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Assessment of Emerging Adult Women for Poly Cystic Ovarian Syndrome Symptoms

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Abstract

Introduction: Polycystic Ovary Syndrome (PCOS) is a very heterogeneous syndrome both in its clinical presentation and laboratory manifestations. Weight loss is feasible in adolescents with PCOS and significant improvements in BMI, Waist circumference and menstrual function can be achieved. **Objective:** To carry out the assessment of PCOS symptoms of selected emerging adult women and to identify samples at risk of PCOS. **Materials and Methods:** A prospective observational design was adopted and the sampling method used in this study is a non-probability sampling technique. Study was conducted for the duration of three months from November 2013 to February 2014 and 231 emerging adult women participated in this study. A questionnaire having the details of menstrual history and features of hyperandrogenism was collected from emerging adult women. **Findings:** The mean, age, height, weight and the body mass index was found to be, 18.86 ± 1.4 years,156.04 ± 7.75 cms, 52.86 ± 9.7 kg and 21.60 ± 3.55 (kg/m^2). 95 (41.1%) emerging adult women reported significant weight gain for the past two months. Among the total study group 87 (37.6%) emerging adult women were categorised as risk category and the rest 144 (62.3%) were not having any symptoms related to PCOS and were considered as normal emerging adult women. 24 women were having irregular menstrual cycle (22 having eight or fewer periods per year and two having more than 12 periods per year). 54 (23.3%) emerging adult women are with acne problem. Hirsutism was found among 27 (11.6%). Five (2.1%) of the subjects were having both acne and hirsutism were belonged to the risk group. Among the selected emerging adult women three percent had heavy bleeding were categorised under risk category. 48 percent of the selected emerging adult women did not do any physical activity, of them 17.7% belonged to 'at risk' category. **Applications/Improvements:** Based on severity of the condition, 74 subjects (32%) were categorised as risk subjects, among the total 87 emerging adult women who were predicted to have PCOS. It is preferable to follow these emerging adult women and repeat the evaluation for the exact diagnosis of PCOS.

Keywords: Acne, Hirsutism, Hyperandrogenism, Menstruation, PCOS

1. Introduction

Adolescents are unique and their degree, rate and pace of specific physical, emotional and social changes vary with each young person. Menstrual irregularity is a common feature of PCOS, occurring in more than 75% of the adult PCOS population and is often the earliest clinical manifestation in the adolescent[1]. PCOS is a common and complicated endocrine disorder that often goes undiagnosed. Appropriate diagnostic criteria and more evidence-based dietary guidelines are needed. Most often, symptoms first appear in adolescence, around the start of menstruation. The signs and symptoms associated with this condition are menstrual cycle disturbances, obesity, infertility, acne, hirsutism and other signs of hyperandrogenism and Polycystic Ovary (PCO) morphology on transvaginal ultrasound scan.

2. Methodology

A prospective observational design was adopted and the sampling method used in this study is a non-probability

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sampling technique. 300 adolescent emerging adult women in the age group of 18 to 23 years were identified for the study, among them 234 emerging adult women accepted to participate in this study, of whom three had to be eliminated due to incomplete data. Finally 231 emerging adult women took part in the study. This study was conducted over a period of three months, from November 2013 to February 2014. The participants filled up a questionnaire about the details of menstrual history and detailed features of hyperandrogenism. In menstrual history, oligomenorrhea status was identified, define oligomenorrhea as eight or fewer menstrual cycles in a year[2–4].

In clinical signs, categorization of acne was based on the severity of lesion, counting of papules/pustules and it was decided using the standard photographs[5].

"A girl was labelled as a probable case of PCOS based on Rotterdam criteria, if she had menstrual irregularity, excessive acne or hirsutism (self-reported) or both. Menstrual irregularity was defined as the presence of chronic amenorrhea or usual cycle length of >35 days[6]".

The detailed explanation of identification of the risk group is explained in Figure 1.

Emerging adult women were selected based on 2006 Androgen Excess Society (AES) Guidelines**,** in which the patient demonstrates both the symptoms: 1. Hirsutism and/or hyperandrogenemia and 2. Oligo-anovulation and/or Polycystic Ovaries (Exclusion of other etiologies of androgen excess and anovulatory infertility).

Based on Rotterdam criteria PCOS prevalence was identified among the selected subjects and it was found that 87 emerging adult women are prone to get PCOS in future, among them 13 (5.6%) of the emerging adult women had irregular menstrual cycle alone, nine (3.89%) of emerging adult women had both irregular menstrual cycle and clinical hyperandrgenism, whereas 65 (28.1%) of were having only clinical hyperandrgenism which includes acne, excess facial or body hair, especially upper lip, chin, neck and dark or discoloured patches of skin on neck, under arms or in skin folds. As per the data it was seen that, 13 (5.6%) of the emerging adult women had irregular menstrual cycle alone, 22 emerging adult women (9.5%) with severe acne, seven subjects (3.03%) with moderate acne, three emerging adult women (1.2%) had irregular menstruation along with acne, two (0.86%) had acne along with patches, two (0.86%) had patches alone, four subjects (1.7%) had irregular menstruation and hirustism, whereas, only two subject (0.86%) had irregular menstruation along with hirustism, acne and patches and 27 (11.6%) had hirustism alone. Based on the acceptance of the subject to participate in the study and severity of the condition, 74 of the selected women (32%) were categorised as risk group, among the total of 87 expected risk subjects.

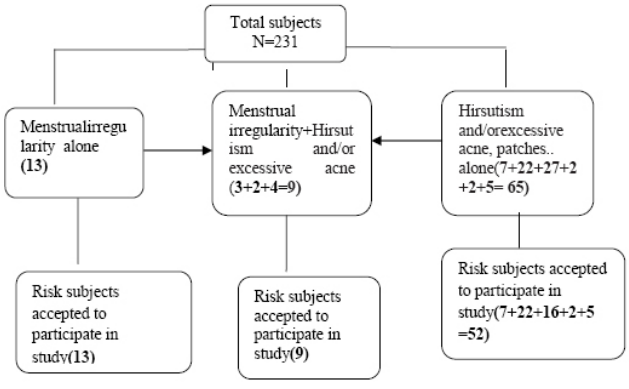

Figure 1. Identification of emerging adult women at risk of PCOS.

3. Results

3.1 Descriptive Data

The final sample of 231 college going emerging adult women had a median age of 18.86 ± 1.4 years (ranging from 18 to 21 years). The mean, height, weight and the BMI was found to be 156.04 ± 7.75 cms, 52.86 ± 9.7 kg and 21.60 ± 3.55 respectively (Table 1).

Among the total emerging adult women 95 (41.1%) reported that they found significant weight gain for the past two months, in that 32 (33.7%) were in risk category. Remaining 136 (58.9 %) emerging adult women did not have any weight gain. It was absorbed that (p≤0.183 NS), no significance was found between risk group and normal emerging adult women.

Table 1. Descriptive data of selected emerging adult women

Characteristics	N = 231, Mean ±SD
Age (years)	18.86± 1.478
Height (m)	156.043± 7.7562
Weight (kg)	52.86 ± 9.784
Body mass index (kg/m^2)	21.6084± 3.55196

On analysing the family history of diseases suffered by the parents of the selected emerging adult women, it was found that 114 (49.4%) had diabetes mellitus, 39 (16.9%) had hypertension/high cholesterol, 35 (15.2%) had obesity, 20 (8.7%) had hormone problems, whereas, nine (3.9%) had diabetes mellitus with hypertension/ high cholesterol, two (0.9%) had diabetes mellitus, hypertension/high cholesterol with obesity and again two (0.9%) had diabetes mellitus with obesity, whereas eight (3.5%) did not have any family history. It was also found 82 (35.4%) emerging adult women in risk group was found to have the family history of any one or all three disease conditions, in that 42 (18.1%) were found to have family history of diabetes alone. Whereas, only five (2.1%) were not having any family history of disease conditions. It was absorbed that ($p \leq 0.273$ NS) no significant difference was found between risk group and normal emerging adult women.

"A study carried out to find the clinically evident Polycystic Ovary Syndrome among first-degree female relatives within families with a proband affected by PCOS, it was observed that the rates of PCOS in mothers and sisters of patients with PCOS were 24 and 32%[7]".

Among the total study group, 8 (37.6%) emerging adult women were categorised as risk category and the rest 144 (62.33%) were not having any symptoms related to PCOS and were considered as normal subjects.

Among the total 231 subjects, 24 emerging adult women were having irregular menstrual cycle (22 having eight or fewer periods per year and two having more than 12 periods per year). It was observed that all 24 emerging adult women will come under risk category and 99 percent level of significance ($p<0.001^{**}$) was found between irregular menstrual history and PCOS prevalence.

On analysing the clinical signs, it was found that, 101 (43.7%) having skin problems of them 54 (23.3%) had mild acne, seven (3.03%) with moderate acne and 22 (9.5%) emerging adult women with severe acne, total twenty nine (12.5%) were included in the study as risk group based on their acceptance and it was observed that ($p<0.001^{**}$) level of significance was found between acne problem and PCOS prevalence[8], observed that, acne as possible risk factors for PCOS, 80% of PCOS group were found to have acne and subjects with acne was found to have increased risk to develop PCOS by eight times.

From Table 2, it was observed that, hirsutism, excess facial or body hair (especially upper lip, chin and neck) was found among 27 (11.6%) of the selected emerging adult women. Of them, only 16 subjects (6.9%) were identified as risk group others were having hair growth in their forehead in negligible amount, Whereas Acanthosis Nigricans, dark or discoloured patches of skin on neck, under arms or in skin folds was found in 15 (5%) of the emerging adult women, of them only two (0.86%) were included in the study, since these emerging adult women were having dark discolouration on their neck and face. It was observed five (2.1%) of the emerging adult women were having both acne and hirsutism and belonged to the risk group. "Hirsutism may be a more reliable marker of hyperandrogenism in adolescents and occurs in approximately 60% of adult women with PCOS. Hirsutism is often less prominent during the adolescent period compared with adulthood as hair growth becomes thick and coarse with increasing duration of androgen exposure[9]".

Table 2. PCOS symptoms of selected emerging adult women

SYMPTOMS OF PCOS			
MENSTRUAL HISTORY		CLINICAL SIGNS	
Frequency of menstruation	N (%)	Signs	N (%)
Regular (12 periods per year)	207 (89.6)	Healthy skin	130 (56.2)
		Adult acne	Mild/short-term 25 (10.8) Moderate 7 (3.03) Severe 22 (9.5) Total 54 (23.3)
Eight or fewer periods per year	22 (9.5)	Excess facial or body hair, especially upper lip, chin, neck	27 (11.6)
12 – 14 periods per year	2 (0.86)	Dark or discoloured patches of skin on neck, groin, under arms or in skin folds	Moderate 2 (0.86) Mild/ short-term 13 (5.6) Total 15 (5)
Menstrual irregularity	24 (10.4)	Acne and excess facial hair	5 (2.1)
p values	<0.000	Abnormal clinical signs	101 (43.7)

Among the selected emerging adult women 33 (14.3%) had heavy bleeding during their menstruation, of them three percent were under risk category. 174 (75.3%) had moderate menstrual flow, among them 29% were in risk category. 12 (5%) of them had low menstrual flow, of them 2.5% were in risk category and 5% stated that their menstrual flow may vary during each menstrual cycle, of them 3% were in risk category. No significant difference ($p \leq 0.151$ NS) was found between risk group and normal adolescent emerging adult women.

40.6% of total emerging adult women reported that they were having severe acne during their menstruation, whereas rest of the subjects 137 (59.3%) were not having any symptoms during menstruation and the results were not significant between the two groups.

The other symptoms associated with menstruation were mood swings, pelvic pain, irritability; sleep disturbances did not have any significance with PCOS prevalence.

Among the total emerging adult women, 168 (72.7%) suffered from hair loss during menstruation, among them 60 (25.9%) were in risk category and 65 (28.1%) had mood swing, among them 17 (7.3%) were in risk group and the results were not significant excessive hair loss and PCOS prevalence.

"It has reported that, there is a significant risk for mood disorders (defined by the *Diagnostic and Statistical Manual of Mental Disorders-IV*) in women with PCOS[10,11]". In PCOS, weight and hirsutism consistently caused more concern than menstrual problems or infertility. The symptoms associated with PCOS, namely hirsutism, acne, diabetes mellitus and Obstructive Sleep Apnea Syndrome (OSAS) were all reported to reduce HRQoL[12].

40.6% of the emerging adult women suffered from nausea, vomiting, constipation and diarrhoea or combination all the four conditions during menstruation. 14.2% of them belonged to risk category.

It was observed that "PCOS affects 5–10 % of reproductive-aged women. Irritable Bowel Syndrome (IBS) is a chronic intestinal disorder that affects up to 20% of adults, more often women[13,14]".

From the Figure 2, it is seen that 48% of the selected emerging adult women did not involve themselves in any physical activity, of them 17.7% belonged to 'at risk' category. The rest 19.4% were involved in active physical activity like jogging, heavy lifting, digging, aerobics or fast bicycling for at least 20 minutes/day for >3 times a week. 32.4% were involved in moderate physical activity like mowing the lawn, carrying light loads, bicycling or playing doubles tennis for at least 30 minutes/day for >5 times a week.

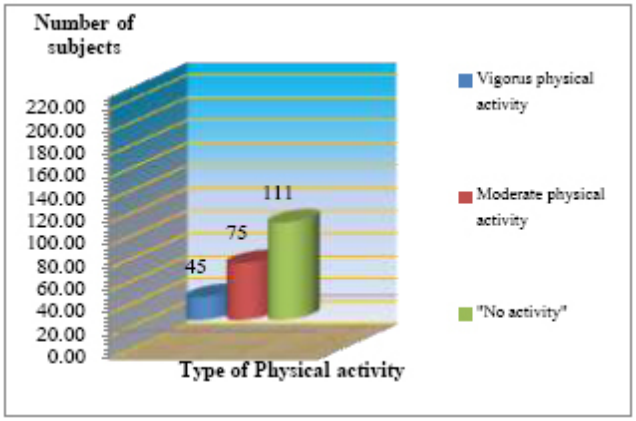

Figure 2. Physical activity of selected emerging adult women.

4. Conclusion

The PCOS is reported to be a growing problem of adolescent emerging adult women. A simple menstrual history assessment could detect possible PCOS as early as in adolescence to facilitate early appropriate intervention. Also use of a simple questionnaire-based survey is a suitable tool for community screening of PCOS. In the current study, based on Rotterdam criteria, severity of the condition and acceptance of subjects to take part in the study, 74 emerging adult women (32%) were categorized as risk subjects, among the total 87 (37.6%) subjects who expected or predicted to have PCOS. It is preferable to follow these emerging adult women and repeat the evaluation for the exact diagnosis of PCOS.

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