Original Investigation

Clinician vs Self-ratings of Hirsutism in Patients With Polycystic Ovarian Syndrome
Associations With Quality of Life and Depression

Lauri Pasch, PhD; Steven Y. He, MD; Heather Huddleston, MD; Marcelle I. Cedars, MD; Abram Beshay, BS; Lee T. Zane, MD, MAS; Kanade Shinkai, MD, PhD

IMPORTANCE Qualitative evidence suggests that hirsutism inflicts significant negative impacts on quality of life and may be associated with depression. Quantitative research is essential to determine best practices in caring for hirsute patients.

OBJECTIVE To quantify quality-of-life impact of hirsutism and evaluate how the degree of hirsutism (as assessed by patients and clinicians) is associated with quality of life and depressive symptoms.

DESIGN, SETTING, PARTICIPANTS This study included 229 patients aged 14 to 52 years consecutively recruited from a polycystic ovarian syndrome (PCOS) clinic between May 18, 2006, and October 25, 2012, who met the Rotterdam PCOS criteria. Data analysis was completed July 2015, and alterations were completed in response to reviewer comments in January 2016.

MAIN OUTCOMES AND MEASURES Clinicians and patients rated degree of hirsutism using the modified Ferriman-Gallwey (mFG) instrument, a visual scoring method assessing androgen-dependent hair growth in 9 body areas. Hirsutism-related quality of life was assessed using the Skindex-16, a validated quality of life instrument for skin disorders. Depressive symptoms were assessed using the Beck Depression Inventory-Fast screen.

RESULTS Overall, 229 patients aged 14 to 52 years who met the Rotterdam criteria for polycystic ovarian syndrome rated themselves and were rated by clinicians for hirsutism. Total mean self-rated mFG score for patients was 13.3 out of a total 36 possible points; total mean clinician-rated mFG score for patients was 8.63 ($P < .001$); self-ratings for hirsutism were higher for all body areas except thigh. Hirsutism had a significant negative effect on quality of life; the mean (SD) Skindex-16 score for the emotion domain was 73.9 (29.8) and 44.3 (33.7) for the function domain. Higher degrees of hirsutism (determined by both patients and clinicians) were moderately associated with more negative quality-of-life impact; however, self-ratings ($r = 0.19$-0.46) were more strongly associated than clinician ratings ($r = 0.14$-0.32) ($P < .05$ for all). Only self-ratings of hirsutism were significantly associated with risk of depression ($r = 0.14$; $P < .05$).

CONCLUSIONS AND RELEVANCE There is notable discordance in the perception of hirsutism between patients and clinicians; patients view their hirsutism as more severe than clinicians do. Quality-of-life impacts of hirsutism are consistent with that reported for other serious skin conditions. This negative impact is only partially associated with the degree of hirsutism, with self-ratings being more highly associated with quality of life impact than clinician ratings. These results support guidelines recommending that treatment be guided largely by patient distress with hair growth and subjective perceptions as opposed to clinician judgment of degree. Patient self-rating is critical information for patient-centered care for hirsute patients.

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Author Affiliations: Department of Psychiatry, University of California at San Francisco, San Francisco (Pasch); Department of Dermatology, University of California at San Francisco, San Francisco (He, Shinkai); Department of Obstetrics, Gynecology, and Reproductive Sciences, University of California at San Francisco, San Francisco (Huddleston, Cedars); School of Medicine, Eastern Virginia Medical School, Norfolk (Beshay); Anacor Pharmaceuticals, Palo Alto, California (Zane).

Corresponding Author: Kanade Shinkai, MD, PhD, 1701 Divisadero St, 3rd Floor, San Francisco, CA 94115 (kanade.shinkai@ucsf.edu).

Hirsutism is a frequent presenting complaint to dermatologists, affecting 5% to 15% of women of reproductive age. It is characterized by excessive terminal hair growth in a male-pattern distribution in female patients, usually involving the face, chest, back, upper arms, abdomen, and thighs.[1,2] Hirsutism is commonly measured using the modified Ferriman-Gallwey (mFG) scoring system, which is a reliable visual inspection method that evaluates hair growth in 9 androgen-dependent body areas.[3,4] Qualitative reports reveal that hirsutism can cause depression, worry, embarrassment, and social withdrawal, but quantitative assessments of the effect of hirsutism on quality of life are few to date and have been limited by small sample sizes.[5-10] Patients in laser hair removal trials report significant quality-of-life impacts of hirsutism, but these patients may be more distressed by hirsutism than most.[11,12] Thus, relatively little is known about the impact of hirsutism on quality of life.

Treatment recommendations for hirsutism are often based on degree of hair growth, but this approach has recently been called into question.[3,13] First, as 1 study[14] showed that patient self-ratings of hirsutism were generally higher than clinician ratings, degree of hirsutism appears to depend on whether it is measured by a clinician or the patient. Second, there is uncertainty about the association between the degree of hirsutism and its impact on quality of life. The effects of hirsutism on patients' quality of life may be a more relevant factor in determining treatment plans than the degree or clinical severity of hirsutism determined by a clinician.[4,13] A few small studies showed no association between mFG scores and general distress.[5,9] In contrast, Ekbäck[12] and colleagues showed that self-rated mFG scores (as opposed to clinician ratings) were moderately associated with hirsutism-related quality of life and mildly associated with general distress.

This study reports on a large sample of patients with polycystic ovarian syndrome (PCOS), the most common etiology for hirsutism. Polycystic ovarian syndrome is a complex endocrine syndrome in women characterized by ovulatory disruption, polycystic ovaries, and clinical and/or laboratory signs of hyperandrogenism.[2] To address practice gaps in the existing literature, the aims of this study were to examine the correspondence between clinician ratings and self-ratings of degree of hirsutism, and evaluate the extent to which degree of hirsutism is associated with hirsutism-related quality of life and risk for depression.

Methods

Participants

Participants were consecutively recruited from a multidisciplinary PCOS clinic at the University of California, San Francisco (UCSF) from May 18, 2006, to October 25, 2012. All patients completed an intake questionnaire, laboratory serum testing, and were evaluated by a reproductive endocrinologist, dermatologist, genetic counselor, dietitian, and psychologist. A transvaginal ultrasound was completed to assess ovarian morphology. The dermatologist and reproductive endocrinologist arrived at the diagnosis of PCOS through joint

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Key Points

Question: To what extent does hirsutism negatively affect patients, and is it related to the degree of hirsutism?

Findings: Patient self-ratings of hirsutism were notably more severe than clinician ratings. Hirsutism is associated with depression and negative quality-of-life impact, and the quality-of-life impairment is only partially determined by degree of hirsutism.

Meaning: Patient self-rating is essential in the clinician's approach to patient-centered care for hirsute patients.

consultation using the 2003 Rotterdam criteria[15] that requires 2 out of 3 clinical signs or symptoms: (1) oligoovulation and/or anovulation; (2) clinical or biochemical signs of hyperandrogenism; (3) presence of 12 or more antral follicles per ovary and/or ovarian volume greater than 10 mL by ultrasound. To provide more accurate assessment, patients were asked to discontinue oral contraceptives and/or spironolactone at least 1 month before the clinic visit and to refrain from waxing, shaving, or plucking facial or body hair (except lower legs and underarms) for at least 1 week before the clinic visit. The UCSF Committee on Human Research granted approval for this study. Written patient consent for study participation was obtained.

Clinician Ratings of Hirsutism

Hirsutism was rated by a dermatologist (K.S., L.T.Z.) using the mFG visual scoring method that assesses androgen-dependent hair growth in 9 body areas (upper lip, chin, chest, upper and lower back, upper and lower abdomen, thighs, and upper arms).[3] For each site, a score on a scale of 0 (absence of hair) to 4 (extensive terminal hair growth) was recorded. A total mFG score was calculated as a sum of all sites with a score ranging from 0 to 36. Physician-rated interobserver agreement has been shown to be high (mean κ = 0.74).[16] A total score of 8 or greater is defined as clinical evidence of hirsutism; scores from 8 to 15 are considered mild hirsutism; scores from 16 to 25 are considered moderate; and scores from 26 to 36 are considered severe hirsutism.[1,13]

Self-ratings of Hirsutism

Patients were shown the published mFG images and were asked to self-rate hair growth in each of the 9 body areas.[3,17] For each site, a score on a scale of 0 to 4 was recorded. The mFG score was calculated in the same manner as for the clinician ratings.[12]

Hirsutism-Related Quality of Life

The Skindex-16 is a validated quality of life instrument for skin disorders that was adapted to address excessive hair growth (Supplement).[18,19] This 16-item questionnaire is subdivided into 3 domains: skin symptoms (4 items; eg, itching, irritation), effects on emotions (7 items; eg, worry, embarrassment), and effects on physical or social functioning (5 items; eg, social interactions, work). Patients were asked how often they are bothered by each item using a bipolar scale with 7 boxes anchored by the words "never bothered" to "always bothered." All scores are transformed to a linear scale ranging from 0 to

100 with a higher score indicating greater negative effect. Scale scores were the average of responses to items in each of the 3 scales.

Depressive Symptoms

The Beck Depression Inventory-Fast screen (BDI-FS) is a 7-item version of the 21-item Beck Depression Inventory intended for use as a screen for depression risk in clinic populations with coexisting medical issues.[20] Participants are asked to choose 1 statement from each item that best describes the way they had been feeling in the past 2 weeks. Each item is scored on a 4-point scale ranging from 0 to 3. Total scores are computed as the sum of the score for all 7 items and range from 0 to 21, with higher scores indicative of increased risk for depression. This scale has been validated in a series of studies of family practice and internal medicine patients that are published in the BDI-FS manual.[20] Subsequent studies have validated its use in diseases including multiple sclerosis,[21] chronic pain,[22] and end-stage renal disease.[23] A score of 0 to 3 indicates minimal risk for depression; 4 to 8, mild; 9 to 12, moderate; and 13 to 21, severe.

Statistical Analysis

Descriptive statistics were used to summarize overall characteristics of the study population. Statistical analysis was performed using STATA V.12 (STATA Corp). Paired t tests were used to assess differences in hirsutism self-ratings and clinician ratings. The McNemar test was used to compare the number of patients meeting criteria for clinical hirsutism by self-ratings vs clinician ratings. The strength of association between variables was determined using the Pearson correlation coefficient, with significance parameters defined by 2-sided P values. Comparison of the size of correlations was assessed using the bootstrap method.

Results

Participants were included in this study if they met Rotterdam criteria for PCOS and provided complete questionnaire data (n = 229). Demographic information regarding the women in the sample can be found in **Table 1**. Participants comprised a diverse group of ages, ethnic categories, and relationship statuses, and, on average, had a high level of education. Most women were nulliparous.

The mean (SD) clinician-rated total mFG score was 8.6 (6.3) with a range from 0 to 31. The mean (SD) self-rated total mFG score was 13.3 (7.3) with a range from 1 to 33. Paired t tests were employed to examine the difference in clinician-rated hirsutism and self-rated hirsutism at each of the 9 body areas and total mFG score (**Table 2**). In total, and for each body area with the exception of thigh, the average difference was significant, with self-ratings consistently higher than clinician ratings. Average differences were highest for the upper lip (0.94) and lowest for the thigh (0.07), and the average difference in the total mFG score was 4.66 points higher for self-ratings than clinician ratings. As shown in the **Figure**, more women met criteria for clinical hirsutism by self-ratings (n = 174 patients

Table 1. Characteristics of Patients With PCOS[a]

Characteristics	No. (%)
Age, mean (SD) [range], y	27.9 (6.3) [14-52]
Race	
White, non-Latino	124 (44.9)
White, Latino	17 (6.1)
White, Ashkenazi Jewish	17 (6.1)
Asian	44 (15.9)
Middle Eastern	11 (4.0)
Hispanic	16 (5.8)
Pacific Islander	2 (1.0)
African American	21 (7.6)
Native American	5 (2.0)
Multiracial	9 (3.2)
Other	15 (5.4)
Education	
Postgraduate	68 (24.6)
College	101 (36.5)
Some college	58 (21.0)
High school	14 (5.1)
Junior high school	2 (1.0)
Relationship	
Married	76 (27.5)
Partnered	59 (21.3)
Single	104 (37.7)
Parity	
1 or more	33 (11.9)
0	209 (75.7)

Abbreviation: PCOS, polycystic ovarian syndrome.

[a] Overall, 229 patients were included, and data is presented as mean (SD) for age and No. (%) for all other values.

[76%]) than by clinician ratings (n = 113 patients [49%]) (McNemar = 49.6; P < .001). In 68 patients (30%), self-ratings indicated clinical hirsutism but clinician ratings did not, whereas clinician ratings indicated clinical hirsutism and self-ratings did not in only 7 patients (3%).

In general, patients reported poor hirsutism–related quality of life, with the highest scores in the Skindex-16 emotions domain and lowest in the Skindex-16 symptoms domain (**Table 3**). Hirsutism-related quality of life was positively associated with self-ratings of hirsutism, such that women who rated themselves as having higher levels of hirsutism reported greater negative symptoms (r = 0.19; P < .05) and greater negative effect on emotions (r = 0.46; P < .001) and functioning (r = 0.43; P < .001) (Table 3). Clinician ratings of degree of hirsutism were not significantly associated with negative symptoms (r = 0.14) but were significantly associated with greater negative effect on emotions (r = 0.32; P < .001) and functioning (r = 0.28; P < .001) (Table 3). Negative effect on emotions and function were more strongly associated with hirsutism self-ratings than clinician ratings (P < .05) (Table 3).

The mean score for depression risk based on the BDI-FS was 4.3, which is in the mild at-risk category. Depression risk was associated with self-rated hirsutism; women who rated

Table 2. Differences Between Clinician and Self-rated mFG Scores[a]

Variable	Mean (SD) Clinician Rating	Mean (SD) Patient Rating	Mean (SD) [Range] Difference	P Value[b]
Upper lip	1.08 (.99)	2.01 (1.16)	.94 (1.26) [−3.00 to 4.00]	<.001
Chin	1.34 (1.30)	2.01 (1.32)	.66 (1.08) [−3.00 to 4.00]	<.001
Chest	.42 (.78)	1.09 (.95)	.67 (.83) [−2.00 to 4.00]	<.001
Upper abdomen	.65 (.89)	1.27 (2.12)	.61 (.99) [−2.00 to 4.00]	<.001
Lower abdomen	1.66 (1.15)	2.32 (1.21)	.66 (1.15) [−2.00 to 4.00]	<.001
Upper arm	.42 (.84)	1.00 (1.10)	.59 (1.11) [−4.00 to 4.00]	<.001
Thigh	1.66 (1.08)	1.74 (1.13)	.07 (1.20) [−3.00 to 4.00]	.38
Upper back	.50 (.79)	.76 (.99)	.25 (.87) [−2.00 to 3.00]	<.001
Lower back	.88 (1.05)	1.09 (1.16)	.22 (.94) [−3.00 to 3.00]	<.001
Total	8.63 (6.29)	13.30 (7.28)	4.66 (5.44) [−14.00 to 19.00]	<.001

Abbreviation: mFG, modified Ferriman-Gallwey.

[a] Overall, 229 patients were included, and the mFG score ranges from 0 to 36.

[b] t Test.

Table 3. Hirsutism-Related Quality of Life and Depressive Symptoms In Relation to Self-rated and Clinician-Rated mFG Scores

Characteristics	Mean (SD)	Range	Correlation With Self-rated mFG Scores	Correlation With Clinician-Rated mFG Scores
Skindex symptoms	22.10 (26.30)	0-100	0.19[a]	0.14
Skindex emotions	73.90 (29.80)	0-100	0.46[b]	0.32[b]
Skindex function	44.30 (33.70)	0-100	0.43[b]	0.28[b]
BDI-FS	4.33 (4.07)	0-17	0.14[a]	0.06

Abbreviations: BDI-FS, Beck Depression Inventory-Fast screen; mFG, Modified Ferriman-Gallwey.

[a] P < .05.

[b] P < .001.

Figure. Number of Patients With PCOS With Clinical Hirsutism Using Clinician vs Self-rated mFG Scores

mFG indicates modified Ferriman-Gallwey; PCOS, polycystic ovarian syndrome.

themselves as having higher levels of hirsutism reported higher risk for depression ($r = 0.14$; $P < .05$). Depression risk was not significantly correlated with clinician-rated hirsutism ($r = 0.06$) (Table 3).

Discussion

Although it is intuitive that hirsutism can have significant negative effects, quantitative documentation has been limited. In this study of a cohort of women with PCOS, patients rated themselves as being more hirsute than did the clinician (an average of 4.6 points higher on the total mFG score). Our quantitative measurement using the Skindex-16 confirmed that hirsutism has a significant negative impact on the quality of life of PCOS patients. Higher degrees of hirsutism (as judged by

both patients and clinicians) were associated with more severe quality-of-life imapcts, but self-ratings were generally more strongly associated than clinician ratings. Only self-ratings of hirsutism were significantly associated with risk of depression.

This is among the first studies to apply the Skindex-16 as an instrument to measure quality-of-life impacts of hirsutism. The Skindex-16 is a validated, reliable, and efficient instrument to measure quality-of-life impacts of various cutaneous disorders, and it enables comparison across different skin diseases.[18] Our findings reveal relatively limited quality-of-life impacts of symptoms but relatively severe effects on emotions and function. Our results are comparable to Sampogna et al,[24] who reported that while hirsutism rated low compared with other skin conditions in symptoms, it was among the most negative of the 32 skin conditions studied in effects on emotions, and it was the most negative in effect on functioning. Chren et al[19] reported Skindex-16 scores for 5 significant skin conditions including eczematous dermatitis, psoriasis, acne, warts, and other benign growths. Notably, our Skindex-16 findings for hirsutism revealed more severe effects on emotions than all other conditions except acne, which had a similarly negative effect. Furthermore, our hirsutism findings showed more severe effects of hirsutism on function than any of the 5 conditions reported by Chren et al.[19] Kawashima et al[25] reported Skindex-16 scores for atopic dermatitis, a condition known to be particularly debilitating. Our hirsutism findings revealed lesser negative effects of symptoms but higher negative effects on emotions and functioning than atopic dermatitis. The only skin condition we could identify with more negative quality-of-life impacts on the Skindex-16 was female patients seeking treatment for hair loss, and like hirsutism, symptom scores were low but effects on emotions

and functioning were even more severe than our hirsutism findings.[26] Thus, in comparison with existing reports, the negative quality-of-life impact of hirsutism on emotions and functioning appears to be as high or significantly higher than other known debilitating skin conditions.

Previous research has generally indicated no association between clinician-rated hirsutism and measures of patients' distress, but findings have been mixed. Our study sheds light on these contradictory findings. Consistent with previous small reports, clinician-rated degree of hirsutism was not associated with general psychological distress.[5,9] However, clinician ratings were associated with specific hirsutism quality-of-life impacts, suggesting that although degree of hirsutism was associated with how negatively it impacts women, the negative impact does not transmit more broadly to risk for depression. Women's own assessments of degree of hirsutism appear to present a distinct picture and were more strongly associated with specific quality-of-life impacts and with depression risk, findings similar to those reported by Ekbäck et al,[12] who reported on only hirsutism self-ratings. These results are similar to findings regarding acne and alopecia, where it has been shown that patient self-ratings are more strongly associated with quality-of-life impacts than clinician ratings.[26,27]

Taking into account the magnitude of the correlations, it can be concluded that some women have relatively little hair growth or in only 1 body area but perceive very negative effects of hair growth in terms of embarrassment, social isolation, and self-consciousness. Conversely, other women have significant hair growth in many body areas but do not perceive that it negatively impacts their self-perception and do not feel isolated or limited by it. The implication of these findings is that while measurement of the degree of hair growth (either by a clinician or the patient) will tell the clinician something about its potential personal impact—and therefore the desire for and appropriateness of hair removal—it will not tell the full story. Tailoring treatment plans (ie, laser photothermolysis or spironolactone) based only on the objective clinical degree of hirsutism would clearly result in overemphasizing hair removal for patients for whom the problem is not very troubling, as well as undertreating patients who are substantially distressed. These findings parallel research on other skin conditions; for example, some patients are highly distressed by clinically mild or sparse lesions of acne and others remain unconcerned about clinically severe acne.[27] They also provide strong empirical support for recent practice guidelines that argue that treatment offerings and recommendations for hirsutism should be guided largely by patient distress with hair growth and subjective perceptions as opposed to only by absolute degree of hair growth.[4,13] These data, making important implications for indications for treatment, present a strong case that health insurance coverage should include treatment for hirsutism owing to its clear negative quality-of-life impacts.

The strengths of this study included: (1) a large sample of general PCOS patients, as opposed to only those specifically requesting laser hair removal that could bias the sample toward more severe hirsutism; (2) assessment of and comparison with clinician ratings and self-ratings of hirsutism; and (3) assessment of the specific impact of hirsutism on quality of life and depression using validated instruments as opposed to only general distress measures. One potential limitation of our study is that clinician ratings of hirsutism were dependent on the timing of most recent hair removal by our patients. To improve accuracy of assessment, all patients were instructed to refrain from hair removal at least 1 week prior to clinic visit, but it is possible that not all did or that hair growth did not return to baseline during this time. Thus, patient reports might be higher because of knowledge of what hair they had removed. Additionally, the 1 month discontinuation of oral contraceptives and spironolactone for those patients who were using them may not have been long enough for hair growth to return to baseline. Longer time frames to refrain from treatment were not chosen owing to burden on the patient. Thus, overall assessments of hirsutism may have been lower than in than in never-treated patients. We also recognize that the study population represents patients who sought care at a multidisciplinary PCOS clinic with a dermatologist and may not be representative of the general population of PCOS patients.

Conclusions

Our findings indicate that patient self-assessment of hirsutism is critical information for the full understanding of the effects on quality of life and should inform treatment. We propose that the Skindex-16 is a relatively expedient method for assessing individual effect of hirsutism on quality of life, and in combination with patient assessment of degree of hair growth, may be helpful in guiding the development of optimal, patient-centered treatment plans.

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