

# Anxiety among reproductive age women with polycystic ovarian syndrome

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## ABSTRACT

**Introduction:** Polycystic ovarian syndrome is a most common endocrine disorder commonly seen in young reproductive age women and is commonly manifested by presence of multiple signs and symptoms like oligomenorrhoea, hirsutism, obesity, and emotional disturbances. These symptoms are frequently linked with decline in women's self-esteem and self-image and may have psychological problems like anxiety and depression.

**Objective:** To assess the level of anxiety among reproductive age women with polycystic ovarian syndrome.

**Methodology:** A descriptive cross-sectional study was conducted among 169 reproductive age women having polycystic ovarian syndrome. Women were selected purposively from polycystic ovarian syndrome WARRIOR Nepali women group. They were approached through Facebook social media. Data were collected through self-administered questionnaire from 2022 October to 2022 November by using Google Forms. SPSS v.21 was used to analyse the data. Both descriptive and inferential statistics were used.

**Result:** Out of 169, more than two third (115, 68%) women had moderate to severe level of anxiety, and 54 (32%) had minimal to mild level of anxiety. Level of anxiety was significantly associated with education, duration of diagnosis of polycystic ovarian syndrome, presence of acne, and thickened dark patches on the skin of women.

**Conclusion:** Overall, anxiety was highly prevalent among reproductive age women with polycystic ovarian syndrome. Early detection and prompt treatment of polycystic ovarian syndrome is required to reduce the level of anxiety among women.

**Keywords:** Anxiety; polycystic ovarian syndrome; women.

## INTRODUCTION

Polycystic ovarian syndrome (PCOS) is an endocrine disorder of female, characterised by the presence of at least two of the three features: decreased or absence of ovulation, hyperandrogenism, and polycystic ovaries on ultrasound.<sup>1</sup> The PCOS affects 7–10% of women

of childbearing age and is the most common cause of infertility. Approximately five million women of reproductive age in the United States have PCOS.<sup>2</sup> The prevalence of PCOS among adolescent girls aged 15 years to 19 years in a medical college of India was found to be 11.96%,<sup>3</sup> among Chinese women it was found to be 10.0%,<sup>4</sup> and among medical students of a tertiary care hospital, Nepal, it was found to be 9.18%.<sup>5</sup>

The PCOS is a main cause of infertility<sup>6</sup> which leads to mental health issues among women. The PCOS diagnosis is associated with an increased risk of moderate and severe depressive and anxiety symptoms.<sup>7</sup> Although there is evidence that anxiety is a significant issue in PCOS, very few studies have been conducted in Nepal. Hence, this study was conducted to find out the level of anxiety among reproductive age women having PCOS.

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## METHODOLOGY

A descriptive cross-sectional research was conducted among PCOS WARRIOR Nepali women group. This group was chosen at convenience because one of the authors of this study is associated with it. This is a private group on Facebook, only members can see who is in the group and what they post. It was created on 2020 June 5. Non-probability purposive sampling technique was used, and the participants were approached through social media, Facebook. A sample size of 156.73 was calculated using formula  $n = z^2 pq / d^2$  ( $p = 19.5^8$ ,  $q = 0.884$ ,  $e = 0.065$  and  $z = 1.96$  at 95% confidence level). Adding 10% non-response rate, the desired sample size was 173. However, we got responses from 169 women only. Hence, the final sample size was 169. Women of reproductive age group (aged 18-49 years) who were the members of PCOS WARRIOR group and clinically diagnosed with PCOS were included in this study.

Structured questionnaire was used for data collection consisting of two parts; part one socio-demographic, obstetric, health related information, and symptoms experienced due to PCOS, and part two standard valid tool Beck Anxiety Inventory (BAI) for assessing anxiety.<sup>9</sup> It is self-rated inventory used to determine the level of anxiety with internal consistency, Cronbach's  $\alpha$  as 0.92. It is composed of 21 items Likert-type inventory rated from zero to three. The score ranges from zero to 63 and higher scores indicate higher severity of anxiety. Scores 0-7 indicates minimal anxiety, 8-15 mild anxiety, 16-25 moderate anxiety, and 26-63 severe anxiety. Validated Nepali version<sup>10</sup> of BAI was used to collect the data. Pretesting was conducted among 17 (10% of calculated sample size) PCOS diagnosed women in the same group who were excluded from the main study.

Ethical approval for the study was obtained from institutional review committee of Kathmandu Medical College (Reference number: 0712022/27). The admin of the PCOS WARRIOR Nepali women group was contacted to get permission for the data collection among members of the group. Each individual member of the group was contacted using Facebook and its messenger and requested to fill the questionnaire. Google Form was developed, and the link was shared in the Facebook and Messenger. Researchers' information and objectives of the study were clearly explained in the Form. Those who gave consent to participate in the study were asked to continue to fill the form. The form was prepared in such a way that whoever gave consent to participate in the study had to click on a proceed button for a response that they had gone through the consent form and agreed to

participate in the study. The respondents could withdraw from study at any time during filling of the Form, and until the submit button was not clicked, the Form would not be recorded. Privacy and confidentiality of records were strictly maintained throughout the study. Data collection was done from 2022 October to 2022 November. The data were analysed using IBM SPSS Statistics for Windows, version 21 (IBM Corp., Armonk, N.Y., USA). Descriptive statistics, such as frequency, percentage, mean, standard deviation (SD) were utilised to describe the socio-demographic information of the respondents, and level of anxiety and inferential statistics, Chi-square test was applied to find out the association between level of anxiety and independent variables. A p value of  $<0.05$  was considered as significant.

## RESULT

The mean age of the respondents was  $24.74 \pm 2.87$  years. Among 169 respondents, around two third of the respondents (110, 65.1%) were  $<25$  years old. Regarding marital status, 120 (71%) were unmarried. Majority (118, 69.8%) of the respondents belonged to nuclear family, more than half (106, 62.7%) of the respondents had obtained bachelor's level education and more than half (89, 52.7%) of the respondents were students by occupation (Table 1).

Majority of the respondents (123, 72.8%) had their menarche at the age up to 13 years. More than half (88, 52%) of the respondents had irregular menstruation cycle. Regarding fertility status among married women, (10, 20.5%) had subfertility (Table 2).

Regarding the health problems associated with PCOS among respondents, in more than half 104 (61.5%) of the respondents, the duration of diagnosis of PCOS was up to three years (Table 3). Likewise majority (114, 67.5%) had experienced the symptoms of acne and had oily skin. More than half (91, 53.8%) of the respondents experienced increase in body weight. Among diseases associated with PCOS, one fifth of respondents (37, 32.5%) had hypertension followed by hypothyroidism (32, 18.9%).

About the anxiety symptoms among respondents, the major symptoms affecting the respondents severely were nervousness (10, 5.9%), fear of losing control (9, 5.3%), fear of worst happening (8, 4.7%) and the least affecting symptoms were heart pounding/racing (3, 1.8%), face flushed (4, 2.4%), and feeling hot (1, 0.6%) (Table 4). Nearly half (74, 43.8%) of the respondents had moderate anxiety, 41 (24.3%) had severe anxiety, 37

(21.9%) had mild anxiety, and 17 (10.1%) had minimal level of anxiety. Overall, 54 (32%) respondents had minimal to mild anxiety and 115 (68%) had moderate to severe level of anxiety (Table 5).

On association of anxiety status with the selected socio-demographic variables and the symptoms of PCOS experienced by the respondents, the severity of anxiety was significantly associated with education level ( $p = 0.01$ ), duration of diagnosis of PCOS ( $p = 0.003$ ), presence of acne ( $p = 0.02$ ) and thickened dark patches on skin of women ( $p = 0.008$ ) (Table 6).

**Table 1: Socio-demographic information of the respondents (N = 169)**

Variables	n (%)
<b>Age (in years)</b>	
<25	110 (65.1)
≥25	59 (34.9)
<b>Mean ± SD = 24.742 ± 0.879</b>	
<b>Marital status</b>	
Married	49 (29.0)
Unmarried	120 (71.0)
<b>Type of family</b>	
Nuclear	118 (69.8)
Joint	51 (30.2)
<b>Education</b>	
Secondary level	5 (3.0)
Higher secondary level	44 (26.0)
Bachelor's level	106 (62.7)
Master's level	14 (8.3)
<b>Occupation</b>	
Homemaker	36 (21.4)
Service	44 (26.0)
Student	89 (52.7)

**Table 2: Menstrual and obstetric information of the respondents (N = 169)**

Variables	n (%)
<b>Age at menarche (years)</b>	
≤13	123 (72.8)
>13	46 (27.2)
<b>Mean ± SD = 12.95 ± 1.04</b>	
<b>Menstrual status</b>	
Regular	81 (47.9)
Irregular	88 (52.1)
<b>Fertility status among married (n = 49)</b>	
Currently pregnant	21 (42.8)
Attempted for >1 year but failed	10 (20.5)
Have a desired number of children	11 (22.5)
Not have a child and no plan to have now	7 (14.2)

**Table 3: Health problems associated with PCOS among respondents (N = 169)**

Variables	n (%)
<b>Duration of diagnosis (in years)</b>	
<3	104 (61.5)
>3	65 (38.5)
<b>Symptoms of PCOS*</b>	
Hirsutism	65 (38.5)
Oily skin and acne	114 (67.5)
Thickened dark patches on skin	65 (38.5)
Increase in body weight	91 (53.8)
Decrease in body weight	33 (19.5)
<b>Presence of other disease</b>	
No other disease	55 (32.5)
Hypertension	37 (21.9)
Hypothyroidism	32 (18.9)
Diabetes	23 (13.6)
Hyperlipidaemia	22 (13.1)

\*Multiple response

**Table 4: Anxiety symptoms among the respondents (N = 169), n (%)**

Symptoms	Not at all	Mild	Moderate	Severe
Numbness or tingling	43 (25.4)	99 (58.6)	24 (14.2)	3 (1.8)
Feeling hot	34 (20.1)	90 (53.3)	44 (26.0)	1 (0.6)
Wobbliness in the leg	83 (49.1)	69 (40.8)	14 (8.3)	3 (1.8)
Unable to relax	38 (22.5)	89 (52.7)	41 (24.3)	1 (0.6)
Fear of worst happening	34 (20.1)	67 (39.6)	60 (35.5)	8 (4.7)
Dizzy or lightheaded	45 (26.6)	85 (50.3)	34 (20.1)	5 (3.0)
Heart pounding/racing	29 (17.2)	64 (37.9)	73 (43.2)	3 (1.8)
Unsteady	88 (52.1)	61 (36.1)	18 (10.7)	2 (1.2)
Terrified or afraid	44 (26.0)	73 (43.2)	47 (27.8)	5 (3.0)
Nervousness	32 (18.9)	56 (33.1)	71 (42.0)	10 (5.9)
Feeling of choking	67 (39.6)	56 (33.1)	41 (24.3)	5 (3.0)
Hands trembling	76 (45.6)	67 (39.6)	23 (13.6)	3 (1.8)
Shaky/unsteady	77 (45.6)	64 (37.9)	25 (14.8)	3 (1.8)

Fear of losing control	81 (47.9)	50 (29.6)	29 (17.2)	9 (5.3)
Difficulty in breathing	50 (29.6)	63 (37.3)	54 (32.0)	2 (1.2)
Fear of dying	74 (43.8)	63 (37.3)	29 (17.2)	3 (1.8)
Scared	44 (26.0)	64 (37.9)	53 (31.4)	8 (4.7)
Indigestion	42 (24.9)	85 (50.3)	38 (22.5)	4 (2.4)
Faint/lightheaded	106 (62.7)	50 (29.6)	12 (7.1)	1 (0.6)
Face flushed	33 (19.5)	78 (46.2)	54 (32.0)	4 (2.4)
Hot/cold sweats	55 (32.5)	67 (39.6)	45 (26.6)	2 (1.2)

**Table 5: Level of anxiety among the respondents (N = 169)**

Level of anxiety	n (%)
Minimal anxiety	17 (10.1)
Mild anxiety	37 (21.9)
Moderate anxiety	74 (43.8)
Severe anxiety	41 (24.3)
Minimal to mild anxiety	54 (32)
Moderate to severe anxiety	115 (68)

**Table 6: Association between selected of independent variables and anxiety (N = 169)**

Variables	Minimal to mild anxiety	Moderate to severe anxiety	p- value
<b>Age (in years)</b>			
<25	31	71	0.18
>25	15	44	
<b>Marital status</b>			
Married	12	37	0.28
Unmarried	42	78	
<b>Educational level</b>			
Up to secondary	9	40	0.01*
Higher education	45	75	
<b>Occupation</b>			
Not earning	42	83	0.43
Earning	12	32	
<b>Menstrual cycle</b>			
Regular	27	54	0.71
Irregular	27	61	
<b>Duration of diagnosis (in years)</b>			
< 3	42	62	0.003*
> 3	12	53	
<b>Symptoms of PCOS</b>			
Hirsutism	23	42	0.44
Acne	30	84	0.02*
Thickened dark patches on skin	13	52	0.008*
Increased body weight	30	61	0.76

Significant at &lt;0.05 \*= Chi-square test

## DISCUSSION

This study was conducted to find out the level of anxiety among reproductive aged women with PCOS. Among the different symptoms experienced by women with PCOS, acne and hirsutism was present in 67.5% and 38.5% respectively in the present study which is consistent to a study conducted in India in which 55.7% and 37.9% of women with PCOS had acne and hirsutism respectively.<sup>11</sup> Contrast finding was shown in a study conducted in Nepal in which acne and hirsutism was noted 13% and 33% women respectively.<sup>12</sup> This study showed menstrual irregularity in 52.1% of women with PCOS which is contrast with the finding of a study conducted in India where menstrual irregularity was in 95.7% of the women<sup>11</sup> and with two studies conducted on clinical profile of PCOS in Nepal, and the menstrual irregularity was found 83% and 78% respectively.<sup>12,13</sup>

In this study thickened dark patches on skin was present in 38.5% which is contrast with the study conducted in India where it was only 12.9%.<sup>14</sup> In this study increase in body weight was present in 53.8% of women. Similar finding was observed in a study done among women with PCOS in clinical setting in India in which 56% of women had obesity.<sup>15</sup> Similarly, a study among women with PCOS in Nepal has shown obesity in 61% of women and overweight in 22%.<sup>13</sup> In this study, increase in body weight does not mean obesity but it implies increase in body weight after the diagnosis of PCOS.

Women with PCOS are especially vulnerable to anxiety symptoms. Studies have shown that PCOS patients are about three times more likely to suffer from anxiety than the general population.<sup>16</sup> The women with PCOS had higher levels of anxiety and depression compared to the healthy women.<sup>17</sup> In this current study 43.8% had moderate anxiety which is contrast with the study conducted in India where moderate anxiety was present in 29.60%.<sup>11</sup> In this study 24.3% had severe anxiety which is in line with the study conducted in Australia where severe anxiety was present in 21%.<sup>18</sup> In India severe anxiety was present in 7.40% of the participants.<sup>11</sup> whereas in Australia, moderate anxiety was present among 17%.<sup>18</sup>

In the current study, severity of anxiety symptoms was significantly associated with educational level ( $p = 0.01$ ) which was consistent with a study conducted in Pakistan in which it is mentioned that among the women with PCOS, the severity of anxiety symptoms was significantly

associated with the level of education ( $p = 0.04$ ).<sup>19</sup> Except the educational status, other socio-demographic variables, such as age, marital status, occupation were not significantly associated with anxiety in this study ( $p \geq 0.05$ ). The finding is supported by the study conducted in Pakistan which showed that age, body mass index, marital status, monthly household income, ethnicity, menstrual irregularities, comorbidities, did not show a statistically significant association with anxiety ( $p > 0.05$ ).<sup>19</sup>

In this study, severity of anxiety was associated with acne ( $p = 0.02$ ) which is in line with a study done in Saudi Arabia which found that acne was significantly associated with anxiety ( $p = 0.03$ )<sup>20</sup> whereas in study from India acne was not significantly associated with anxiety.<sup>11</sup> The association of presence of acne and anxiety might be due to acne being a visible feature of PCOS. Acne confers a significant psychological burden, as it is commonly present in the face, denoted by the dissatisfaction with the perception of body image and facial attractiveness.

Among the different symptoms experienced by women with PCOS, thickened dark patches on skin was significantly associated with anxiety level ( $p = 0.008$ ) which is contrast with the study conducted in India where there was no association between presence of thickened dark patches on skin ( $p \geq 0.05$ ) with anxiety level.<sup>11</sup>

The study population were the social media user, which was overrepresented by young women with PCOS. Hence, the finding may not be generalised to the women who are out of access of social media. To increase generalisation, study on clinical setting is recommended. Comparative study can be conducted among women having PCOS and without having it.

## CONCLUSION

Overall, anxiety was highly prevalent among women with polycystic ovarian syndrome. Nearly half of the respondents had moderate level of anxiety. Anxiety was significantly associated with education, duration of diagnosis and presence of acne and thickened dark patches on skin. Early detection and prompt treatment of PCOS is required to reduce the level of anxiety among women. Regular physical exercise and cognitive behaviour therapy can be advised to reduce the polycystic ovarian syndrome as well as anxiety symptoms.



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