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Original Research Article

ASSOCIATION OF FOOD HABITS WITH SUSPECTED CASES OF POLYCYSTIC OVARY SYNDROME (PCOS) IN FEMALE MEDICAL STUDENTS OF WESTERN INDIA: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Polycystic ovary syndrome (PCOS) is a common and complicated endocrine-metabolic disorder of unknown etiology that affects, according to different diagnostic criteria, 5–20% of women of reproductive age worldwide. Up to 80% of women with PCOS present with overweight or obesity. This study aims to investigate the association between food habits and suspected cases of PCOS in female medical students of western India.

Material and Methods: An observational, cross-sectional study was conducted in medical college attached with tertiary care teaching hospital from August 2024 to September 2024. All female medical students from second year to final year were included in this study. All female students were contacted and data was collected on pre- designed and pre – tested questionnaire for prevalence of PCOS and food habits of medical students.

Results: In the present study 23 suspected cases of PCOS from total 151 study participants were observed. Among 23 suspected cases of PCOS, 14 cases were already diagnosed by gynecologist. Eating outside food in PCOS and non PCOS participants were 82.61% and 86.71% respectively. Consumption of sugar content was high in P COS group as compared to non PCOS group. Consumption of fiber rich food in PCOS and non PCOS group was 69.57% and 77.34% respectively.

Conclusion: This study provide evidence to support association between food habits and cases of PCOS. We observed that high sugar containing food consumption and low fiber intake in PCOS participants.

Keywords: Cross-Sectional Study, Food habits, Medical students, Polycystic ovary syndrome (PCOS).

INTRODUCTION

Polycystic ovary syndrome (PCOS) is a common and complicated endocrine-metabolic disorder of unknown aetiology that affects, according to different diagnostic criteria, 5–20% of women of reproductive age worldwide. Women with PCOS often present with clinical or biochemical hyperandrogenism, oligo anovulation, and/or polycystic ovarian morphology.[1] Few nationally representative surveys have been conducted in India from 2010 to 2014, reporting the variation in prevalence rate from 6% to 46.8%.[2] Nidhi et al., in 2011, conducted a prospective study involving 460 girls of 15–18 years from a residential college in South India and reported a prevalence rate of 9.13%.3 A 2017 study conducted by Gupta et al. in 500 college girls aged 17– 24 reported a prevalence rate of 8.2%.[4] Another study conducted in Mumbai among 600 girls of 15–24 years reported an estimated prevalence of 22.5%.[5]

Up to 80% of women with PCOS present with overweight or obesity. Although preliminary evidence suggests that women with PCOS are more

susceptible to weight gain, controversy exists on whether dietary and physical activity behaviours contribute to the development of PCOS. Poor diet has been associated with individual PCOS features, such as hyperandrogenaemia and polycystic ovaries, as well as self-reported infertility.[6] Internationally, most studies indicate that women with and without PCOS have different baseline dietary intakes; the former with a higher intake of calories and saturated fat and inadequate fibre consumption. Clinical symptoms and the compounded risk of chronic disease in patients with PCOS may be exacerbated by these alterations in diet. In addition, Szczuko et al. analysed the diet of 54 women of childbearing age with PCOS and demonstrated that metabolic disorders related to improper ovarian function are due to unhealthy diets in women with PCOS.[7] It is important to note that Tremellen and Pearce proposed a microbiological hypothesis for how PCOS occurs, suggesting that a poor diet leads to disorders of the intestinal flora, and the dysbiosis of gut microbiota theory can explain all 3 components of the syndrome.[8] Epidemiological studies and large clinical trials have identified long-lasting, low-grade chronic inflammation in PCOS and potential anti-inflammatory and pro-inflammatory components in diets associated with the pathogenesis of PCOS.[1]

Change in lifestyle, especially food habits might have role in the prevalence of PCOS. This study aims to investigate the association between food habits and suspected cases of PCOS in female medical students of western India.

MATERIALS AND METHODS

An observational, cross-sectional study was conducted in medical college attached with tertiary care teaching hospital from August 2024 to September 2024.All female medical students from second year to final year were included in this study. Female medical students who will refuse to participate in the study were excluded from the study. After obtaining permission from Institutional Ethics Committee, all female students were contacted and data was collected on pre- designed and pre – tested questionnaire for prevalence of PCOS and food habits of medical students. The questionnaire will consist of three sections: (A) Socio-demographic details (B) Self-administered Questionnaire for screening of PCOS (c) questions related to food habits

Self-administered Questionnaire for diagnosis of PCOS:[9]

It is a validated questionnaire which includes questions for followings: 1. Menstrual cycle characteristics 2. Male pattern hair growth 3. Weight gain 4. Milky discharge from nipples. If score ≥ 2, consistent with diagnosis of PCOS. From this questionnaire, we will identify suspected cases of PCOS.

Questions related to food habits were answered by both the groups – study participants with PCOS and without PCOS.

Statistical Analysis

The data was entered into Microsoft office excel and analyzed by epi info software. Numerical variables were described using the mean, Standard deviation after checking normality of data which will be tested using Kolmogorov test. Categorical variables were described using the absolute (N) and relative (%) frequencies.

RESULTS

In our study, with the help of self – administered questionnaire, we found 23 suspected cases of PCOS from total 151 study participants. Among 23 suspected cases of PCOS, 14 cases were already diagnosed by gynecologist. [Table 1]

Most of the study participants were from urban region in both the groups. (PCOS – 65.22, Non PCOS – 70.31) In both the group most of the study participants were vegetarian. (PCOS – 82.61 Non PCOS – 90.63) Source of food in both the groups was mess. (PCOS – 69.57 Non PCOS – 87.5) [Table 2]

Eating outside food in PCOS and non PCOS participants were 82.61% and 86.71% respectively. Pizza was most favorite junk food in both the groups and most favorite ingredient in both the groups was cheese. Consumption of sugar content was high in PCOS group as compared to non PCOS group. (PCOS – 86.96, non PCOS – 67.97) The most favorite high sugar content food was ice cream in both groups. Consumption of fiber rich food in PCOS and non PCOS group was 69.57% and 77.34% respectively. [Table 3]

Table 1: Diagnosis of PCOS with the self – administered questionnaire

Total no of study participants	151
Diagnosed cases of PCOS	23 (15.23)
All ready diagnosed PCOS by gynecologist	14 (60.87%)
Diagnosis of PCOS with self – administered questionnaire	9 (39.13%)

Table 2: Sociodemographic characteristics of study participants

Characteristics	**PCOS cases (n = 23)(%)**	**Non PCOS (n= 128)(%)**
Age (Mean ± SD)	20.35 ± 1.57	20.36 ± 1.55
No of students Year wise		
Second year	12 (52.17)	85 (66.41)
Third – I year	3 (13.04)	13 (10.16)
Third – II year	8 (34.78)	30 (23.43)

Locality		
Urban	15 (65.22)	90 (70.31)
Rural	8 (34.78)	38 (29.69)
Recent living facility		
Hostel	20 (86.96)	121 (94.53)
home	3 (13.04)	7 (5.47)
Type of diet		
Vegetarian	19 (82.61)	116 (90.63)
Non vegetarian	4 (17.39)	12 (9.37)
Source of daily food		
Mess	16 (69.57)	112 (87.5)
Tiffin	4 (17.39)	9 (7.03)
Home	3 (13.04)	7 (5.47)

Table 3: Food habits of study participants

Food habits	PCOS cases (n = 23)(%)	Non PCOS (n= 128)(%)
Consuming outside food		
yes	19 (82.61%)	111 (86.72%)
no	4 (17.39%)	17 (13.28%)
Frequency of outside food		
One time /week	11 (47.83%)	56 (43.75%)
Two times/week	1 (4.35%)	19 (14.84%)
Three times/week	6 (26.08%)	22 (17.18%)
Four times/week	1 (4.35%)	7 (5.46%)
Five times/week	0	5 (3.90%)
Six times/week	0	1 (0.78%)
Seven times/week	0	1 (0.78%)
Liking fast-food		
Yes	18 (78.26%)	86 (67.18%)
No	5 (21.73%)	42 (32.81%)
Most Favourite fast-food	Pizza	Pizza
	7 (30.43%)	41 (32%)
Most favourite ingredient in fast-food	Cheese	Cheese
	7 (30.43%)	41 (32%)
Consumption of high sugar content		
Yes	20 (86.96%)	87 (67.97%)
No	3 (13.04%)	41 (32.03%)
Favourite high sugar content food	Ice cream	Ice cream
	8 (34.78%)	40 (31.25%)
Consumption of milk and milk related products		
Yes	18 (78.26%)	98 (76.56%)
No	5 (21.73%)	30 (23.43%)
Consumption of Fiber rich products		
Yes	16 (69.56%)	99 (77.34%)
No	7 (30.43%)	29 (22.65%)
Activity during food time	Watching mobile	Talking with friends
	10 (43.47%)	39 (30.46%)
Skipping meal		
Yes	8 (34.78%)	106 (82.81%)
No	15 (65.21%)	22 (17.18%)
Change in food pattern during exam		
Yes	13 (56.52%)	98 (76.56%)
No	10 (43.47%)	30 (23.43%)

DISCUSSION

We compared food habits in a female medical student of western India with and without PCOS using self-administered questionnaire. Total 151 girls have participated in the study out of these 14 girls were already diagnosed with PCOS and 9 were diagnosed by our questionnaire. Most of the study participants were from urban areas and vegetarian. Our results showed that there was no significant difference of taking out side foods in girls of PCOS and non PCOS. In current study 78.26% girls with PCOS are liking more fast food which is 67.18% in case of non PCOS girls. Study done by Ashraf Radwan et al. showed a significant association between fast food consumption and development of facial acne and PCOS.[10] Hajivandi et al. also found that PCOS girls consume more unhealthy foods such as fast food, soft drinks, sweets and junk foods.[11] In our results there was no significant difference in frequency of taking outside food per weekly in non PCOS and PCOS girls. In this study most favorite fast food consumed by both groups was pizza and most favorite ingredient was cheese. But there was no significant difference in taking of this food in both groups.

The results showed that girls with PCOS consume more sugar content food compared to non PCOS girls and the ice cream was most consumed food by them. Which is similar to the study done by Mahtab

Badri Fariman et al. who demonstrated that the proportion intake of simple carbohydrates (sugar and soft drinks) to complex carbohydrates (legumes) was higher in the PCOS girls.[12] Study done by Scheila Karen Graff et al. also found that women with a PCOS found higher dietary glycemic index (GI) than control women.[13] A meta-analysis and systematic review showed that the Low GI diet is an effective, acceptable, and safe intervention for relieving insulin resistance, and professional dietary advice should be offered to all PCOS patients.[14,15] In this study there was no significant difference in taking milk and milk products in both groups. study done by Mahtab Badri Fariman et al. showed PCOS women had lower consumption of dairy products compared to non PCOS.[12] Studies done by Hosseini MS, et al. also found lower intake of dairy products in PCOS girls compared to control group. In comparison to these results Rajaeieh G, et al. T suggested that after adjustment for confounders, there was a direct relationship between milk consumption and risk of PCOS. Girls with PCOS found that consuming less fiber containing diet compared to non PCOS. This is similar to study done by Mahtab Badri Fariman et al. who showed that PCOS women received a lower intake of vegetables, fruits, and dairy products. As fruits and vegetables are significant source of fibers, vitamins and minerals and they are associated with lower risk of metabolic disease.[16] It has been found that more fiber intake reduces the chances of PCOS occurrence in adolescent girls.[17] In present study 43.47% PCOS and 30.46 % participants were doing some activity while taking food. Skipping meal and change in food pattern during exam were higher in non PCOS group compared to PCOS group.

Present cross-sectional study was aimed to explore the association of food habits in a suspected PCOS female participants. The strength of study was questionnaire covering details of demographic characteristics, fast food consumption pattern and other food habits, which provides detailed understanding of PCOS and food habit association.

The present study has limitation also. The current study was cross sectional. longitudinal studies are needed to establish a temporal relationship between junk food consumption, the development of PCOS. And the study was done in medical students these findings may not be generalized to the other PCOS patients.

CONCLUSION

This study provide evidence to support association between food habits and cases of PCOS. We observed that high sugar containing food consumption and low fiber intake in PCOS participants. Further studies are needed for finding association of food habits with PCOS. Understanding dietary influences on PCOS can improve management and treatment and prevention strategies for affected individuals.

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