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Original Research

Assessment of Health-Related Quality of Life in Patients with Idiopathic Hirsutism Compared to Patients with Polycystic Ovary Syndrome

Muhammed Masum Canat,[1] Hazan Erhan,[2] Ceren Yarkutay Turkkan,[2] Dilek Canat,[3] Alper Ozel,[4] Feyza Yener Ozturk,[1] Yuksel Altuntas[1]

[1]Department of Endocrinology and Metabolism, University of Health Sciences Türkiye, Sisli Hamidiye Etfal Training and Research Hospital, Istanbul, Türkiye
[2]Department of Internal Medicine, University of Health Sciences Türkiye, Sisli Hamidiye Etfal Training and Research Hospital, Istanbul, Türkiye
[3]Department of Dermatology, University of Health Sciences Türkiye, Basaksehir Cam ve Sakura City Hospital, Istanbul, Türkiye
[4]Department of Radiology, University of Health Sciences Türkiye, Sisli Hamidiye Etfal Training and Research Hospital, Istanbul, Türkiye

ABSTRACT

Objective: Hirsutism affects 5–15% of women of reproductive age. Health-related quality of life (HQOL) is a multidimensional assessment of well-being that considers the physical, social, and emotional aspects associated with a specific disease. The aim of this study is to evaluate HQOL in patients diagnosed with idiopathic hirsutism (IH) and compare it with patients diagnosed with polycystic ovary syndrome (PCOS).

Methods: This cross-sectional observational study was performed on 183 female individuals, consisting of 51 patients diagnosed with idiopathic hirsutism, 76 patients diagnosed with PCOS, and 56 healthy volunteers. Participants with a history of neuropsychiatric disorders, under 18 and over 45 years of age, during pregnancy and lactation, with any chronic disease that could interfere with diagnostic laboratory tests, and who had previously been treated for IH or PCOS were excluded from the study. Demographic, anthropometric, laboratory, and clinical data on the cases were recorded. The Short Form-36 (SF-36) questionnaire, the Beck Depression Inventory (BDI), and the Beck Anxiety Inventory (BAI) were administered in a face-to-face interview by related authors involved in the study.

Results: The mean age, level of education, lifestyle, and marital status of all three groups were similar. There were no significant differences in body mass index (BMI) or waist circumference between the groups. Mean modified Ferriman-Gallwey (mFG) scores were similar in the IH and PCOS groups. In the IH patients, the general health and mental health domains of the SF-36 questionnaire scores were significantly lower than in the control group ($p<0.001$ and $p=0.026$, respectively). When the SF-36 questionnaire scores were compared between the IH and PCOS groups, the general health and role emotional domains were significantly lower in the PCOS group ($p=0.013$ and $p<0.001$, respectively), and the other domains were similar. All SF-36 questionnaire domains were significantly and negatively correlated with BMI and waist circumference measurements in IH patients. Both BDI and BAI scores were significantly and positively correlated with BMI ($r=0.348$, $p<0.001$, and $r=0.162$, $p=0.012$, respectively) and waist circumference ($r=0.326$, $p<0.001$, and $r=0.344$, $p<0.001$, respectively). Six out of eight domains of the SF-36 QOL scores were significantly and negatively correlated with the mFG scores.

Conclusion: Patients diagnosed with IH have impaired HQOL, similar to patients diagnosed with PCOS. Improving HQOL should be a goal when deciding on a management approach for hirsutism, which is one of the most common reasons for referral to endocrinology and dermatology outpatient clinics.

Keywords: Health-related quality of life, Idiopathic hirsutism, Polycystic ovary syndrome, SF-36 questionnaire

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Address for correspondence: Muhammed Masum Canat, MD. Department of Endocrinology and Metabolism, University of Health Sciences Türkiye, Sisli Hamidiye Etfal Training and Research Hospital, Istanbul, Türkiye
Phone: +90 505 530 18 94 **E-mail:** mmasumcanat@gmail.com

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Hirsutism is defined as excessive terminal hair growth in females with a male distribution.[1] The most common clinical diagnostic criterion for hyperandrogenism is hirsutism.[2] The prevalence of hirsutism varies across different ethnic groups, affecting approximately 5–15% of women.[3]

Polycystic ovary syndrome (PCOS) is the most common cause of hirsutism. Over 80% of hirsutism cases are caused by this complex and heterogeneous syndrome. Idiopathic hirsutism (IH) represents approximately 10% of hirsutism cases. The remaining causes of hirsutism are uncommon disorders, including non-classical congenital adrenal hyperplasia (1–10%), hyperandrogenism with insulin resistance and acanthosis nigricans (3%), and androgen-secreting neoplasms (0.2%).[4] Endocrinopathies such as Cushing's syndrome, hyperprolactinemia, acromegaly, and thyroid dysfunction may be associated with hirsutism. Many medications, including androgens, anabolic steroids, glucocorticosteroids, and minoxidil, can also lead to hirsutism.[5]

Irrespective of the cause, excessive hair growth can be a source of considerable psychological and emotional distress. The impact of hirsutism threatens the feminine identity and adversely affects health-related quality of life (HQOL).[6] The evaluation of HQOL is a multidimensional assessment of well-being that considers the physical, social, and emotional aspects associated with a specific disease.[7] Acquiring HQOL information provides several benefits, including assessing treatment effectiveness, monitoring patient conditions, and selecting treatment priorities.

Numerous cross-sectional studies have demonstrated that PCOS has a negative impact on QOL and can be the cause of mood disorders such as depression, anxiety, marital and social problems, and sexual dysfunction.[8-11] IH has been shown to have a significant negative impact on HQOL in many studies.[12,13] The effects of IH and PCOS on QOL in groups with similar demographics and anthropometry have not been compared in the literature. This study aims to evaluate HQOL in patients diagnosed with IH and compare it with patients diagnosed with PCOS.

Methods

This cross-sectional observational study was conducted on female patients who applied to the endocrinology outpatient clinic in the first half of 2023 with complaints of excessive male-pattern hair growth. The modified Ferriman–Gallwey (mFG) scoring system is the most commonly used method to evaluate terminal hairs.[14] This system categorizes hair growth between 0 (absence of terminal hairs) and 4 (typical terminal hair growth) at nine distinct body locations (upper lip, jaw, chest, upper and lower back, upper and lower abdomen, arm, and thigh). In the presence of thick, long (>5 mm) terminal hairs in androgen-dependent areas, the mFG scoring system was applied using a photographic atlas.[15] Hirsutism was defined as a score of ≥8. Cases were asked about menstrual cycles and medications that can cause hair growth. Laboratory tests required for differential diagnosis were performed according to guidelines.[1] An expert radiologist performed the pelvic ultrasound assessment on all patients.

IH was diagnosed in women with hirsutism (mFG score ≥8) who have normal serum androgen concentrations, regular ovulatory cycles, no polycystic ovarian morphology, and no identifiable cause of hirsutism.[16] We used the Rotterdam criteria[17] to diagnose PCOS, as recommended by most expert groups.[18,19] Namely, the diagnosis of PCOS is based on the presence of at least two out of three of the following criteria: (I) oligoanovulation; (II) hyperandrogenism (clinical and/or biochemical); and (III) polycystic ovarian morphology (by ultrasound). Disorders causing oligoanovulation and/or hyperandrogenism, such as non-classical congenital adrenal hyperplasia, hyperprolactinemia, thyroid disease, and androgen-secreting tumors, that mimic PCOS, were excluded. The definitions of oligoanovulation, hyperandrogenism, and PCOM were based on the most recent criteria.[18]

As a result of the diagnostic evaluations, 51 patients diagnosed with idiopathic hirsutism, 76 patients diagnosed with PCOS, and 56 healthy hospital staff were included in the study. Individuals with a history of neuropsychiatric disorders, active malignancy, receiving active chemotherapy, under 18 and over 45 years of age, during pregnancy and lactation, with any chronic disease that could interfere with diagnostic laboratory tests, duration of excessive male pattern hair growth <6 months and more than 2 years, and who had previously been treated for IH or PCOS were excluded from the study.

Age, level of education (primary or graduate), lifestyle (sedentary or active), and marital status were taken as demographic data. Height, weight, and waist circumference were measured, and the body mass index (BMI) was calculated. Demographic, anthropometric, laboratory, and clinical data on the cases were recorded. The Short Form-36 (SF-36) questionnaire, the Beck Depression Inventory (BDI), and the Beck Anxiety Inventory (BAI) were administered in a face-to-face interview by related authors involved in the study. Physicians provided explanations for unclear questions.

The SF-36 questionnaire consists of 36 questions measuring eight health domains: physical functioning, general

health perceptions, mental health, physical role functioning (role physical), emotional role functioning (role emotional), vitality (energy and fatigue), bodily pain, and social functioning. These domains are scored from 0 to 100, with higher scores reflecting better health conditions. Scoring was based on a standard evaluating algorithm.[20] that is compatible with the confirmed Turkish version.[21] The BDI is a reliable, easy-to-use, 21-item scale that measures the intensity of depression symptoms in individuals. Each item is scored from 0 to 3, with higher scores reflecting more severe depression.[22] Similarly, the BAI is a 21-item scale, and each item is scored on a 0–3 scale, with higher scores reflecting more severe anxiety.[23] The Turkish-validated versions of the BDI and BAI were used.[24,25]

Ethical Standards

The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). The institutional clinical research ethics committee approved this study protocol on May 16, 2023 (approval number: 2338).

Statistical Analysis

Data were analyzed using IBM SPSS® Statistics for Windows, version 17.0 (IBM Corp., Armonk, NY, USA). The Kolmogorov-Smirnov test was used to determine whether the data were normally distributed, and if not, non-parametric assessments were used, including Spearman's correlation of the different variables. Categorical data were expressed as percentages and compared using the chi-squared test. In cases where the data did not show a normal distribution, the Mann-Whitney U test was used. The Kruskal-Wallis H test was used to compare multiple groups (in post hoc analyses, we used the Mann-Whitney U test with the Bonferroni correction). Statistical significance was defined as $p<0.05$.

Results

The demographic, clinical, and laboratory data of the IH group (n=51), PCOS group (n=76) and control group (n=56) are shown in Table 1. The mean age, level of education, lifestyle, and marital status of all three groups were similar. There were no significant differences in BMI or waist circumference between the groups. Mean mFG scores in the IH and PCOS groups were similar and, due to the design of the study, significantly higher than in the control group. Total testosterone and calculated free testosterone levels were similar between the IH and control groups, while HOMA-IR levels were significantly higher in the IH group. All three laboratory values were significantly higher in the PCOS group than in the other two groups.

Comparisons of the SF-36 questionnaire, BDI, and BAI scores between groups are shown in Table 2. In the IH patients, the general health and mental health domains of the SF-36 questionnaire scores were significantly lower than in the control group. No significant difference was found for the other six items. In the PCOS patients, five out of eight domains of the SF-36 questionnaire scores were significantly lower than in the control group. The only items that were not significantly affected were vitality and bodily pain. When the SF 36 questionnaire scores were compared between the IH and PCOS groups, it was found that only the general

Table 1. The demographic, clinical and laboratory data of the IH group, PCOS group, and control group [mean (standard deviation) or number (percentage)

	IH group (n=51)	PCOS group (n=76)	Control group (n=56)	p
Age	25.10 (4.22)	24.06 (3.31)	26.64 (6.01)	0.131
Education				
Primary	9 (17.6)	16 (21.1)	10 (17.9)	0.967
Graduate	42 (82.3)	60 (78.9)	46 (82.1)	
Life style				
Sedentary	22 (43.1)	34 (44.7)	26 (46.4)	0.732
Active	29 (56.9)	42 (55.3)	30 (53.6)	
Married	10 (24.4)	17 (26.6)	11 (25.6)	0.886
BMI (kg/m^2)	24.76 (3.48)	26.04 (5.64)	23.78 (4.43)	0.209
Waist circumference (cm)	81.42 (14.33)	83.34 (14.48)	79.10 (13.71)	0.394
mFG score	13.48 (4.32)	14.47 (4.59)	4.14 (2.21)	<0.001
Total T (ng/dL)	30.6 (10.8)	42.2 (19.7)	29.8 (13.2)	<0.001
Calculated free T (pg/mL)	2.11 (0.96)	2.98 (1.87)	2.06 (0.88)	0.002
HOMA-IR	2.39 (0.98)	3.48 (2.16)	1.11 (0.48)	<0.001

IH: Idiopathic hirsutism; PCOS: Polycystic ovary syndrome; mFG: Modified Ferriman-Gallwey; T: Testosterone.

health and role emotional domains were significantly lower in the PCOS group, and the others were similar.

The BDI and BAI scores were significantly higher in the IH and PCOS patients than in the control group. When these scores were compared between IH and PCOS patients, the anxiety score was significantly higher in PCOS patients (Table 2).

All SF-36 questionnaire domains were significantly and negatively correlated with BMI and waist circumference measurements in IH patients (Table 3). Both BDI and BAI scores were significantly and positively correlated with BMI (r=0.348, p<0.001, and r=0.162, p=0.012, respectively) and waist circumference (r=0.326, p<0.001, and r=0.344, p<0.001, respectively). Six out of eight domains of SF-36 questionnaire scores were significantly and negatively correlated with mFG scores. The only items that were not significantly correlated were role-emotional and bodily pain. Both BDI and BAI scores were significantly and positively

Table 2. Comparison of SF-36 questionnaire, anxiety and depression scores

	IH group (n=51)	PCOS group (n=76)	Control group (n=56)	p^1	p^2	p^3
SF-36 questionnaire scores						
Physical functioning	86.00 (24.38)	84.76 (25.46)	91.66 (32.12)	0.310	0.171	0.784
General health	59.75 (18.88)	51.81 (16.66)	74.05 (22.15)	<0.001	<0.001	0.013
Mental health	54.60 (16.87)	53.59 (18.11)	62.29 (18.36)	0.026	0.007	0.752
Role physical	59.38 (17.89)	58.73 (15.98)	65.48 (19.65)	0.097	0.031	0.830
Role emotional	51.66 (17.44)	39.68 (10.48)	49.99 (16.36)	0.610	<0.001	<0.001
Vitality	45.50 (14.42)	45.16 (13.88)	46.90 (14.76)	0.621	0.489	0.894
Bodily pain	72.88 (20.56)	67.74 (18.89)	70.30 (19.66)	0.508	0.450	0.149
Social functioning	65.94 (19.45)	59.33 (17.76)	69.35 (22.08)	0.400	0.004	0.050
BDI score	14.05 (4.98)	15.83 (5.25)	9.66 (2.57)	<0.001	<0.001	0.058
BAI score	17.03 (6.35)	20.11 (7.48)	11.71 (3.48)	<0.001	<0.001	0.017

IH: Idiopathic hirsutism; PCOS: Polycystic ovary syndrome; BDI: Beck depression ınventory; BAI: Beck anxiety ınventory; p^1: IH-Control group; p^2: PCOS-Control group; p^3: IH-PCOS group.

Table 3. Correlation analysis of the idiopathic hirsutism patients

		BMI	Waist circumference	mFG score	Total Testosterone	Calculated Free Testosterone	HOMA-IR
SF-36 QUESTIONNAIRE SCORES							
Physical functioning	r	−0.210	−0.202	−0.130	−0.027	−0.042	−0.094
	p	0.001	0.001	0.025	0.662	0.494	0.128
General health	r	−0.152	−0.148	−0.128	−0.031	−0.020	−0.066
	p	0.014	0.018	0.034	0.612	0.750	0.281
Mental health	r	−0.150	−0.154	−0.125	−0.055	−0.022	−0.038
	p	0.016	0.012	0.045	0.367	0.725	0.537
Role physical	r	−0.126	−0.168	−0.150	−0.065	−0.026	−0.080
	p	0.042	0.010	0.016	0.288	0.670	0.183
Role emotional	r	−0.129	−0.146	−0.073	−0.039	−0.010	−0.003
	p	0.032	0.018	0.226	0.512	0.873	0.957
Vitality	r	−0.128	−0.152	−0.135	−0.021	−0.016	−0.023
	p	0.045	0.016	0.022	0.718	0.794	0.707
Bodily pain	r	−0.130	−0.128	−0.013	−0.003	−0.028	-0.026
	p	0.030	0.040	0.833	0.962	0.648	0.669
Social functioning	r	−0.258	−0.262	−0.168	−0.039	−0.113	−0.054
	p	<0.001	<0.001	0.010	0.516	0.058	0.369
BDI SCORE	r	0.348	0.326	0.134	0.035	0.036	0.004
	p	<0.001	<0.001	0.024	0.572	0.558	0.952
BAI SCORE	r	0.162	0.344	0.153	0.014	0.011	0.014
	p	0.012	<0.001	0.014	0.820	0.858	0.817

BMI: Body mass index; mFG: Modified Ferriman-Gallwey; BDI: Beck depression ınventory; BAI: Beck anxiety ınventory.

correlated with mFG scores (r=0.134, p=0.024, and r=0.153, p=0.014, respectively). The SF-36 questionnaire domains, BDI, and BAI scores showed no significant correlations with T and HOMA-IR levels.

Discussion

The present study demonstrates that IH patients had low scores in both the general health and mental health domains of the SF-36 questionnaire when compared to the control group. Furthermore, all domains, except for vitality and bodily pain, were similar in IH and PCOS patients. The study also concludes that IH patients have a higher prevalence of depression and anxiety than controls, similar to PCOS patients.

It has been reported that variations in demographic characteristics, such as age, ethnicity, educational level, and marital status, can influence the assessment of HQOL.[26] In our study, all three groups had similar demographics, such as age, education level, lifestyle, and marital status.

It is widely recognized that obesity has a negative impact on HQOL.[27] Furthermore, Dokras et al.[26] reported that weight loss in obese women with PCOS significantly improved several mental and physical domains associated with QOL, anxiety, and depressive symptoms. We enhanced the physical assessment of individuals by including waist circumference measurements in addition to BMI. The similarity of the mean values of these anthropometric measurements in all three groups increased the power of the main results of our study. In accordance with the literature, our analyses revealed that both BMI and waist circumference were significantly negatively correlated with all SF-36 questionnaire domains and significantly positively correlated with BDI and BAI scores.

A study has presented that women with hyperandrogenism, especially those aged 20–29, have an increased risk of developing psychiatric disorders.[28] Although the plasma androgen levels of our patients are normal for the diagnosis of idiopathic hirsutism, we found that the general health and mental health scores from the SF-36 questionnaire domains were low, and the BDI and BAI scores were high in the IH group. These findings suggest that the presence of hirsutism may affect HQOL, BDI, and BAI scores regardless of plasma androgen levels.

PCOS is characterized by various pathophysiological factors. Women diagnosed with PCOS often have significant insulin resistance, which contributes significantly to its manifestation.[29] The HOMA-IR value, an indicator of insulin resistance, was higher in patients with PCOS and IH than in individuals in the control group in our study. The pathophysiology of IH is thought to involve a primary increase in skin 5-alpha-reductase activity, possibly affecting both isoenzyme types, and an alteration in androgen receptor function.[16] Although insulin resistance is considered responsible for the pathophysiology of PCOS, it is not mentioned for IH. It is thought that the observed increase in HOMA-IR in IH patients may be related to the pathophysiology of the disease.

According to the World Health Organization's QOL Assessment, the term QOL refers to an individual's perspective on their position in life in the context of their society's culture and value systems, as well as their goals, expectations, norms, and concerns.[30] This definition highlighted the importance of cultural context in QOL questionnaires. Therefore, we used the validated Turkish version of the SF-36 questionnaire.[21] Comprehensive general HQOL tools, such as the SF-36 questionnaire, may have advantages because they are applicable across different disease states and populations. They have the remarkable advantage of allowing comparisons between different diseases.[31]

PCOS is the most common endocrine disorder of reproductive age.[32] The components of PCOS, including menstrual irregularities, hirsutism, anovulation, and acne, can significantly impair QOL, lead to mood disorders, and cause anxiety.[33] The literature contains numerous studies that demonstrate the adverse effects of PCOS on HQOL. For instance, a meta-analysis found that hirsutism and menstruation were the most effective components of PCOS on HQOL.[10] Consistent with the literature, we found that five out of eight domains of the SF-36 questionnaire scores were significantly lower in the PCOS patients than in the control group.

According to a study carried out on adolescent females, hirsutism is associated with reduced QOL, a higher prevalence of anxiety disorders, and a lower level of self-esteem.[34] In an Italian study, 50 women diagnosed with hirsutism, ranging from IH to PCOS, underwent the same psychometric assessment as 50 sociodemographically matched healthy non-hirsutic women. Patients with hirsutism showed significantly higher levels of social fears, anxiety, and psychotic symptoms compared to the control group. However, there were no significant differences in depression, cognitive symptoms, anger, hostility, or somatization.[35] Based on their population-based prospective cohort study results, Mahmoudieh et al.[36] suggest that routine metabolic screening is not universally recommended for all hirsute women once PCOS has been ruled out. However, it has been suggested that clinicians should be aware of the impact of excessive hair growth on overall health and QOL.[3] In a study from Turkey involving a total of 57 patients, the QOL of hirsutism patients with PCOS seemed

to be significantly more affected than those without PCOS.[13] In our study, general health and mental health scores from the SF-36 questionnaire domains were significantly lower in patients with IH than in the control group, indicating the negative impact of IH on HQOL. In the study by Hahn et al.,[33] the hirsutism score was significantly correlated with several SF-36 physical and general health scales in PCOS patients. According to the correlation analysis in IH patients, we found that all SF-36 questionnaire domains, except role-emotional and bodily pain, were significantly and negatively correlated with mFG scores. This suggests that the degree of hirsutism is the primary determinant of reduced HQOL in IH patients.

Our search revealed no studies in the literature comparing HQOL between IH and PCOS patients with similar sociodemographic and anthropometric characteristics. It was found that six out of eight domains of the SF-36 questionnaire, except general health and emotional role, showed similar low scores between IH patients and PCOS patients. Based on these results, it was concluded that the HQOL of IH patients is adversely affected to an extent similar to that of PCOS patients.

The limitation of the present study is that a disease-specific questionnaire may be more sensitive to changes than the generic questionnaires that have been used.[37] However, no disease-specific questionnaire has been validated for Turkish patients with IH and/or PCOS. In addition, the PCOS HQOL Questionnaire has been developed for this condition. It has been shown to be associated with the SF-36 questionnaire.[38]

Conclusion

This study provides evidence that patients diagnosed with IH have impaired HQOL, similar to patients diagnosed with PCOS. The improvement of HQOL should also be targeted when determining the management approach for hirsutism, which is one of the most common reasons for referral to endocrinology and dermatology outpatient clinics. In addition, there is a requirement for validated scoring systems that are specific to the Turkish population and the disease to assess HQOL among patients diagnosed with IH.

Disclosures

Ethics Committee Approval: The study was approved by the Ethics Committee of University of Health Sciences Türkiye, Sisli Hamidiye Etfal Training and Research Hospital (No: 2338, dated 16.05.2023).

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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