

CUTANEOUS MANIFESTATIONS OF POLYCYSTIC OVARY SYNDROME

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Received 09.02.2025

Accepted 27.04.2025

Abstract: Polycystic ovary syndrome (PCOS) is a complex endocrine disorder observed in 6–20% of women of reproductive age [4,6]. The main diagnostic criteria of this syndrome are hyperandrogenism, ovulation disorders, and the appearance of polycystic ovaries on ultrasound [4]. Cutaneous manifestations of PCOS, especially acne, hirsutism, alopecia, are closely related to hormonal imbalance [6,7].

Objective: To investigate skin symptoms in women with PCOS in Azerbaijan and assess their association with hormonal imbalance and body mass index (BMI).

The study shows that the level of awareness regarding PCOS is low. The prevalence of skin problems in women with PCOS suggests that they are related to hormonal disorders. Therefore, women's education, dermatological and endocrinological referrals, as well as recommendations on proper diet are of great importance.

Keywords: PCOS, acne, hirsutism, alopecia, skin manifestations, hyperandrogenism

Introduction

Polycystic ovary syndrome (PCOS) is a gynecological, endocrine, and metabolic disorder that occurs in approximately 6-20% of women of reproductive age [4,6]. The most commonly accepted diagnostic criteria are the Rotterdam criteria [4]:

1. Elevated free testosterone or DHEA-S
2. Less than 8 menstrual cycles per year
3. More than 20 follicles per ovary on ultrasound.

If 2 of these criteria are present, the patient is diagnosed with polycystic ovary syndrome [2]. The main cause of the skin symptoms seen in PCOS is hormonal imbalance, especially hyperandrogenism and insulin resistance [6]. Hyperandrogenism is the main cause of painful cystic acne, hirsutism (excess hair growth) and hair loss [7]. The main skin symptom seen in insulin resistance is acanthosis nigricans, which is a darkening of the skin folds, mainly in the neck, armpits and groin [7].

The mechanism of acne formation is based on increased androgens [3,6]. Increased androgens cause the growth of small sebaceous glands located at the base of hair follicles and an increase in sebum production [3]. Sebum creates a basis for the growth of *Propionibacterium acnes* bacteria on the skin [3]. Dead skin cells and oil cause blockage of pores, resulting in the formation of inflammatory lesions and cystic acne. Acne is characterized by its location on the chin, cheeks and neck, being deep, painful, and resistant to conventional acne treatments [3].

Free testosterone is converted to dihydrotestosterone (DHT) in hair follicles by the enzyme 5-alpha-reductase [7]. DHT converts vellus hair into terminal hair (thick, dark, long), and hirsutism is formed [7].

The most affected areas are the face (chin, upper lip), chest, abdomen, back, and thighs. DHT also causes miniaturization of hair follicles (follicles shrink, weakened hair emerges) [7]. The anagen (growth) phase of hair is shortened, and more hair enters the telogen (fall) phase. Thinning of hair on the top of the head is evident, and the forehead area is relatively spared, unlike male pattern baldness.

Experimental part

To identify women with PCOS in Azerbaijan, increase their awareness, determine the most common skin problems, and assess their relationship with hormonal imbalance, a cross-sectional survey was conducted.

A structured questionnaire was created using Google Forms and distributed via social media. The survey was adapted from the questionnaire developed by Jodi Godfrey, M.S., R.D., and Priyathama Vellanki, M.D. (March 10, 2022) [2], preserving its original meaning while adapting it to the local context.

A total of 152 women aged 18–45 years participated in the study. The survey was conducted between March 24 and April 24, 2025. Participation was voluntary and anonymous.

The questionnaire included:

Awareness of PCOS

Personal and family history

Presence of dermatological manifestations (acne, hirsutism, alopecia)

Anthropometric data (height and weight) for BMI calculation

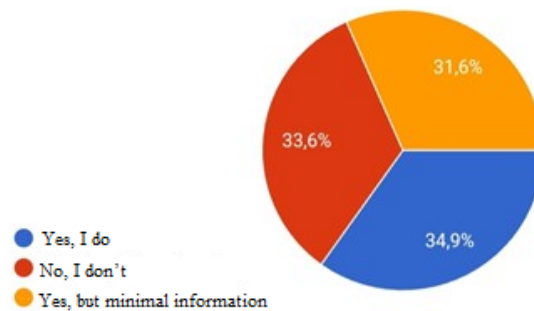
BMI was calculated using standard formula (kg/m^2) and categorized accordingly [8].

Results and discussion

It was found that 53 women (34.9%) were aware of PCOS, 48 (31.6%) had very little knowledge, and 51 (33.6%) had no knowledge at all. This indicates a low level of awareness in the population.

Do you have information about polycystic ovaries?

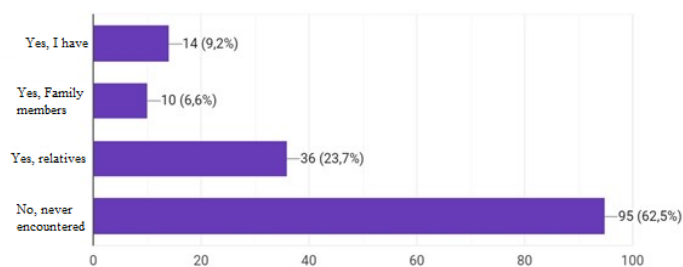
Responded - 152



Regarding prevalence, 14 women (9.2%) reported having PCOS, 10 (6.6%) reported PCOS in family members, 36 (23.7%) in relatives, and 95 (62.5%) reported no history.

Did you encounter polycystic ovaries among yourself, family members, or relatives?

Responded - 152



This finding suggests a possible genetic predisposition.

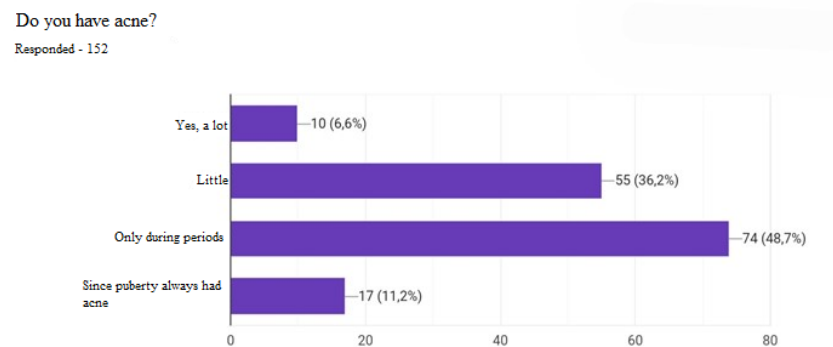
Among women diagnosed with PCOS:

2 (14.2%) had severe acne

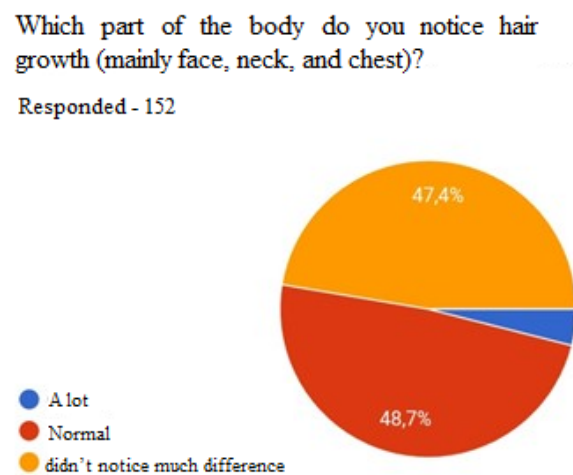
4 (28.5%) had acne during menstruation

1 (7.1%) had persistent acne since adolescence

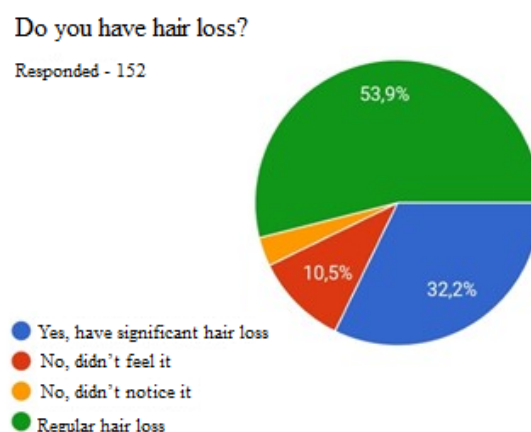
This supports the role of hormonal imbalance in acne development.



Hirsutism was observed in 4 patients (28.5%), mainly affecting the face, neck, and chest, which are androgen-sensitive areas [7].



Hair loss was reported in 6 out of 14 PCOS patients (42.8%), indicating a strong association between PCOS and alopecia.



We calculated the body mass index (BMI) of women with PCOS by asking the height and weight of the women participating in the survey. Of the 14 PCOS patients, 5 (35.7%) had a body mass index (BMI) of more than 25, and 3 (21.4%) had a body mass index (BMI) of more than 30. This statistic shows the role of PCOS in obesity.

Conclusion

As a result of the survey and research we conducted, we found that very few women in our country are aware of PCOS. For this reason, we informed these women about it through brochures we prepared. We explained to women with PCOS who suffered from skin problems that these problems were related to PCOS and referred them to a dermatologist. We recommended a diet suitable for women with PCOS who had a high body mass index (BMI).

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