOS	102(35.5)	27(9.4)	158(55.1)

Unusual amount of Hair growth on different body parts (upper lip, chin, abdomen, breast, thighs etc) is a symptom of PCOS.	50(17.4)	32(11.1)	205(71.4)
Severe acne problem during menstrual cycle is a symptom of PCOS	79(27.5)	29(10.1)	179(62.4)
Hair loss from scalp more than normal is a symptom of PCOS	48(16.7)	32(11.1)	207(72.1)
PCOS diagnosis can be confirmed by vaginal ultrasound	42(14.6)	40(13.9)	205(71.4)
Specific blood test can be used for diagnosis of PCOS	45(15.7)	42(15.0)	199(69.3)
PCOS may lead to heart disease	26(9.1)	39(13.6)	222(77.4)
PCOS may lead to diabetes	40(13.9)	45(15.7)	202(70.4)
PCOS may lead to infertility	120(41.8)	27(9.4)	140(48.8)
PCOS may leads to anxiety and depression	63(22.0)	37(12.9)	187(65.2)
Hormonal therapy may be used to treat PCOS	38(13.2)	38(13.2)	211(73.5)
Anti-diabetic medication may be used to treat diabetes	47(16.4)	35(12.2)	205(71.4)
symptomatic treatment may be given to relief the symptoms of PCOS	39(13.6)	43(15.0)	205(71.4)
Surgery may be used to remove Ovarian cysts	106(36.9)	35(12.2)	146(50.9)

Table 3: Clinical signs and symptoms of PCOS

Clinical signs and symptoms of PCOS	Yes	No
History of PCOS in your mother or sister	41(14.3)	246(85.7)
Very Heavy periods	55(19.2)	232(80.8)
Prolonged periods	36(12.5)	251(87.5)
Complete absence of periods	27(9.4)	260(90.6)
Partial absence of periods (not after 28 days)	50(17.4)	237(82.6)
acne problem during Menstrual cycle	65(22.6)	222(77.4)
Unusual amount of Hair loss from Scalp	38(13.2)	249(86.8)
Unusual amount of hair growth at different body parts (upper lip, chin, abdomen, breast, thighs)	36(12.5)	251(87.5)
Discoloration or dark patches on Skin	30(10.5)	257(89.5)
Continuous abnormal weight gain	47(16.4)	240(83.6)
Family history of Diabetes	77(26.8)	210(73.2)

Table 4: Practices regarding food habits

Practices regarding food habits	Always	Usually	Some-times	Rarely	Never
How often do you read nutrition labels	9(3.1)	21(7.3)	96(33.4)	69(24.0)	92(32.1)
I incorporate low- fat foods into my diet	8(2.8)	34(11.8)	94(32.8)	65(22.6)	86(30.0)
I incorporate low salt foods into my diet	16(5.6)	47(16.4)	94(32.8)	55(19.2)	75(26.1)
I eat 5 servings of fruits and vegetables per day	24(8.4)	37(12.9)	80(27.9)	82(28.6)	64(22.3)
I decrease the amount of refined sugar in my diet	17(5.9)	49(17.1)	97(33.8)	59(20.6)	65(22.6)
I eat more high- fibre foods	18(6.3)	38(13.2)	110(38.3)	55(19.2)	66(23.0)
I eat smaller portions at dinner	18(6.3)	46(16.0)	96(33.4)	61(21.3)	66(23.0)
I exercise 30 minutes 5 day a week	18(6.3)	31(10.8)	63(22.0)	58(20.2)	117(40.8)
I control my eating on weekends	13(4.5)	27(9.4)	87(30.3)	67(23.3)	93(32.4)
It is easy for me to eat a Healthy diet.	20(7.0)	50(17.4)	107(37.3)	45(15.7)	65(22.6)

Table 5: Association between education and knowledge regarding PCOS

	No knowledge	Not sure	Knowledge present	Chi-square
Diploma/Graduate	29	3	63	
High school	29	3	42	0.003*
Illiterate	29	0	23	
Middle school	22	7	23	
Primary school	8	0	6	

Chi-square Test

Results

Total no of study participants enrolled for the study were 287. Among the study participants 95 (33.1%) were holding a diploma/graduate degree and most of them 171(59.6%) were unemployed. Majority of them belonged to 286 (99.7%) Hindu religion and were Married 261(90.9%). Around 80 (27.9%) belonged to class IV socioeconomic status of modified BG Prasad's classification. When asked for the presence of any co-morbidities like diabetes

33(11.5%) and Hypertension 18(6.3%), majority 215 (74.9%) didn't have any co-morbidities.

Of the 157 participants, 54.7% had heard of PCOS (polycystic ovarian syndrome), and 14.6% had heard of androgen male hormone. Only 95 participants (33.1%) were aware that patients with PCOS have tiny multiple cysts in their ovaries; 90 participants (31.4%) believed that obesity is a contributing factor to PCOS; and 43 participants (15.3%) realised that pre-diabetes, a condition marked by a decrease in the body's ability to use insulin, may be a cause of PCOS. approximately 102 people (35.5%) have reported irregular or absent menstruation, and approximately 50 people (17.4%) have reported unusually high hair development on various body areas (upper lip, chin, belly, breast, thighs, etc.) as a sign of PCOS. Fewer than 79 people (27.5%) have identified severe acne throughout the menstrual cycle as a sign of PCOS. About 48 (16.7%) people said that PCOS causes greater hair loss from the scalp than usual. 42 people (14.6%) have acknowledged that vaginal ultrasonography can be used to confirm a PCOS diagnosis, while 45 people (15.7%) have stated that a certain blood test may be used to diagnose PCOS. It is agreed upon that PCOS may cause heart disease 26(9.1%), diabetes 40(13.9%), and infertility 120(41.8%). 63(22.0%) concur that anxiety and despair might result from PCOS. 38 people (13.2%) have agreed that PCOS may be treated with hormonal treatment, while 47 people (16.4%) have agreed that diabetes may be treated with anti-diabetic medication. 39 patients may receive symptomatic therapy to alleviate their PCOS symptoms (13.6%). 106(36.9%) concur that ovarian cysts may be removed surgically.

Coming to clinical signs and symptoms of PCOS, 41(14.3%) had history of PCOS among their mother or sister. Very Heavy periods were noticed by 55(19.2%) and Prolonged periods by 36(12.5%). Complete absence of periods was seen in 27(9.4%) and Partial absence of periods (not after 28 days) was seen in 50(17.4%). Acne problem during Menstrual cycle was noticed in 65(22.6%). Around 38(13.2%) had Unusual amount of Hair loss from Scalp. Unusual amount of hair growth at different body parts (upper lip, chin, abdomen, breast, thighs) was seen in 36(12.5%). Discoloration or dark patches on Skin, Continuous abnormal weight gain, Family history of Diabetes was seen in 30(10.5%), 47(16.4%) and 77(26.8%) respectively. Regarding practices, 9(3.1%) read nutrition labels and 8(2.8%) incorporate low- fat foods into diet. Only 24(8.4%) eat 5 servings of fruits and vegetables per day and 17(5.9%) decreased the amount of refined sugar in their diet. Around 18(6.3%) eat more high- fibre foods and eat smaller portions at dinner. Only 18(6.3%) exercise 30 minutes per day and 13(4.5%) control their eating on weekends. There was

significant association between knowledge and educational status of PCOS p value 0.003.

Discussion

Metabolic issues are associated with PCOS, a prevalent condition among females. Although lifestyle modifications are essential for treatment, women may struggle with adherence and have misconceptions. Our research illuminated the awareness, perspectives, and implementation of lifestyle adjustments among rural women of Puducherry.

Consistent with characteristics of PCOS onset, the majority of subjects were young adults. According to earlier research, women between the ages of 18 and 44 are frequently affected with PCOS [13, 14].A significant portion of them were married, which emphasises the need of early identification and treatment. 33.1% of individuals held a bachelor's degree, indicating a correlation between more education and increased awareness of PCOS. This result is consistent with some other research that indicated a favourable correlation between education level and understanding of PCOS [15]. It highlights the necessity of educational programmes aimed at all societal levels.

Just 25% of the participants knew enough about PCOS to be aware of its symptoms and its consequences. This result is consistent with earlier studies that showed women with PCOS had relatively poor levels of awareness of the condition [16].

It is concerning that participants are unaware of the links between PCOS and mental health problems, diabetes, heart disease, and infertility, as these links are essential for managing PCOS holistically.

Since they were ignorant, there was no positive attitude towards PCOS treatment alternatives. The benefit of losing weight for PCOS therapy was unknown to the participants. This runs counter to the findings of the earlier study, which showed that changing one's lifestyle can help treat PCOS [17].

Most individuals said there was no history of PCOS in their families. This runs counter to the established genetic component of PCOS, indicating a potential underreporting issue or a lack of family knowledge regarding PCOS patients. Family history is an independent risk factor for PCOS, according to earlier research [18].

Knowledge of PCOS was shown to be significantly correlated with level of education. This result is consistent with earlier studies showing that awareness of PCOS may be influenced by levels of education [19] Our research highlights the value of comprehensive educational programmes to increase public knowledge of PCOS, with a focus on the genetic component because of the low reported

family history. Healthcare professionals need to deliver thorough information with a focus on lifestyle adjustments. Support groups and internet resources can enhance these initiatives by promoting a feeling of community among PCOS individuals

This study has limitations, including its relatively small sample size. Future research could include a larger and more diverse sample to enhance generalizability. Additionally, qualitative research may provide deeper insights into the experiences and challenges faced by Puducherry women in regard with PCOS.

Conclusion

Women in rural Puducherry have inadequate understanding, attitudes, and practices surrounding PCOS. As a result, medical practitioners are essential in educating patients about PCOS and stressing the value of early diagnosis and management. Future studies utilising bigger and more varied sample sizes are required, in addition to qualitative studies to explore in further detail the PCOS-related experiences and difficulties that Puducherry women have experienced

Recommendation

It is recommended that healthcare authorities and practitioners in Puducherry intensify efforts to educate women in rural areas about Polycystic Ovary Syndrome (PCOS). Implementing targeted outreach programs, workshops, and awareness campaigns can play a pivotal role in improving understanding, fostering positive attitudes, and promoting effective practices related to PCOS. Medical practitioners should actively engage with communities to provide accurate information and address misconceptions. Establishing collaborations between medical practitioners, local health authorities, and community leaders is crucial. This can facilitate the development and implementation of targeted health programs tailored to the specific needs of rural women in Puducherry. Such collaborations can also enhance the reach and impact of educational initiatives, ensuring a more comprehensive understanding of PCOS in the community.

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