

A Case Control Study To Identify The Risk Factors Of PCOS Among Women In Reproductive Ages In Selected Under Graduate Colleges

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Abstract

BACKGROUND: Poly Cystic Ovarian Syndrome is the common endocrine disorder. Poly Cystic Ovarian syndrome [PCOS] is a disease characterized by multiple "Poly" cysts [small sacs filled with fluid] in the ovaries. Irregular menstrual periods among women cause such ovulatory dysfunctions and Poly Cystic Ovarian Syndrome [PCOS]. **RESULTS:** The study findings shows that body mass index 20(50.00%) of women in cases and 21(52.50%) of women in controls are normal, 10(25.00%) of women in cases and 04(10.00%) of women in controls are obese and remaining 10(25%) of women in cases and 15 (37.50%) of women in controls are in underweight, 11(27.50%) of women in cases and 2(5.00%) of women in controls were having irregular menstrual pattern and 29(72.50%) of women in cases and 38(95.00%) of women in controls were having a regular menstrual pattern, 15(37.50%) of women in cases and 26(65.00%) of women in controls were not having peri menstrual symptoms and 25(62.50%) of women in cases and 14(35.00%) of women in controls were having a peri menstrual symptoms, Shows that association of dairy products among women in reproductive ages with selected socio demographic variables, shows that there was significant association with milk at the level of $p = 0.001$ and coffee at the level of $p = 0.001$. The other variables were not significant, Shows that association of fast food items and activities among women in reproductive ages with selected socio demographic variables shows that there was significant association with broiler chicken at the level of $p = 0.032$. The other variables were not significant and Multivariate logistic analysis on risk factors of PCOS among women in reproductive age shows that milk, coffee and broiler chicken had significant risk on developing PCOS among women in reproductive age with OR of 9.7, 5.4 and 3.3 respectively with the p -value of <0.001 and 0.038 respectively. **CONCLUSION:** The following conclusions were drawn on the basis of findings of the study: The study concludes that the daily consumption of milk and coffee and weekly consumption of broiler chicken are acting as risk factors for PCOS among women in reproductive age.

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INTRODUCTION

Polycystic Ovary Syndrome (PCOS) is a clinical syndrome characterized by mild obesity, irregular menses or amenorrhea, and signs of androgen excess such as hirsutism and acne. Diagnosis is based on clinical symptoms, hormone measurement, and imaging, rather than the presence of ovarian cysts. The ovaries typically contain numerous small follicular cysts, and may be enlarged. PCOS affects 5% to 10% of women in

reproductive age, with insulin resistance being a common feature. Lifestyle changes including weight loss, exercise, and a healthy diet can help manage symptoms and reduce the risk of complications.

Research highlights the importance of understanding and preventing PCOS. A cross-sectional study conducted at a multi ethnic university found that while a significant proportion of women reported symptoms consistent with PCOS, many lacked knowledge about the condition⁵. Ethnicity and education level influenced healthcare-seeking behaviour and sources of information. Another study in a coastal population of India revealed low awareness and knowledge about PCOS, particularly among rural women, emphasizing the need for targeted health education programs⁶. A quasi-experimental study among postgraduate students in Nigeria showed that education on PCOS prevention significantly improved participants' knowledge and attitudes.

These findings underscore the need for increased awareness and education about PCOS, particularly among at-risk populations. By empowering individuals with knowledge about prevention and management strategies, healthcare providers can help mitigate the impact of PCOS and improve overall health outcomes for women worldwide.

The researcher found that there are number of cases of PCOS in the community which could have been prevented if the risk factors were identified. Hence to bridge these lacunae it was found important to list the risk factors of PCOS. Thus the present study was undertaken.

METHODS

The research employed an evaluative approach to identify the risk factors associated with Polycystic Ovary Syndrome (PCOS) among women in reproductive ages within selected undergraduate colleges. Utilizing a case-control research design, cases were defined as women medically diagnosed with PCOS by a licensed physician and undergoing treatment, while controls comprised women in the reproductive age group without PCOS, matched for age with the cases. The independent variable under investigation was the risk factors of PCOS, while the dependent variable was women in reproductive ages. Demographic variables included age, education, occupation, family income, religion, food pattern, height, weight, BMI, type of family, age of menarche, and marital status. The study was conducted in selected Nursing Colleges in Kuppam, Chittoor District, Andhra Pradesh, with the target population being women in reproductive ages within these colleges. The accessible population included women in reproductive ages who verbally consented to participate in the study. Purposive sampling method was employed to select the samples, with inclusion criteria specifying women meeting the case or control definition, while exclusion criteria excluded women with any other disease condition. A semi-structured questionnaire was developed, validated for content validity by nursing experts, and assessed for reliability through a pilot study using the test-retest method. Ethical clearance was obtained from the Institutional Human Ethics Committee, and written consent was obtained from the participants after explaining the study procedure.

RESULTS

Among the 80 women in reproductive ages studied, it was observed that 40.00% of cases and 57.50% of controls were below the age of 20 years, while 60.00% of cases and 42.50% of controls were above the age of 20 years. In terms of family monthly income, 12.50% of cases and 30.00% of controls had a monthly income ranging from 0-10000, while 72.50% of cases and 52.50% of controls had an income ranging from 10001-20000. Regarding body mass index (BMI), 50.00% of cases and 52.50% of controls were categorized as normal, while 25.00% of cases and 10.00% of controls were obese, and 25.00% of cases and 37.50% of controls were underweight. Furthermore, 10.00% of cases and 12.50% of controls belonged to joint families, and 90.00% of cases and 87.50% of controls belonged to nuclear families. In terms of marital status, 95.00% of cases and 92.50% of controls were unmarried. Concerning religious affiliation, 42.50% of cases and 42.50% of controls were Hindu, while 55.00% of cases and 57.50% of controls were Christian. Only 2.50% of cases were Muslim, with no Muslim controls. Finally, regarding food patterns, 2.50% of cases and 12.50% of controls were vegetarian, while 97.50% of cases and 87.50% of controls were non-vegetarian. 70.00% of cases and 55.00% of controls attained menarche at age <13 years, while 30.00% of cases and 45.00% of controls attained menarche at age >13 years.

Family History

In terms of family history, 90.00% of cases and 95.00% of controls did not have any family history of PCOS, while 10.00% of cases and 5.00% of controls had a family history of PCOS. Regarding diabetes mellitus, 70.00% of cases and 77.50% of controls did not have any family history, while 30.00% of cases and 22.50% of controls had a family history of diabetes mellitus.

Menstrual History

Regarding menstrual patterns, 27.50% of cases and 5.00% of controls had irregular menstrual patterns, while 72.50% of cases and 95.00% of controls had regular menstrual patterns. 37.50% of cases and 65.00% of controls did not have peri-menstrual symptoms, while 62.50% of cases and 35.00% of controls did have peri-menstrual symptoms.

Risk Assessment

Assessment of Dairy Products

N=80

S.No	Dairy Products	Type of participation		Chi Square	p-Value	
		Cases	Control			
Do you take the following dairy products daily?						
1	Milk	No	13	33	20.460	0.001**
		Yes	27	7		
2	Coffee	No	12	28	12.800	0.001**
		Yes	28	12		
3	Tea	No	17	15	0.2083	0.648
		Yes	23	25		
4	Cheese	No	39	38	0.346	0.556
		Yes	1	2		

** - highly significant

The above table represents the association of dairy products among women in reproductive ages with groups, shows that there was significant association with milk at the level of $p = 0.001$ and coffee at the level of $p = 0.001$. The other variables were not significant.

Assessment of Fast foods and activities

N=80

S.No	Life style practices	Type of participation		Chi Square	p-Value	
		Cases	Control			
Do you take the following fast food items per week?						
1		No	13	17	0.853	0.356

	Cakes	Yes	27	23		
2	Cookies	No	3	10	4.500	0.034
		Yes	37	30		
3	Potato chips	No	7	13	2.400	0.121
		Yes	33	27		
4	Pizza	No	40	38	2.051	0.152
		Yes	0	2		
5	Pasta or noodles	No	14	19	1.289	1.289
		Yes	26	21		
6	Popcorn	No	32	32	0.000	1.000
		Yes	08	08		
7	Bread	No	20	23	0.452	0.501
		Yes	20	17		
8	Tanduri items	No	28	26	0.227	0.633
		Yes	12	14		
9	Broiler chicken	No	05	13	4.587	0.032**
		Yes	35	27		
Do you following the activities per week?						
10	Exercise	No	29	29	0.000	1.000
		Yes	11	11		
11	Watching T.V	No	32	33	0.082	0.775
		Yes	08	07		
12		No	03	00	3.116	0.077

	Sleeping during day time	Yes	37	40		
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** - highly significant

The above table represents the association of fast food items and activities among women in reproductive ages with groups shows that there was significant association with broiler chicken at the level of $p= 0.032$. The other variables were not significant.

Multivariate Logistic Analysis On Risk Factors Of PCOS Among Women In Reproductive Age

N=80

S.NO	Variables	OR	95% C.I. for EXP(B)		p- value
			Lower	Upper	
1	Milk	9.7	3.4	27.9	0.001
2	Coffee	5.4	2.1	14.1	0.001
3	Broiler Chicken	3.3	1.1	10.6	0.038

The above table shows that milk, coffee and broiler chicken had significant risk on developing PCOS among women in reproductive age with OR of 9.7, 5.4, 3.3 respectively with the p-value of 0.001, 0.001 and 0.038 respectively.

DISCUSSION

The findings of this study projects the various factors associated with polycystic ovary syndrome (PCOS) among women in reproductive age groups. The socio-demographic variables, including age, family income, body mass index (BMI), marital status, and others, showed notable differences between cases and controls, highlighting potential risk factors associated with PCOS. The family history, medical history, and menstrual history were examined, providing further insights into the multifaceted nature of PCOS.

The association of dairy product consumption, particularly milk and coffee, with PCOS risk corroborates findings from previous studies. Rajaeieh et al. (2013) found a direct relationship between milk consumption²² and PCOS risk, while Wang et al. (2021) reported an inverse correlation between coffee intake and PCOS risk. These results suggest the importance of dietary factors in PCOS development²³.

The significant association between broiler chicken intake and PCOS risk aligns with the findings of Gul et al. (2020), underscoring the potential role of dietary habits in PCOS pathogenesis²⁴. These findings contribute to our understanding of PCOS etiology and emphasize the need for further research to elucidate the complex interplay between lifestyle factors and PCOS development

CONCLUSION

This study provides valuable insights into the risk factors associated with polycystic ovary syndrome (PCOS) among women in reproductive age groups. Through the analysis of socio-demographic variables, family history, medical history, menstrual patterns, and dietary habits, significant associations with PCOS risk were identified. The findings emphasize the importance of understanding the multifactorial nature of PCOS, with factors such as diet, family history, and lifestyle playing important roles in its development. The study's correlates with previous research on dairy product consumption, coffee intake, and broiler chicken consumption further strengthens the validity of its conclusions. These findings contribute to advancing our understanding of PCOS and stress the importance of targeted interventions and further research to mitigate its impact on women's health and well-being.

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Conflicts of interest

There are no conflicts of interest.

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