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Original Article

Implementation and Reliability of Self Assessment PCOS Questionnaire At Yadgiri Institute of Medical Sciences

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ABSTRACT

Polycystic Ovary Syndrome (PCOS) is one of the most common endocrine disorders affecting women of reproductive age, with significant reproductive, metabolic, and psychological implications. This cross-sectional study aimed to assess the effectiveness of a self-administered questionnaire in identifying symptoms and risk factors associated with PCOS among young female students.

The study was conducted among 100 medical and nursing students aged 21–30 years. Data were collected using a structured self-assessment questionnaire covering menstrual history, clinical symptoms, and associated comorbidities. Descriptive statistical analysis was performed using SPSS version 26.0.

The mean age of participants was 25.70 ± 2.98 years. Most participants (89%) had a normal Body Mass Index (BMI). Menstrual irregularities were reported in 45% of participants, while 26% experienced dysmenorrhea and 25% reported heavy menstrual bleeding. Clinical features associated with PCOS included acne (31%), abnormal hair growth (19%), and acanthosis nigricans (14%). Comorbid conditions such as hypothyroidism (11%), diabetes (2%), hypertension (3%), and dyslipidemia (2%) were also observed, while 25% reported oral contraceptive pill use.

The findings indicate that a significant proportion of participants exhibited symptoms suggestive of PCOS despite having normal BMI and minimal comorbidities. The self-administered questionnaire proved to be a practical, non-invasive, and effective screening tool for early identification of individuals at risk. Early detection through such tools can facilitate timely clinical evaluation and management, thereby improving long-term health outcomes.

Keywords*:Polycystic Ovary Syndrome (PCOS), Menstrual Irregularities, Hyperandrogenism, Insulin Resistance.*

INTRODUCTION

The disorder that eventually would be known as the polycystic ovary (or ovarian) syndrome (PCOS) was initially described by Stein and Leventhal in 1935 (2). Despite the difficulty in ascertaining the prevalence of this disorder among women there are convincing data today to suggest that it affects between 6% and 8% of women worldwide, using the National Institutes of Health (NIH) 1990 criteria, such that it can be considered one of the most common disorders of humans, and the single most common endocrine abnormality of women of reproductive age.(1)

Clinically, diagnosing a woman as having PCOS implies an increased risk for infertility, dysfunctional bleeding, endometrial carcinoma, obesity, type 2 diabetes mellitus (DM), dyslipidemia, hypertension, and possibly cardiovascular disease (CVD). Furthermore, it has important familial implications, principally, but not exclusively, for her sisters and daughters. Consequently, the diagnosis of PCOS should not be assigned lightly, and diagnostic criteria should be based on robust data. In few Asian countries prevalence figures are ranging from 2% to 7.5% in China and 6.3% in Srilanka. There are few studies conducted in India. Studies done in South India and Maharashtra, prevalence of PCOS (by Rotterdam's criteria) were reported as 9.13% and 22.5% (10.7% by Androgen Excess Society criteria) respectively(2)

There is no universally accepted definition of PCOS. It is a complex clinical presentation and is traditionally thought of as a triad of oligomenorrhea, hirsutism and obesity, and is now recognized as a heterogeneous disorder that results in overproduction of androgens, primarily from the ovary, and is associated with insulin resistance. The first recognition of an association between glucose intolerance and hyperandrogenism (HA) was the famous report of the bearded diabetic woman by Archard and Thiers in 1921.[3]

PCOS may present with amenorrhea, infertility, features of hyperandrogenemia (HA), signs of metabolic disturbances like insulin resistance, and dyslipidemia. The apparent underlying reason is persistent anovulation over a prolonged period. Different endocrinopathies can lead to anovulation and the subsequent emergence of polycystic ovaries. Thus PCO can be considered as a functional derangement. The clinical picture and ovarian status seen in PCOS can reflect any of the dysfunctional states. As these women are vulnerable to type II diabetes, dyslipidemia, premature arteriosclerosis, and endometrial carcinoma, treatment of PCOS should also aim to search these abnormalities. Treatment of these concurrent abnormalities in individual PCOS woman will result in a better outcome. It may correct the signs and symptoms and also prevent anticipated and or unanticipated future adverse outcomes. Infertility as a result of anovulation is a complication of PCOS. PCOS women may present with a complaint of failure to conceive. PCOS can result in primary or secondary infertility.

The exact prevalence of PCOS is not known as the syndrome is not defined precisely. The estimated prevalence in women of reproductive age is 5-10%. Under the new criteria (Rotterdam-2003), the prevalence among the general female population will raise up to 10%.[4] Nidhi, *et al*. prospectively studied 460 girls aged 15-18 years from a residential college in Andhra Pradesh, South India. The authors have reported a prevalence of PCOS in 9.13% of the Indian adolescents.[5] Consideration of a one definitive endocrine or clinical criterion for the diagnosis of the PCOS may result in biased selection of patients focusing on an isolated segment of a wide clinical spectrum. This can influence the incidence and prevalence of PCOS, thereby masking the gravity of the problem.

Studies highlighting the impact of ethnicity in PCOS have considered the metabolic aspects of the syndrome, including insulin resistance, glucose intolerance, lipid abnormalities, and coronary artery diseases. Williamson, *et al*. reported that PCOS women of different ethnicity presented with different clinical manifestation of PCOS.[6] Studies conducted on Indian PCOS women suggested that abnormalities of the insulin receptor are more common in Indian women with PCOS compared to white women with PCOS.[7]

In the present study, we are using self assessment questionnaire in students at Dr B R Ambedker medical college and hospital, Bangalore.

REVIEW OF LITERATURE:

Polycystic ovary syndrome Validated questionnaire for use in diagnosis published by Sue D. Pedersen MD FRCPC Sony Brar Peter Faris PhD Bernard Corenblum MD FRCPC Article in Canadian family physician, July 2007**:** To construct and validate a questionnaire for use in diagnosis of polycystic ovary syndrome (PCOS). Fifty patients with PCOS and PARTICIPANTS 50 patients without PCOS were included in the study. Main outcome measures Demographic information, medical history, related diagnoses, menstrual history, and fertility history. A history of infrequent menses, hirsutism, obesity, and acne were strongly predictive of a diagnosis of PCOS, whereas a history of failed pregnancy attempts was not useful. A history of nipple discharge outside of pregnancy strongly predicted no diagnosis of PCOS. They constructed a 4-item questionnaire for use in diagnosis of PCOS; the questionnaire yielded a sensitivity of 85% and a specificity of 85% on multivariate logistic regression and a sensitivity of 77% and a specificity of 94% using the 4-item questionnaire. Predictive accuracy was validated using a second sample of 117 patients, in addition to internal validation using bootstrap analysis. Self-Administered Questionnaire to Screen for Polycystic Ovarian Syndrome by Bronwyn S. Bedrick,1,2 Ashley M. Eskew,1,3 Jorge E. Chavarro,4 and Emily S. Jungheim5 published in Women's Health Reports Volume 1.1, 2020: women ages 18–50 were recruited with and without PCOS as defined by modified Rotterdam criteria to complete a self-administered survey of common PCOS signs and symptoms. Fifty-one women with PCOS and 50 women without PCOS participated in this study. Hirsutism, defined by a modification of the FG score of ‡3 from the upper lip and abdomen based on self-assessments, provided a sensitivity of 76% and specificity of 70%, whereas report of any depilatory practices provided a sensitivity of 71% and specificity of 74%. The combined sensitivity of these measures was 93% with a specificity of 52%. In multivariate logistic regression, women who used depilatory techniques had an adjusted odds ratio (aOR) of PCOS of 6.6 (95% confidence interval [CI] 2.5–17.3, p = 0.0002). Those with obesity had similar aOR of PCOS (aOR 6.7, 95% CI 2.5–17.9, p = 0.0001). Addition of other variables did not improve model fit and the net sensitivity and specificity of these two variables did not improve those of depilatory practices and hirsutism.

MATERIALS AND METHODS

Source of Data

Source of study: This is a CROSS-SECTIONAL study conducted at DR BR Ambedkar medical college and hospital. All female students after obtaining their consents were asked to submit their responses of the questionnaire.

Sample size: All medical and nursing students of Dr B R Ambedker Medical college.

Sample design: CROSS-SECTIONAL study

Study place: Dr B R Ambedkar Medical college

Method of collection :

All students willing to participate in survey.

Inclusion criteria:

All students studying in 1st to last year of M.B.B.S and Nursing.

Exclusion criteria:

Known case of
TYPE-1 DM
AUTOIMMUNE DIASEASE

Does the study require any investigations or intervention to be conducted on patients or other humans or animals? If so, describe briefly.
No

Has ethical clearance obtained from your institution for this study and required investigations in this study.
YES

STATISTICAL ANALYSIS

Data was analyzed using the statistical package **SPSS 26.0** (SPSS Inc., Chicago, IL) **Descriptive statistics** was performed to assess the mean , standard deviation and proportion of the respective groups.

TABLE 1- AGE

	N	Minimum	Maximum	Mean	Std. Deviation
Age	**100**	**21**	**30**	**25.70**	**2.980**

The data collected from a sample of 100 individuals reveals that their ages range from a minimum of 21 years to a maximum of 30 years. The average age of the participants is 25.70 years, with a standard deviation of 2.98 years, indicating a relatively consistent age distribution within the sample.

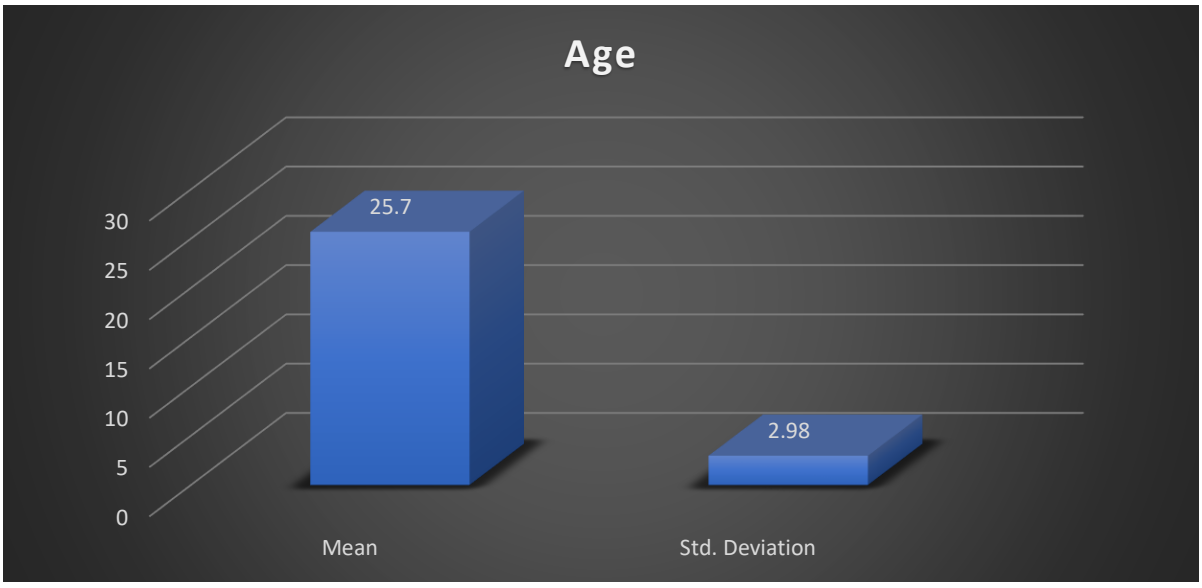

TABLE 2- HEIGHT,WEIGHT,BMI

	N	Minimum	Maximum	Mean	Std. Deviation
HEIGHT	**100**	**153**	**170**	**161.64**	**4.074**
WEIGHT	**100**	**50**	**70**	**59.40**	**4.634**
BMI	**100**	**20.80**	**27.70**	**22.6988**	**1.52828**

The analysis of a sample of 100 individuals provides insight into their physical characteristics, specifically height, weight, and body mass index (BMI). The heights of the participants range from a minimum of 153 cm to a maximum of 170 cm, with an average height of 161.64 cm and a standard deviation of 4.074 cm, indicating a moderate variation in height among the group. In terms of weight, the participants weigh between 50 kg and 70 kg, with a mean weight of 59.40 kg and a standard deviation of 4.634 kg, suggesting a fairly consistent weight range within the sample. Correspondingly, the BMI values range from 20.80 to 27.70, with an average BMI of 22.70 and a standard deviation of 1.53.

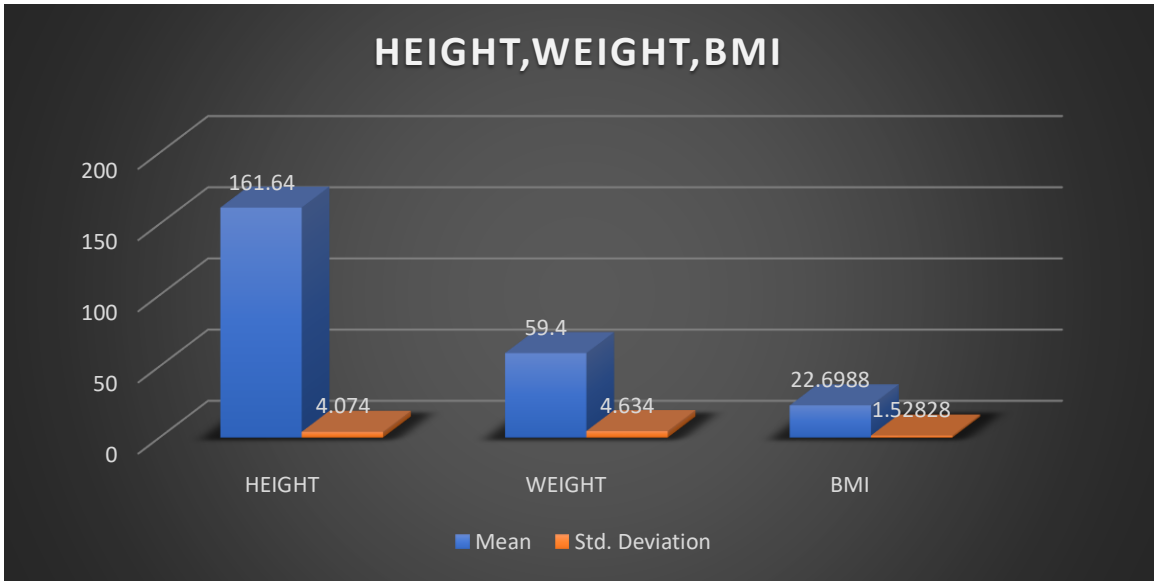

TABLE 3- BMI CATEGORIES

		Frequency	Percent
BMI	**Normal**	**89**	**89.0**
	Overweight	**11**	**11.0**
	Total	**100**	**100.0**

The distribution of body mass index (BMI) among the sample of 100 individuals reveals a predominance of normal weight classifications. Specifically, 89 participants, accounting for 89.0% of the sample, fall within the normal BMI range, indicating a healthy weight status. Conversely, only 11 individuals, or 11.0%, are classified as overweight.

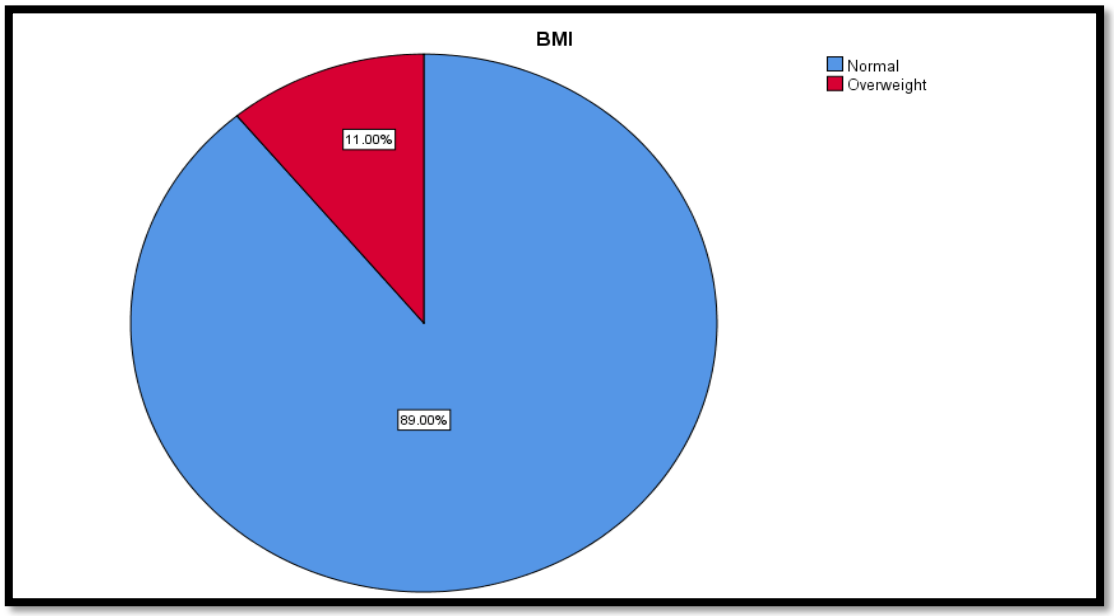

TABLE 4- MENSTRUAL PATTERN

	N	Percentage
Regular	**54**	**54**
Irregular	**45**	**45**
Dysmenorrhea	**26**	**26**
HMB	**25**	**25**

The table provides insights into menstrual patterns and related symptoms among the surveyed population. Of the participants, 54% reported having regular menstrual cycles, while 45% indicated irregular cycles, highlighting a notable prevalence of menstrual irregularity. Additionally, 26% of respondents experienced dysmenorrhea, or painful menstruation, suggesting that a significant portion of the population may face discomfort during their menstrual periods. Furthermore, 25% reported experiencing heavy menstrual bleeding (HMB), which can further impact their quality of life.

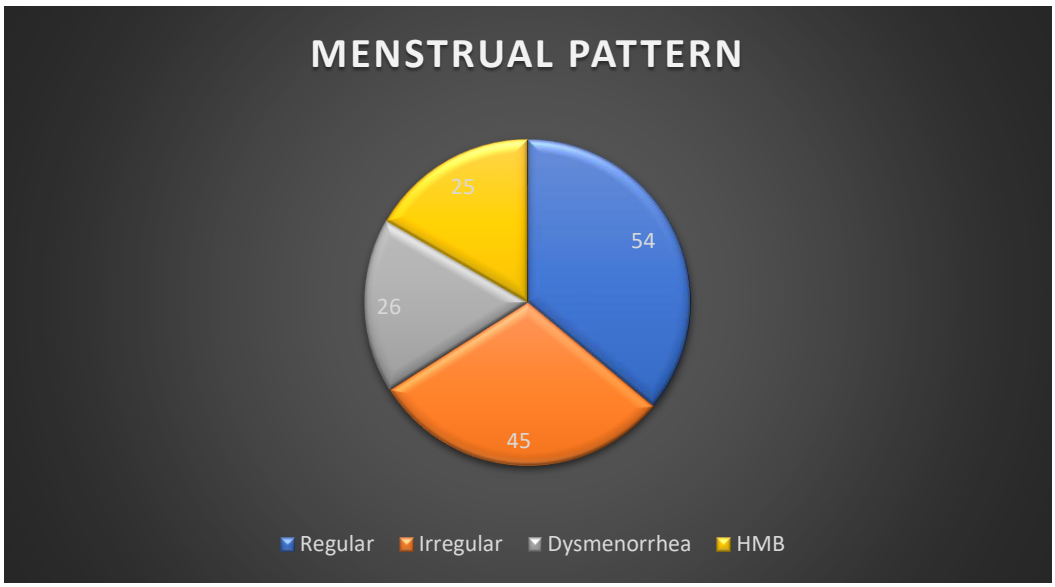

Table 5- Acne

		Frequency	Percent
Acne	**NO**	**69**	**69.0**
	Yes	**31**	**31.0**
	Total	**100**	**100.0**

The data presented in the table indicates the prevalence of acne within the surveyed population, with 69% of participants reporting no occurrence of acne, while 31% acknowledged experiencing this condition.

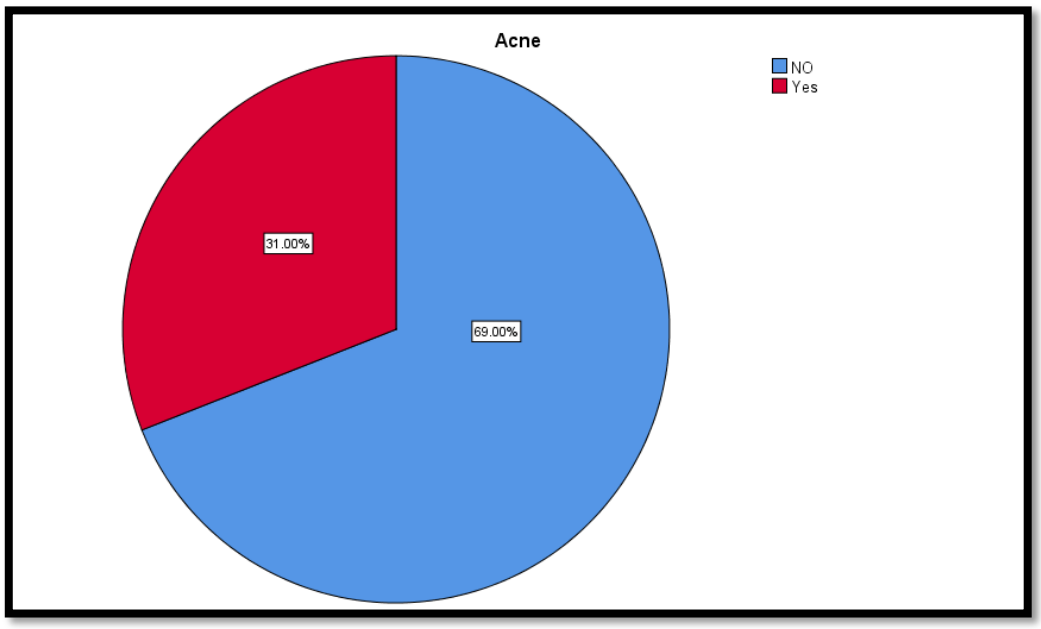

Table 6- Nipple Discharge

		Frequency	Percent
Nipple Discharge	**NO**	**93**	**93.0**
	Yes	**7**	**7.0**
	Total	**100**	**100.0**

The table displays the frequency and percentage of nipple discharge among the surveyed population, revealing that a significant majority, 93%, reported no occurrence of nipple discharge, while only 7% indicated that they had experienced this symptom.

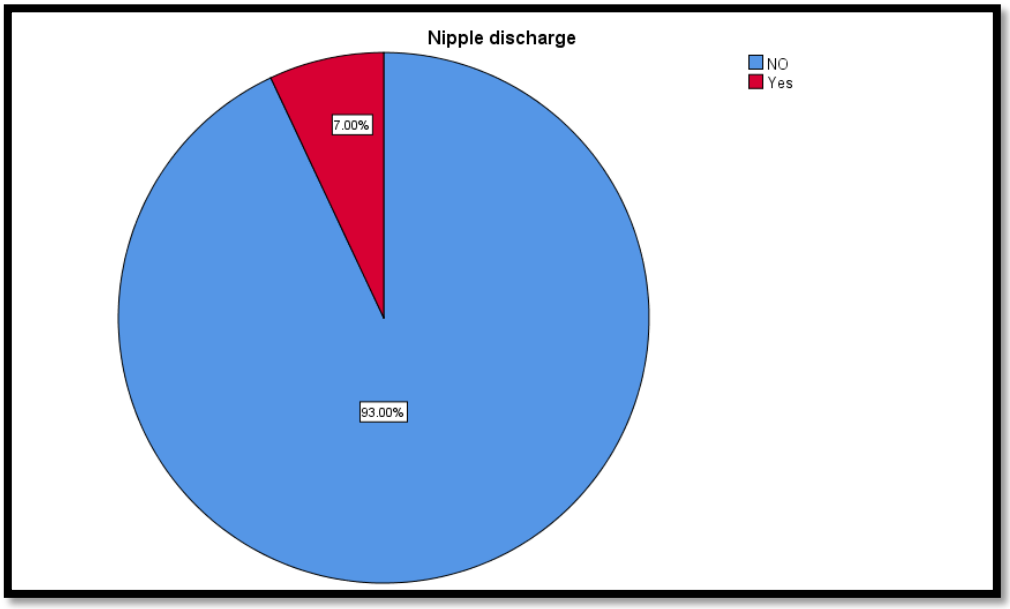

Table 7- Acanthosisnigricans

		Frequency	Percent
Acanthosisnigricans	**NO**	**86**	**86.0**
	Yes	**14**	**14.0**
	Total	**100**	**100.0**

The data presented in the table indicates the prevalence of acanthosisnigricans within a surveyed population, showing that 86% of participants reported no acanthosisNigricans, while 14% acknowledged experiencing this symptom. This significant majority suggests that nipple discharge is relatively rare among the individuals in this group.

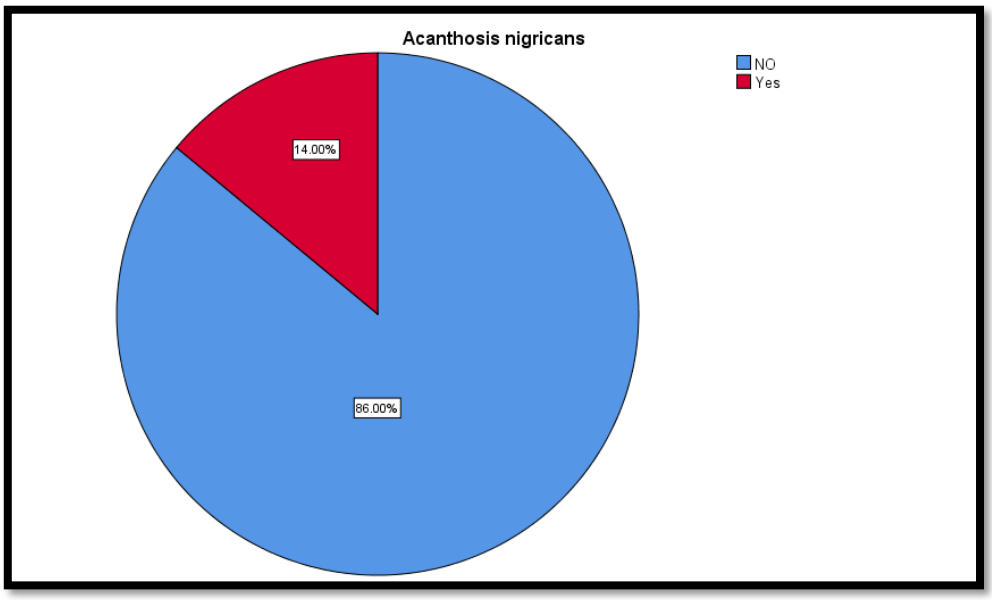

Table 8- Abnormal Hair growth

		Frequency	Percent
Abnormal hair	**NO**	**81**	**81.0**
	Yes	**19**	**19.0**
	Total	**100**	**100.0**

The table presents data on the prevalence of Abnormal Hair among a sample population, revealing that a substantial majority, 81%, reported experiencing no Abnormal Hair, while 19% indicated that they did have this symptom. This distribution suggests that nipple discharge is relatively uncommon in this cohort, with the overwhelming majority of individuals not exhibiting this condition.

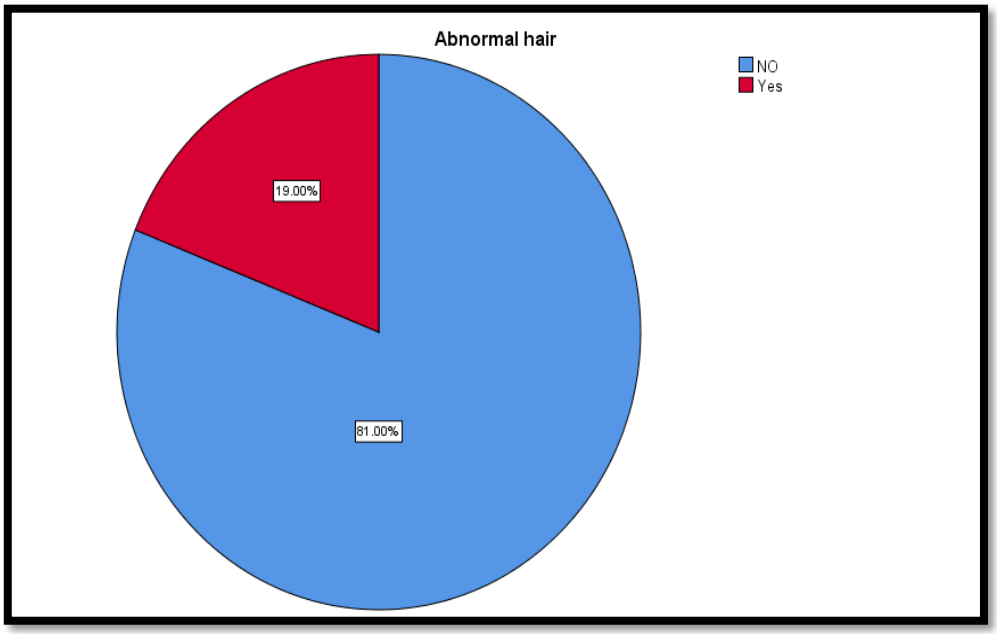

TABLE 9- CO MORBIDITIES

	Frequency	Percent
Diabetes	**2**	**2.0**
Hypertension	**3**	**3.0**
Dyslipidemia	**2**	**2.0**
Hypothyroidism	**11**	**11.0**
Use of OCP	**25**	**25.0**
NIL	**61**	**61.0**

The provided table outlines the frequency and percentage of various health conditions and lifestyle factors among a sample population. Notably, the most prevalent condition reported was the use of oral contraceptive pills (OCP), accounting for 25% of respondents. Following this, hypothyroidism was identified in 11% of the participants, indicating a significant occurrence of this endocrine disorder. In contrast, diabetes and dyslipidemia were each reported by 2% of the population, while hypertension was slightly more common at 3%. A considerable majority, 61%, reported no significant health conditions or lifestyle factors (indicated as "NIL"), suggesting a relatively healthy population segment. This data highlights the varying prevalence of specific health issues and the predominant use of OCP within the group.
Self administered questionnaire for PCOS

1. Name:
2. Age:
3. Weight:
4. Height:
5. Menstrual pattern: Frequency-

Days of flow-
No. of pads changed in a day-
Dysmenorrhoea-

Acne(Clinical acne defined as 5+ pustules on chin, cheeks, and forehead within previous 3months):

Nipple discharge:

History of Diabetes mellitus • Hypertension • Dyslipidemia • Anorexia or bulimia • Hypothyroidism • Use of oral contraceptives to regularize cycles

Acanthosis nigricans:
Hair

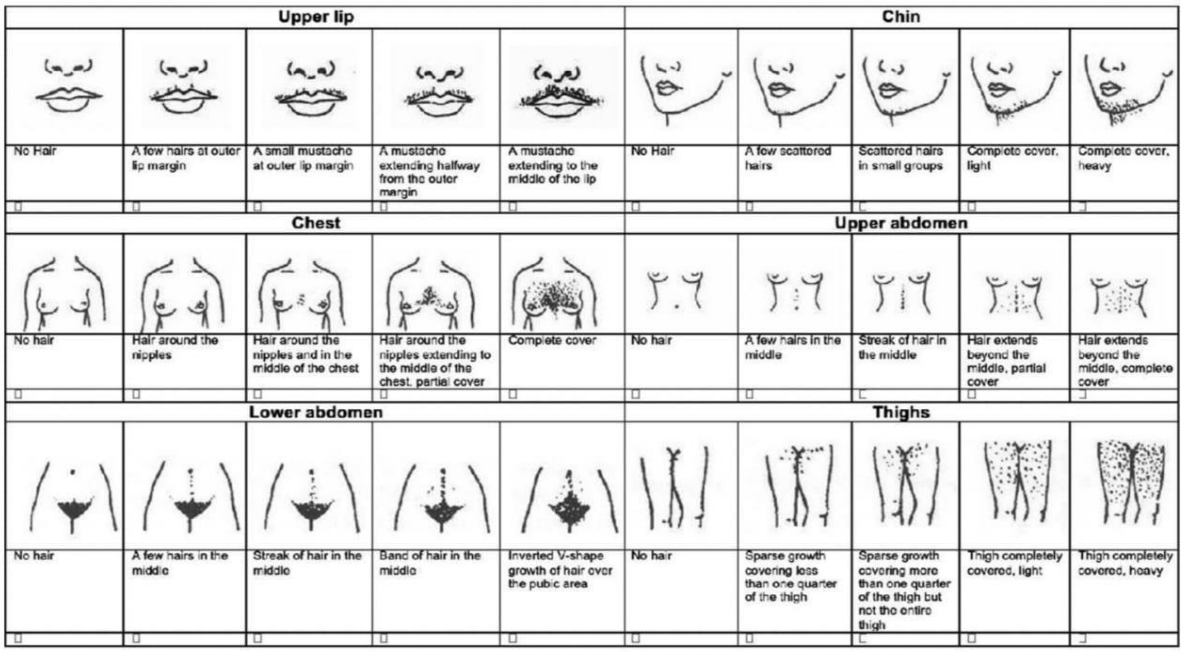

FIG. 1. Ferriman-Gallwey images[39] used for participant selection.

RESULTS

The present study included 100 participants with a mean age of 25.70 ± 2.98 years, indicating a relatively homogeneous young adult population.

Anthropometric Characteristics
The participants had:

Mean height: 161.64 ± 4.07 cm

Mean weight: 59.40 ± 4.63 kg

Mean BMI: 22.70 ± 1.53 kg/m²

Most participants (89%) had a normal BMI, while only 11% were overweight, suggesting that the majority of the sample had a healthy body composition.

Menstrual and Clinical Characteristics
54% reported regular menstrual cycles

45% had irregular cycles

26% experienced dysmenorrhoea

25% reported heavy menstrual bleeding

This indicates a considerable prevalence of menstrual irregularities, which is a key feature associated with PCOS.

Clinical Signs Associated with PCOS
Acne: 31%

Acanthosisnigricans: 14%

Abnormal hair growth: 19%

Nipple discharge: 7%

These findings show the presence of mild to moderate clinical symptoms suggestive of hyperandrogenism and metabolic disturbance in a subset of participants.

Comorbidities and Risk Factors
Hypothyroidism: 11%

Use of oral contraceptive pills (OCP): 25%

Diabetes: 2%

Hypertension: 3%

Dyslipidemia: 2%

No comorbidities: 61%

Most participants (61%) had no associated comorbidities, indicating a relatively healthy sample population.

CONCLUSION

The findings of this study demonstrate that the PCOS questionnaire is effective in identifying key symptoms and risk factors associated with PCOS within a young female population.

A substantial proportion of participants reported menstrual irregularities and clinical features such as acne, abnormal hair growth, and acanthosis nigricans, which are commonly linked to PCOS. Despite the majority having a normal BMI and no major comorbidities, the presence of these symptoms highlights the importance of early screening tools.

The questionnaire proved to be a useful, non-invasive, and practical tool for preliminary assessment, enabling the identification of individuals who may require further clinical evaluation.

Overall, the study supports the reliability and applicability of the PCOS questionnaire as a screening instrument, particularly in community or outpatient settings. Early detection through such tools can facilitate timely diagnosis and intervention, thereby improving long-term health outcomes.

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