



**EFFICACY OF ONLINE SELF-ASSESSMENT TEST FOR EARLY
DETECTION OF PCOS RISK- A CROSS SECTIONAL SURVEY STUDY**

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ABSTRACT

Background: Poly Cystic Ovarian Syndrome (PCOS) is an emerging health problem affecting women of reproductive age and because of its high prevalence it has gained much attention in this present era. Early diagnosis and proper management are crucial to address symptoms and minimize long-term health risks. **Objective:** Primary: Efficacy of online self-assessment test for early detection of polycystic ovary syndrome risk in young student population. Secondary: Identifying the relationship between the type of menses, regular or irregular and score levels. **Method:** This was a cross-sectional survey study among 277 girl students in the urban area of Karnataka, India. Convenience sampling between the ages of 18-25 yrs students and willing to participate were included in the study. Survey basis 19-question self-assessment test for PCOS risk adapted from Elizabeth Lee Viet PDF. A pre- tested, self-guided close ended and structured questionnaire was used. **Results:** The chi-square value of 18.69 and p-value of 0.001 indicate a statistically significant relationship between the type of menses and test score levels. This significance highlights the importance of menstrual regularity as a potential indicator of overall health. The t-value of -6.469 further supports the significance of this difference, reinforcing that the association between irregular menses and higher total scores is statistically robust. **Conclusion:** In this self-scoring survey suggesting a fairly normal distribution of scores and effectiveness of early detection of PCOS risk. Respondents reported enough symptoms to warrant further medical investigation.

Keywords: Menstrual cycle disorder, Polycystic ovary syndrome, Premenstrual syndrome,
PCOS Survey, Women's health issues, PCOS Self-assessment, PCOS risk factors

INTRODUCTION:

Polycystic ovarian syndrome is a lifelong multisystem, genetic disorder characterized by a presence of menstrual irregularities, insulin resistance, hyperandrogenemia and central obesity with the higher risk of developing Diabetes mellitus, Endometrial hyperplasia and Cardiovascular risks [1]. It is affecting 5–15% of reproductive-aged women and is thought to be one of the leading causes of infertility. Despite its prevalence, PCOS remains underdiagnosed, often leading to significant delays in treatment. This delay can have profound consequences for patients' health and well-being [2-3]. In the Indian population there are very few standardized self-assessment tools based on readily observable criteria that can be used to effectively determine their PCOS risks. The awareness amongst the students in India remains poor. The risk of metabolic syndrome is high even at a young age, highlighting the importance of early and regular screening. Hence early diagnosis and screening are crucial to address symptoms and minimize long-term health risks [4-5]. People are increasingly seeking health information and managing their health through electronic technologies. This study helps in understanding how self-assessment tools help to develop personalized plans based on each woman's unique situation and stay healthy in their

life. Early detection is crucial for effective management, but traditional diagnosis can involve multiple doctor visits and tests. This is where online self-assessment tests come in. These questionnaires aim to identify young women at higher risk of PCOS based on commonly reported symptoms so that they can do further evaluation of their health and adopt necessary lifestyle changes [6-8].

OBJECTIVES:

Primary: Efficacy of online self-assessment test for early detection of polycystic ovary syndrome risk in young student population. Secondary: Identifying the relationship between the type of menses, regular or irregular and score levels

METHODOLOGY:

STUDY DESIGN: Type of study: Cross sectional Survey Study. **Ethical clearance:** The study was approved by the institutional ethics committee (Ref. N0. IEC/BMK/05-2023 dated 18-08-2023. Protocol ID: BMK/23/JG/01). Collected responses from a target audience at a particular time interval. **Sample Size:** 277, Convenience sampling, girl students between the ages of 18-25, who are willing to participate were included. **Survey Study duration:** 30days. **Study tool:** A pre- tested, self-guided close ended and structured questionnaire was used. **Target Population:** Women aged 18-25, enrolled in the colleges, urban area of

Belgaum, Karnataka, India. **Advertising:** Study details promoted through event announcements and college specific closed social media groups. **Survey Basis:** 19-question self-assessment test for PCOS risk adapted from Elizabeth Lee Viet PDF [9]. **Questions:** Focused on predisposing factors of PCOS with binary "yes" or "no" answer options. **Format:** Anonymous Google form accessible on computers or mobile devices. **Consent:** Submission of completed questionnaire indicated consent to participate. **Scoring:** Each "yes" response was assigned a score of ONE. Scoring 5 and above is presumed to be under the risk of PCOS and they need further help in lifestyle modification.

RESULTS:

1. Age: Age distribution of the respondents who took the PCOS self-assessment survey indicates that the largest proportion (50%) of respondents fell into the reproductive age group (18-25yrs) and all respondents were undergraduate students.
2. Frequency Distribution of responses by the study participants: The frequency distribution of responses from 277 participants to various health-related questions reveals some notable trends (**Table 1**).
3. Descriptive statistics of total score:

The descriptive statistics of the total score for 277 participants indicate a wide range of variability. The minimum score observed was 0, while the maximum score reached 14. The mean total score was 4.24, with a standard deviation of 3.11, reflecting a moderate spread of the scores around the mean. The median score was 4, showing that half of the participants scored 4 or below. These values suggest that, on average, participants scored relatively low on the total scale, but there was considerable variation in the total scores across the sample (**Table 2**).

4. Frequency Distribution of Total Score Grouping: The frequency distribution of the total score grouping shows that the majority of participants, 68.6%, scored 5 or below, while 31.4% scored above 5. This suggests that most participants had lower total scores, with nearly two-thirds falling into the lower score category. In contrast, less than one-third of the participants scored higher than 5, indicating a smaller proportion with relatively higher total scores. These findings highlight that the lower scores are more common among the participants (**Table 3, Graph 1**).
5. Association between type of menses

and score level: The association between type of menses (regular or irregular) and score level reveals a statistically significant Relationship. Among participants with a score of 5 and below, 78.4% had regular menses, while 21.6% reported irregular menses. Conversely, in the group with scores above 5, only 52.9% had regular menses, and 47.1% had irregular menses. The chi-square value of 18.69 and a p-value of 0.001 indicate that this association is statistically significant, suggesting that participants with irregular menses are more likely to have higher total scores compared to those with regular menses (**Table 4, Graph 2**).

6. Comparison of mean scores by type of menses: The comparison of mean

scores by type of menses shows a significant difference between participants with regular and irregular menses. The mean score for participants with regular menses was 3.51, with a standard deviation of 2.73, while those with irregular menses had a higher mean score of 5.98 and a standard deviation of 3.27. The mean difference (MD) between the two groups was -2.47, indicating that participants with irregular menses scored significantly higher than those with regular menses. The t-value of -6.469 and a p-value of 0.001 demonstrate that this difference is statistically significant, suggesting that irregular menses are associated with higher total scores (**Table 5**).

Table 1: Frequency Distribution of responses by the study participants (n = 277)

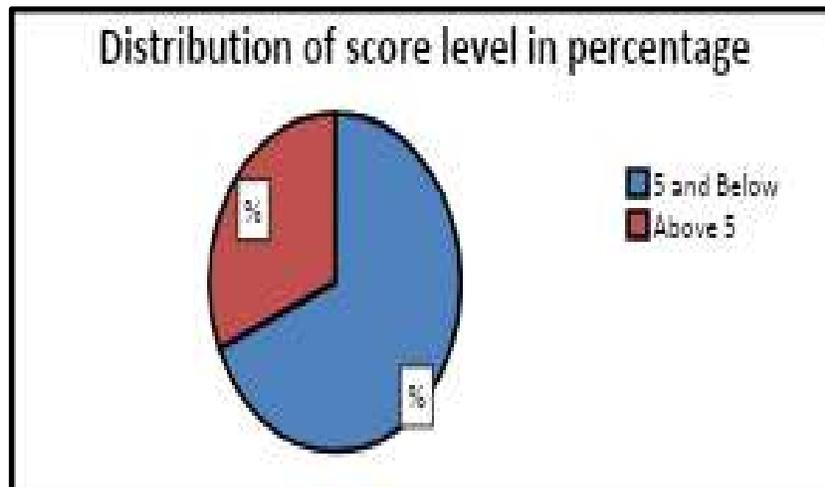
Questions	No	Yes
	n (%)	n (%)
Q.1 Are your periods unpredictable?	195 (70.4)	82 (29.6)
Q.2 Do you crave for sugar?	170 (61.4)	107 (38.6)
Q.3 Do you have continuous weight gain?	241 (87)	36 (13)
Q.4 Do you have difficulty losing weight?	209 (75.5)	68 (24.5)
Q.5 Is your waistline greater than 35 cm?	221 (79.8)	56 (20.2)
Q.6 Do your periods last longer than a week?	263 (94.9)	14 (5.1)
Q.7 Are your periods heavy and prolonged?	257 (92.8)	20 (7.2)
Q.8 Do you have excess facial hairs?	250 (90.3)	27 (9.7)
Q.9 Do you have symptoms of hypoglycaemia?	241 (87)	36 (13)
Q.10 Do you have a family history of diabetes?	169 (61)	108 (39)
Q.11 Do you have a family history of cardiovascular disease?	223 (80.5)	54 (19.5)
Q.12 Do you feel extremely angry, irritable after eating sweets?	259 (93.5)	18 (6.5)
Q.13 Do you have pigmentation on the skin?	205 (74)	72 (26)
Q.14 Do you have a history of high blood pressure?	255 (92.1)	22 (7.9)
Q.15 Do you have an unusual amount of hair on the breasts?	253 (91.3)	24 (8.7)
Q.16 Do you have premenstrual symptoms (PMS)?	149 (53.8)	128 (46.2)
Q.17 Do you have hair on the thighs?	169 (61)	108 (39)
Q.18 Do you have thick pubic hair?	157 (56.7)	120 (43.3)
Q.19 Is your acne worst at different times of the menstrual cycle?	203 (73.3)	74 (26.7)

Table 2: Descriptive statistics of total score

N	Minimum	Maximum	Mean	SD	Median
277	0	14	4.24	3.11	4

Table 3: Frequency Distribution of Total Score Grouping

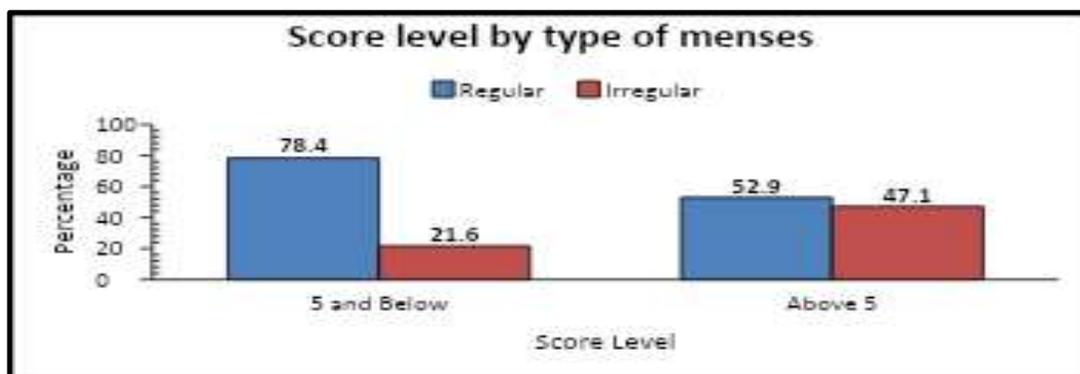
Score Level	N	%
5 and below	190	68.6
Above 5	87	31.4
Total	277	100



Graph 1: Distribution of score level

Table 4: Association between type of menses and score level

Score Level	Type of Menses			Chi-square Value	p-value
	Regular	Irregular	Total		
5 and below	149 (78.4)	41(21.6)	190 (68.6)	18.69	0.001*
Above 5	46 (52.9)	41 (47.1)	87 (31.4)		
Total	195 (70.4)	82 (29.6)	277 (100)		



Graph 2: Score level by type of menses

Table 5: Comparison of mean scores by type of menses

Type of menses	N	Mean	SD	MD	t value	p-value
Regular	195	3.51	2.73	-2.47	-6.469	0.001*
Irregular	82	5.98	3.27			

DISCUSSION:

The data showing the majority experience continuous weight gain and have difficulty losing weight indicates a potential area of concern, suggesting a high incidence of metabolic syndrome or insulin resistance among the participants [10]. The report of Metabolic Health Indicators like sugar cravings and symptoms of hypoglycaemia suggests that participants might be experiencing fluctuations in insulin levels, which is also common in conditions characterized by insulin resistance [11]. The prevalence for family history of Diabetes and Cardiovascular Disease indicates a genetic predisposition affecting metabolic health [12]. A notable participant reported physiological symptoms, excess facial hair (hirsutism), which could be indicative of hormonal imbalances, specifically elevated androgen levels often seen in conditions like PCOS. Additionally, reporting premenstrual symptoms, the symptoms suggest a heightened sensitivity to hormonal fluctuations that may impact mood and physical health [13]. A substantial proportion of participants experienced pigmentation, with others noticing that their acne worsens at different points in their menstrual cycle. This may reflect an interplay between hormonal changes and skin health, suggesting that endocrine factors heavily influence dermatological

manifestations. Conditions like acne can worsen due to increased androgen levels often seen in women with irregular cycles [14-15]. The association between irregular menses and higher symptom scores also indicates that menstrual irregularities may serve as a marker for broader health concerns that require monitoring or intervention.

CONCLUSION:

It was noticed that online self-assessment tests allow for easy and discreet self-screening at home. It can be a valuable tool, particularly for busy student populations. These tests can raise awareness about PCOS symptoms and encourage participants to seek professional evaluation.

REFERENCES:

- [1] Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group. Revised 2003 consensus on diagnostic criteria and long-term health risks related to polycystic ovary syndrome. *Fertil Steril* 2004 Jan;81(1):19-25. [doi: 10.1016/j.fertnstert.2003.10.004] [Medline: 14711538]
- [2] Dokras A, Clifton S, Futterweit W, Wild R. Increased prevalence of anxiety symptoms in women with polycystic ovary syndrome: systematic review and meta-analysis. *Fertil Steril* 2012

- Jan;97(1):225-30.e2. [doi: 10.1016/j.fertnstert.2011.10.022] [Medline: 22127370]
- [3] Ding T, Hardiman PJ, Petersen I, Wang FF, Qu F, Baio G. The prevalence of polycystic ovary syndrome in reproductive-aged women of different ethnicity: a systematic review and meta-analysis. *Oncotarget*. 2017;8(56):96351-8.
- [4] Wild RA, Carmina E, Diamanti-Kandarakis E, Dokras A, Escobar-Morreale HF, Futterweit W, *et al*. Assessment of cardiovascular risk and prevention of cardiovascular disease in women with the polycystic ovary syndrome: a consensus statement by the Androgen Excess and Polycystic Ovary Syndrome (AE-PCOS) Society. *J Clin Endocrinol Metab* 2010 May;95(5):2038-2049. [doi: 10.1210/jc.2009-2724] [Medline: 20375205]
- [5] Dokras A, Bochner M, Hollinrake E, Markham S, VanVoorhis B, Jagasia DH. Screening women with polycystic ovary syndrome for metabolic syndrome. *Obstet Gynecol*. 2005;106(1):131-7.
- [6] Jaya P, Shailesh R. Polycystic ovarian syndrome (PCOS) awareness among young women of central India. *Int J Reprod Contracept Obstet Gynecol*. 2018;7(10):3960-4.14.
- [7] Pitchai P, Sreeraj SR, Anil PR. Awareness of lifestyle modification in females diagnosed with the polycystic ovarian syndrome in India: an explorative study. *Int J Reprod Contracept Obstet Gynecol*. 2016;5(2):470-6.
- [8] Pedersen SD, Brar S, Faris P, Corenblum B. Polycystic ovary syndrome: validated questionnaire for use in diagnosis. *Can Fam Physician*. 2007 Jun;53(6):1042-7, 1041. PMID: 17872783; PMCID: PMC1949220.
- [9] Taneja J *et al*. Polycystic ovary syndrome risk: efficacy of self-assessment test. *Int J Reprod Contracept Obstet Gynecol*. 2020 Jul;9(7):2915-2920. DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20202733>
- [10] Sam S. Obesity and Polycystic Ovary Syndrome. *Obes Manag*. 2007 Apr;3(2):69-73. doi: 10.1089/obe.2007.0019. PMID: 20436797; PMCID: PMC2861983.
- [11] Marsh K, Steinbeck KS, Atkinson FS, Petocz P, Brand-Miller JC. Effect of a low glycemic index

- compared with a conventional healthy diet on polycystic ovary syndrome. *Am J Clin Nutr* 2010 Jul;92(1):83-92. [doi: 10.3945/ajcn.2010.29261] [Medline: 20484445]
- [12] Azziz R, Kashar-Miller MD. Family history as a risk factor for the polycystic ovary syndrome. *J Pediatr Endocrinol Metab*. 2000;13 Suppl 5:1303-6. PMID: 11117675.
- [13] Hou L, Zhou R. Patterns of premenstrual syndrome and depression symptoms in Chinese female university students: Results of a latent profile analysis. *J Affect Disord*. 2021 Oct 1; 293:64-70. doi: 10.1016/j.jad.2021.06.017. Epub 2021 Jun 18. PMID: 34174472.
- [14] Mobasher P, Foulad DP, Raffi J, Zachary C, Fackler N, Zohuri N, Juhasz M, Atanaskova Mesinkovska N. Catamenial Hyperpigmentation: A Review. *J Clin Aesthet Dermatol*. 2020 Jun;13(6):18-21. Epub 2020 Jun 1. PMID: 32884614; PMCID: PMC7442313.
- [15] Adibi N, Robati RM. Skin and metabolic syndrome: A review of the possible associations. *J Res Med Sci*. 2021 Feb 27; 26:16. doi: 10.4103/jrms.JRMS_585_20. PMID: 34084195; PMCID: PMC8106409.