

Health-related quality of life of a group of women with PCOS: A study in West Bengal, India

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ABSTRACT

Objective: To assess the health-related quality of life of women with polycystic ovary syndrome.

Methods: We involved 80 women aged 14-38 years from the outpatient department of two medical hospitals in Kolkata. These women were diagnosed with PCOS using "Rotterdam criteria" by the medical practitioners. Health-related quality of life was assessed with five domains (emotion, body hair, body weight, menstrual, infertility problems) using Health-Related Quality of Life Questionnaire for PCOS (PCOSQOL). Higher scores of these domains indicated the improved quality of life. The participants were interviewed to record socio-demographic characteristics, their perception about health, years of botheration and duration of treatment received for PCOS. Anthropometric characteristics like stature and weight were measured following standard protocol. We applied Student's t test to compare the health-related quality of life between overweight and non overweight participants. ANOVA were conducted to show the difference in health-related quality of life with respect to perceived health status, years of botheration and the duration of treatment received for PCOS.

Results: Results revealed that the health-related quality of life among the PCOS participants differed significantly with respect to their actual weight status and perceived health status; however, it failed to differ significantly with respect to the years of botheration with and the duration of treatment received for PCOS.

Conclusion: We concluded that the perceived health status and actual weight status of PCOS women are likely to determine the health-related quality of life. Therapeutic intervention alone would not help much to improving the PCOS health related quality of life; generating awareness in bringing lifestyle change might be required in addition.

Keywords: Health-related quality of life, PCOS, West Bengal, India

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INTRODUCTION

Polycystic ovary syndrome (PCOS) is a complex hormonal disturbance that appears to be one of the leading causes of infertility among women (Schmid et al. 2004). Moreover, PCOS is found to be associated with other symptoms like, hirsutism, greasy skin, acne, obesity, amenorrhea/oligomenorrhea and dysfunctional uterine bleeding (Azziz et al. 2006; Brassard et al. 2008; Teede et al. 2010). The symptoms of PCOS vary widely within and across the population (Franks 1995; Conway 1996). Presently, 'Rotterdam criteria' (chronic anovulation, elevated androgen concentrations and the presence of polycystic ovaries) is used for the diagnosis of PCOS (Rotterdam ESHRE/ASRM-sponsored PCOS Consensus Workshop Group 2004) and the treatment is aimed at symptomatic improvement. In the long run, PCOS also increases the risk for several non-curable diseases such as, type 2 diabetes mellitus, cardiovascular disease, depressive disorder and certain types of cancer (Balen 2001; Kelly et al. 2002; Ehrmann 2005; Hollinrake et al. 2007). Thus, PCOS affects health and subsequently causes impairment in health-related quality of life of women (Jones et al. 2002; Coffey et al. 2006; Barnard et al. 2007; Ching et al. 2007; Li et al. 2011).

Health-related quality of life is a multidimensional approach that involves physical, psychological and social aspects of life in association with a particular disease or its treatment (Naughton and McBee 1997; Colwell et al. 1998). Cronin et al. (1998) explicates health-related quality of life of PCOS women with respect to emotions, growth of body hair, body weight, infertility and menstrual problems. The studies reported that the problems of acne, depression, obesity and menstrual disturbances are the major consequences of poor quality of life in both adolescent girls and adult women having PCOS (Sonino et al. 1993; Barnard et al. 2007; Jones et al. 2011). Apart from these, quality of life in PCOS individuals becomes impaired with an increased response to stress, declined social activity and dissatisfaction with sexual and marital life (Elsenbruch et al. 2003; Drosdzol et al. 2007).

In India, clinical based studies revealed that a substantial proportion of women are reported with the problems of PCOS such as, hirsutism, acne, obesity, oligomenorrhea, infertility, spontaneous abortion, hyperinsulinemia, thyroid dysfunction and cardiovascular disease (Mandrelle et al. 2012; Sinha et al. 2013; Chakraborty et al. 2013; Ramanand et al. 2013; Guleria et al. 2014; Thathapudi et al. 2014). None of these studies draw attention to the quality of life of PCOS individuals. Thus, in our study we have attempted to assess the health-related quality of life of a group of women having PCOS.

MATERIALS AND METHODS

Study area

The present study was conducted in the city of Kolkata, the state capital of West Bengal, India. Two public health institutions, namely 'Institute of Post-Graduate Medical Education and Research and Seth Sukhlal Karnani Memorial Hospital' (commonly referred to as PG Hospital) and 'Medical College and Hospital, Kolkata', (commonly referred to as Calcutta Medical College) were selected to collect data on patients diagnosed with PCOS. The former hospital is located in the southern part of the city and the later is in the northern-central part

of the city. Both the hospitals are renowned in terms of infrastructure and facilities and cater to the needs of a large section of the people.

Study participants

A total number of 80 individuals, diagnosed with PCOS using "Rotterdam criteria" by the medical practitioners of the two hospitals were recruited for this study. The participants were aged between 14 and 38 years. Most of the participants (85%) belonged to the Hindu group. Rest of them (15%) hailed from Muslim community. Informed written consent was taken from each of them. The protocol of the study was reviewed by the 'Ethical Clearance Committee' of both the public health institutions. The study was conducted during the time period of April to July in the year 2014.

Data types

Data were collected in person from the 'out patient department' (OPD) of both the hospitals. The face-to-face interview was conducted by a same sex interviewer [one of the coauthors of this study (DSG)].

Socio-demographic characteristics and PCOS health history

Information on socio-demographic profile includes age of the participants at the time of interview (in years), educational levels (in years), occupational types, marital status and monthly household income (in Indian rupees). Age at the time of interview showed normal distribution. Educational levels and monthly household income of the participants had skewed distribution; hence these two variables were converted into normal distribution after performing the log transformation. We presented the mean and standard deviation of the age at the time of interview, educational levels and monthly household expenditure of the participants.

Furthermore, the participants were asked to make an assessment about their perceived (present) health status (either 'good' or 'fair' or 'poor'), and also to report the years of botheration with PCOS and duration of treatment (in years) they received from the date of interview.

Health-Related Quality of Life

Health-Related Quality of Life Questionnaire for women with PCOS (PCOSQ) was employed in interviewer-administered format as suggested by Cronin et al. (1998) who originally developed this questionnaire. PCOSQ involves 26 items that are grouped into five domains such as, 'emotion' (8 items), 'body hair' (5 items), 'body weight' (5 items), 'infertility problems' (4 items) and 'menstrual problems' (4 items). Each of these items is rated on a 7-point scale, in which the optimal functioning is represented by the score 7, and the score 1 indicates the poorest level of functioning. Thus, the minimum and maximum scores for each item ranges between 1 and 7 respectively. Each domain was formed by adding the scores of its corresponding items. The minimum and maximum values for each

domain depend on the number of items for the domain. For example, the minimum and maximum values for 'emotion' domain would range between 8 (8×1) and 56 (8×7). The lower score indicates the greater concern and the more adverse impact on woman's health-related quality of life.

Anthropometric characteristics and actual weight status

Stature and weight were measured following standard protocol (Lohman et al. 1988). Stature was measured to the nearest of 0.1 cm using a portable GPM anthropometer for each participant on a horizontal surface with the body stretched upward to the fullest extension and the head in the Frankfurt plane. Weight was measured to the nearest of 0.1 kg for each participant in light clothing without shoes using weighing machine. Body mass index (BMI) was calculated using the formula: $[BMI = \text{weight (kg)} / \text{stature (m}^2)]$. For the adolescent participants (aged 14-19 years), the calculated BMI was translated into age and sex specific BMI z score values using the cut off points based on reference data of World Health Organization (2007). On the other hand, the BMI of those participants whose age was beyond 19 years was classified following the proposition of World Health Organization (2004). Underweight/thin (BMI for age z score < -2 SD or BMI < 18.5), normal weight (BMI for age z score = -2 SD to 1SD or BMI = 18.5 to 25.0), overweight (BMI for age z score = 1SD to 2 SD or BMI = 25.0 to 30.0) and obese (BMI for age z score > 2 SD or BMI > 30.0) individuals were identified. Finally, the participants were grouped into overweight and non overweight. The few obese participants were combined with overweight participants to make 'overweight group', while the underweight and normal weight participants were combined into another group 'non-overweight'.

Statistical analyses

Descriptive statistics were conducted to show the socio-demographic characteristics of the participants. We applied student's t test to compare each of the domains indicating the health-related quality of life of PCOS participants with respect to their actual weight status. Furthermore, analysis of variance (ANOVA) was conducted to compare each of these domains with respect to perceived health status, years of botheration with PCOS and also with the duration of treatment received for the PCOS problems. A minimum p value of ≤ 0.05 was considered statistically significant for all inferential statistics. Cronbach's alpha was calculated to judge the reliability of this questionnaire in this study population. The test result ['emotion' (0.59), 'body hair' (0.82), 'body weight' (0.80), 'menstrual problems' (0.36) and 'infertility problems' (0.84)] indicates that the internal consistency of the domains such as, 'body hair', 'body weight' and 'infertility problems' proved to be acceptable. The entire data were analyzed with the help of Statistical Package for Social Science software version 20.0 (IBM Corporation 2011).

RESULTS

Table 1 shows the socio-demographic characteristics of the participants. The mean values for the age of the participants at the time of the interview and years of education were 23.50 and 12.79 years respectively. Close to half of the participants were students and around 60% of

the participants were unmarried. Mean monthly household income was 12,000 (in Indian rupees).

Table 2 shows that the mean score for 'body weight' domain and also for all the items pertaining to 'body weight' domain were significantly lower in overweight PCOS participants compared to their non overweight counterparts. The score for the individual item like, late menstrual period (of 'emotion' domain), embarrassment about excessive body hair (of 'body hair' domain) and abdominal bloating (of 'menstrual problems' domain) were significantly lower for the overweight participants compared to those who were non overweight.

Table 3 shows that the scores of five domains ('emotion', 'body hair', 'body weight', 'menstrual problems' and 'infertility problems') indicating healthy-related quality of life of the participants failed to differ significantly with respect to the years of botheration with PCOS.

Table 4 shows the similar trend in the results as found in Table 3. The scores of five domains ('emotion', 'body hair', 'body weight', 'menstrual problems' and 'infertility problems') of health-related quality of life failed to differ significantly among the participants with respect to the duration of treatment received for PCOS problems.

Table 5 demonstrates that the participants who perceived their health as good, had significantly higher scores for the domains like, 'emotion', 'body weight' and 'infertility problems'; and also for the individual items like, depression for having PCOS (of 'emotion' domain), concerned about being overweight, frustrated in trying to lose weight, felt less sexy for being overweight (of 'body weight' domain), concerned with infertility problems, worried of not being able to have children (of 'infertility problems' domain).

DISCUSSION

We aimed to assess the health-related quality of life of a group of women with PCOS. Here, five domains (emotion, body hair, body weight, menstrual problems and infertility problems) of health-related quality of life were estimated with respect to the actual weight status, perceived health status, years of botheration and treatment received for the PCOS. The results revealed that the health-related quality of life of the participants differed significantly with respect to their actual weight status and perceived health status; however, it failed to differ significantly with respect to the years of botheration and the duration of treatment received for PCOS.

Literature revealed that the issues pertaining to body weight, menstrual problems, infertility, emotions and body hair were directly reflected in the life experiences of PCOS patients (Mc Cook et al. 2005; Barnard et al. 2007; Thomson et al. 2010; Acmaz et al. 2013; Khomani et al. 2015). In our study, overweight participants more frequently reported the problems related to their own body weight than their non overweight counterpart. For example, they often

expressed their frustration in failing to lose body weight and found themselves to be less attractive. Apart from these, other symptoms like, abdominal bloating, late menstrual period and feelings of uneasiness with excessive body hair were reported to be higher among the overweight participants. It was found that the incidence of both overweight and obesity pose a strong implication on the development and progression of the syndrome (Diamanti-Kandarakis 2007). A higher proportion of obese women with PCOS reported the symptoms of hirsutism and menstrual irregularities (Gambineri et al. 2002). Moreover, the fat accumulation in the abdomen could stimulate the production of androgen in the body that possibly developed the menstrual abnormalities and the growth of body hair (Dale et al. 1992). Our study also implied that the domains of 'emotions', 'body weight' and 'infertility problems', of PCOS health-related quality of life remained impaired among the participants who perceived their health as poor. These participants were found to be concerned with the problems of overweight and remained worried of not being able to have children and reported depression for having PCOS more than those who perceived their health as either good or fair. The psychosocial health of the participants was more affected than physical health (Coffey et al. 2006) since the clinical symptoms and its effect significantly caused the impairment in quality of life among PCOS women. Likewise, the psychosocial factors were believed to develop a profound emotional distress among these women (Eggers et al. 2001). Hahn et al. (2005) reported that irregular menstrual cycles were perceived as the primary reason for infertility and hirsutism among PCOS women. In a qualitative study, it was found that PCOS women who had hirsutism were mostly dissatisfied with body image and perceived themselves as ugly and unattractive that consequently lowered their self esteem and increased the level of depression (Ekback et al. 2009). Thus, disease related changes such as, hirsutism, acne and obesity, hormonal disturbances, fear of infertility and psychosocial distress may impinge on the female identity grasping all the pleasure and confidence in the sexual life of PCOS women (Elsenbruch et al. 2003).

Studies showed that the baseline treatment of PCOS using the medicine (like, metformin) is highly recognized by the medical practitioners (Zisser 2007) as this medicine was found to improve the lipid profile and the insulin sensitivity by shedding the body weight that subsequently prevents the progression of metabolic and reproductive abnormalities (Glueck et al. 2006). Furthermore, this medicine could restore the ovulation and often reduce the risk of miscarriages among the PCOS patients (Fleming 2006). Thus, it is expected that the treatment received for a longer period of time could reduce the botheration of PCOS symptoms and improve the health-related quality of life. On the contrary, our study demonstrated that the participants who received the treatment for a longer period of time were similarly bothered like the ones who have recently started receiving the treatment. Medical practitioners suggested that along with medicine lifestyle modifications (like, moderate physical activities and diet control) are required as the first-line treatment for PCOS management (Essah et al. 2007; Thomson et al. 2010). However, the PCOS participants of this study neither have control over their diet nor do they exercise regularly (Sen Gupta et al. 2015). It is probable that the lower educational attainment of the participants failed to develop fair amount of awareness about how healthy food habit and exercise help to mitigating PCOS health-related quality of life.

Strength and limitation of the study

Studying the health-related quality of life among the PCOS women is a maiden attempt in Indian context. Previous research on PCOS conducted within a medical framework could not provide the psychosocial aspect of PCOS quality of life.

Inclusion of qualitative approach to explore the women's self experiences on PCOS symptoms may add the adequate information in the body of existing literature.

CONCLUSION

We concluded that the perceived health status and actual weight status of PCOS women are likely to determine the health-related quality of life. Therapeutic intervention alone would not help much to improving the PCOS health related quality of life; generating awareness in bringing lifestyle change might be required in addition.

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Table 1 Socio-demographic characteristics of the participants (n=80)

Socio-demographic characteristics	n	%
Age of the participants (years) mean±sd	23.50 ± 8.55	
Educational levels of the participants (years) mean±sd	12.79 ± 2.17	
Occupational status of the participants		
Home maker	25	31.2
Student	38	47.5
Working	17	21.2
Marital status of the participants		
Unmarried	50	62.5
Married	30	37.5
Monthly household income (Indian rupees) mean±sd	12,000 ± 4,569.48	

Table 2 Health-related quality of life of PCOS participants with respect to their actual weight status (n=80)

Health-related quality of life	Actual weight status		t value	p value
	Non overweight n=38	Overweight n=42		
	mean±se	mean±se		
Emotions	3.51±0.17	3.32±0.16	0.805	0.423
Depression for having PCOS	3.63±0.38	3.61±0.35	0.024	0.981
Easily tired	2.15±0.29	2.78±0.33	1.389	0.169
Mood swing for having PCOS	2.28±0.32	2.90±0.36	1.253	0.214
Low self esteem for having PCOS	4.28±0.43	4.28±0.38	0.006	0.995
Felt frightened of getting cancer	6.36±0.26	5.85±0.29	1.297	0.199
Worried about having PCOS	3.10±0.34	2.47±0.25	1.488	0.141
Self conscious for having PCOS	3.07±0.34	2.64±0.24	1.050	0.297
Late menstrual period	3.23±0.39	2.02±0.28	2.523	0.014
Body hair	5.29±0.24	4.79±0.26	1.384	0.170
Visible hair on chin	5.84±0.31	5.76±0.31	0.182	0.856
Visible hair on upper lip	5.21±0.30	4.35±0.33	1.882	0.064
Visible hair on face	5.52±0.29	4.88±0.33	1.442	0.153
Visible hair on body	3.55±0.37	3.64±0.35	0.173	0.863
Embarrassment about excessive body hair	6.34±0.26	5.33±0.39	2.080	0.041
Body weight	4.18±0.29	2.93±0.22	3.419	0.001
Concerned about being overweight	3.57±0.39	2.45±0.26	2.404	0.019
Felt trouble with body weight	4.60±0.37	3.07±0.31	3.181	0.002
Frustrated in trying to lose weight	4.97±0.39	3.73±0.35	2.331	0.022
Felt less sexy for being overweight	4.00±0.39	2.85±0.34	2.197	0.031
Felt difficulties to maintain ideal weight	3.76±0.39	2.54±0.32	2.388	0.019
Menstrual problems	3.38±0.20	3.27±0.18	0.392	0.696
Headaches	5.23±0.35	5.40±0.36	0.327	0.745
Irregular menstrual periods	1.31±0.18	1.83±0.28	1.473	0.145
Abdominal bloating	2.55±0.29	1.26±0.12	4.164	0.001
Menstrual cramps	4.42±0.44	4.59±0.41	0.284	0.777
Infertility problems	4.23±0.36	3.84±0.29	0.825	0.412
Concerned with infertility problems	4.39±0.42	3.76±0.37	1.125	0.264
Worried of not being able to have children	4.36±0.45	3.83±0.38	0.904	0.369
Lack of control over the situation with PCOS	3.68±0.38	3.90±0.38	0.405	0.687
Felt sad for infertility problems	4.47±0.40	3.88±0.37	1.074	0.286

Table 3 Health-related quality of life of PCOS participants with respect to their years of botheration (n=80)

Health-related quality of life	Years of botheration with PCOS			F value	p value
	<2 years n=37	2-5 years n=26	>5 years n=17		
	mean±se	mean±se	mean±se		
Emotions	3.31±0.16	3.47±0.20	3.55±0.31	0.315	0.731
Depression for having PCOS	3.62±0.39	3.23±0.41	4.23±0.56	0.968	0.384
Easily tired	2.32±0.33	2.57±0.41	2.70±0.49	0.238	0.789
Mood swing for having PCOS	2.37±0.33	2.80±0.42	2.82±0.63	0.383	0.683
Low self esteem for having PCOS	4.32±0.38	4.38±0.54	4.05±0.68	0.087	0.916
Felt frightened of getting cancer	5.94±0.32	6.42±0.27	5.94±0.42	0.637	0.532
Worried about having PCOS	2.40±0.30	3.00±0.37	3.23±0.45	1.391	0.255
Self conscious for having PCOS	2.56±0.30	3.00±0.36	3.23±0.44	0.877	0.420
Late menstrual period	2.97±0.39	2.34±0.38	2.17±0.52	1.002	0.372
Body hair	5.05±0.27	4.90±0.32	5.17±0.35	0.156	0.856
Visible hair on chin	5.78±0.33	5.53±0.42	6.23±0.34	0.648	0.526
Visible hair on upper lip	4.56±0.33	5.15±0.38	4.58±0.56	0.692	0.504
Visible hair on face	5.18±0.32	5.07±0.44	5.35±0.43	0.094	0.910
Visible hair on body	3.86±0.38	3.11±0.45	3.76±0.54	0.856	0.429
Embarrassment about excessive body hair	5.89±0.36	5.61±0.47	5.94±0.49	0.153	0.859
Body weight	3.62±0.31	3.44±0.30	3.44±0.39	0.098	0.906
Concerned about being overweight	3.10±0.37	2.92±0.39	2.82±0.53	0.116	0.891
Felt trouble with body weight	4.05±0.37	3.73±0.43	3.35±0.58	0.565	0.571
Frustrated in trying to lose weight	4.64±0.39	4.00±0.48	4.11±0.59	0.615	0.543
Felt less sexy for being overweight	3.27±0.38	3.23±0.43	3.94±0.67	0.554	0.577
Felt difficulties to maintain ideal weight	3.02±0.39	3.34±0.42	3.00±0.63	0.169	0.845
Menstrual problems	3.29±0.21	3.48±0.20	3.16±0.32	0.372	0.691
Headaches	5.16±0.37	5.50±0.41	5.41±0.62	0.179	0.836
Irregular menstrual periods	1.59±0.27	1.73±0.34	1.35±0.24	0.280	0.750
Abdominal bloating	2.02±0.26	1.61±0.21	1.94±0.44	0.573	0.566
Menstrual cramps	4.37±0.45	5.07±0.50	3.94±0.68	0.980	0.380
Infertility problems	4.03±0.33	3.87±0.42	4.25±0.52	0.164	0.849
Concerned with infertility problems	4.13±0.39	3.80±0.50	4.29±0.66	0.216	0.806
Worried of not being able to have children	4.10±0.42	3.73±0.53	4.58±0.65	0.538	0.586
Lack of control over the situation with PCOS	3.51±0.39	4.30±0.47	3.64±0.59	0.862	0.426
Felt sad for infertility problems	4.37±0.39	3.65±0.47	4.47±0.67	0.823	0.443

Table 4 Health-related quality of life of PCOS participants with respect to duration of treatment received (n=80)

Health-related quality of life	Duration of treatment received by PCOS patients			F value	p value
	<2 years	2-5 years	>5 years		
	n=52	n=22	n=6		
	mean±se	mean±se	mean±se		
Emotions	3.28±0.13	3.80±0.25	3.10±0.51	2.106	0.129
Depression for having PCOS	3.48±0.32	3.95±0.49	3.66±0.84	0.320	0.727
Easily tired	2.38±0.27	2.59±0.48	3.00±0.57	0.281	0.756
Mood swing for having PCOS	2.36±0.28	3.18±0.50	2.66±0.48	1.067	0.349
Low self esteem for having PCOS	4.28±0.33	4.40±0.62	3.83±0.54	0.116	0.891
Felt frightened of getting cancer	6.03±0.26	6.54±0.20	5.00±0.93	1.934	0.152
Worried about having PCOS	2.53±0.26	3.22±0.35	3.16±0.98	1.155	0.320
Self conscious for having PCOS	2.63±0.24	3.45±0.44	2.50±0.50	1.650	0.199
Late menstrual period	2.57±0.30	3.09±0.50	1.00±0.07	2.162	0.122
Body hair	5.00±0.23	5.22±0.29	4.60±0.49	0.377	0.687
Visible hair on chin	5.75±0.28	6.00±0.36	5.50±0.92	0.198	0.821
Visible hair on upper lip	4.65±0.28	5.22±0.40	4.00±0.28	1.047	0.356
Visible hair on face	5.21±0.28	5.27±0.41	4.66±0.80	0.220	0.803
Visible hair on body	3.59±0.32	3.50±0.50	4.00±0.85	0.108	0.898
Embarrassment about excessive body hair	5.78±0.31	6.13±0.39	4.83±0.22	0.824	0.443
Body weight	3.65±0.25	3.33±0.33	3.10±0.64	0.452	0.638
Concerned about being overweight	3.19±0.30	2.54±0.41	2.83±0.90	0.708	0.496
Felt trouble with body weight	3.94±0.30	3.13±0.49	5.00±0.89	1.916	0.154
Frustrated in trying to lose weight	4.53±0.33	4.13±0.52	3.16±0.77	0.945	0.393
Felt less sexy for being overweight	3.42±0.33	3.72±0.51	2.00±0.81	1.257	0.290
Felt difficulties to maintain ideal weight	3.19±0.33	3.13±0.48	2.50±0.95	0.231	0.794
Menstrual problems	3.32±0.16	3.59±0.24	2.37±0.53	2.419	0.096
Headaches	5.21±0.31	6.00±0.40	3.83±0.34	2.389	0.099
Irregular menstrual periods	1.63±0.23	1.63±0.31	1.00±0.04	0.442	0.645
Abdominal bloating	1.84±0.20	2.00±0.36	1.66±0.66	0.137	0.872
Menstrual cramps	4.59±0.37	4.72±0.54	3.00±0.26	1.022	0.365
Infertility problems	3.97±0.28	4.31±0.48	3.41±0.85	0.482	0.619
Concerned with infertility problems	4.01±0.34	4.27±0.56	3.88±0.68	0.155	0.857
Worried of not being able to have children	3.96±0.36	4.45±0.57	3.83±0.66	0.294	0.746
Lack of control over the situation with PCOS	3.78±0.34	4.22±0.51	2.33±0.71	1.462	0.238
Felt sad for infertility problems	4.13±0.33	4.31±0.52	3.83±0.27	0.098	0.907

Table 5 Health-related quality of life of PCOS patients with respect to perceived health status (n=80)

Health-related quality of life	Perceived health status			F value	p value
	Poor	Fair	Good		
	n=15 mean±se	n=56 mean±se	n=9 mean±se		
Emotions	2.97±0.29	3.39±0.13	4.31±0.31	4.833	0.011
Depression for having PCOS	3.00±0.54	3.50±0.30	5.44±0.72	3.641	0.031
Easily tired	2.53±0.49	2.28±0.25	3.66±0.88	1.834	0.167
Mood swing for having PCOS	2.60±0.59	2.42±0.28	3.77±0.86	1.474	0.236
Low self esteem for having PCOS	3.13±0.61	4.46±0.34	5.11±0.88	2.167	0.121
Felt frightened of getting cancer	5.26±0.60	6.21±0.22	6.77±0.22	2.537	0.086
Worried about having PCOS	2.33±0.48	2.73±0.25	3.77±0.59	1.698	0.190
Self conscious for having PCOS	2.26±0.35	2.96±0.26	3.11±0.56	0.934	0.397
Late menstrual period	2.66±0.61	2.53±0.28	2.88±0.88	0.104	0.901
Body hair	5.20±0.39	4.98±0.20	5.04±0.76	0.101	0.904
Visible hair on chin	6.26±0.39	5.73±0.26	5.44±0.85	0.602	0.550
Visible hair on upper lip	5.06±0.52	4.60±0.26	5.22±0.84	0.542	0.584
Visible hair on face	4.93±0.49	5.25±0.26	5.22±0.84	0.145	0.866
Visible hair on body	3.66±0.58	3.46±0.30	4.33±0.86	0.551	0.579
Embarrassment about excessive body hair	6.06±0.48	5.87±0.28	5.00±0.87	0.724	0.488
Body weight	2.36±0.24	3.69±0.24	4.44±0.41	5.419	0.006
Concerned about being overweight	1.66±0.23	3.25±0.30	3.55±0.68	3.795	0.027
Felt trouble with body weight	3.13±0.47	3.76±0.32	5.11±0.56	2.210	0.117
Frustrated in trying to lose weight	2.93±0.57	4.50±0.32	5.55±0.68	4.039	0.021
Felt less sexy for being overweight	2.00±0.40	3.53±0.31	4.88±0.88	4.888	0.010
Felt difficulties to maintain ideal weight	2.06±0.49	3.41±0.32	3.11±0.71	2.000	0.142
Menstrual problems	3.11±0.26	3.31±0.16	3.72±0.46	0.689	0.505
Headaches	5.33±0.54	5.37±0.30	5.00±0.92	0.102	0.903
Irregular menstrual periods	1.40±0.19	1.50±0.20	2.44±0.86	1.534	0.222
Abdominal bloating	1.20±0.20	2.05±0.21	1.88±0.51	1.906	0.156
Menstrual cramps	4.53±0.70	4.33±0.36	5.55±0.86	0.772	0.466
Infertility problems	3.43±0.48	3.93±0.28	5.61±0.46	3.479	0.036
Concerned with infertility problems	3.40±0.59	3.91±0.34	6.11±0.56	3.862	0.025
Worried of not being able to have children	3.53±0.70	3.91±0.35	6.11±0.51	3.280	0.043
Lack of control over the situation with PCOS	3.13±0.56	3.91±0.32	4.22±0.87	0.760	0.471
Felt sad for infertility problems	3.66±0.62	4.00±0.33	6.00±0.50	3.074	0.052