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CONSTRUCTION AND VALIDATION OF PSYCHO-SYMPTOMOLOGY OF HIRSUTISM SCALE FOR HIRSUTE WOMEN

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ABSTRACT

Hirsutism is characterized by the presence of excess terminal hairs in androgen-sensitive areas and can cause certain psycho-social issues in women. This study constructs the Psycho-Symptomology of Hirsutism Scale (PSOHS). Initial screening by mFGS, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) was carried out on sample size of 667, 274 and 226, respectively. The literature review, semi-structured interview and expert opinion led to an initial item pool of 25 items that was reduced to 22 items after the Kolmogorov-Smirnov test of normality. After the exploratory analysis by EFA, 16 items were finalized and confirmed by CFA. A two-factor structure model arose with ten items under Anxiety & OCD and six items under the depression subscale. The reliability coefficient of psycho-symptomology of hirsutism and its two subscales, depression and OCD & anxiety, was found to be as .93, .92 and .88, respectively, which designates reasonable internal consistency. The PSOHS is a reliable and valid scale to measure the psychological symptoms of hirsutism for Pakistani Hirsute women

Keywords: *Hirsutism, Psycho-symptomology, OCD & Anxiety, Depression*

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INTRODUCTION

The word 'hirsutism' originates from the Latin word 'hirsutus' meaning hairy (Ak, 2019). Hirsutism is a very common symptom of Polycystic Ovary Syndrome (PCOS) caused by undesired sexual hormones (Heidelbaugh, 2016). Due to PCOS, females face several physiological problems, i.e. obesity, metabolic disorder, hirsutism, infertility, etc. Hirsutism is the presence of excess terminal hairs in body areas sensitive to androgen during reproductive age. The areas include the upper lips, side of the cheek, chest, pubic area, etc. (Heidelbaugh, 2016). The prevalence rate of hirsutism is 5-15% in most population (Amjad et al., 2023; Brutocao et al., 2018).

A growing body of research suggests a considerable effect of hirsutism on psycho-social aspects of female lives and women's health-related quality of life. For instance, several researches, meta-analysis and systematic reviews demonstrate a strong association between Hirsutism and many psychiatric conditions, mainly obsessive compulsive disorder (OCD), anxiety disorders, depression, and eating disorders (Brutocao et al., 2018; Morgan et al., 2008; Vallerand et al., 2018; Wang et al., 2022).

Hirsutism is regarded as a social stigma and is thought to bring women great emotional distress and social embarrassment (Kiran, 2018). Women's perceptions of their bodies are negatively impacted by hirsutism, which consequently has a significant impact on their self-perception, self-esteem, social interactions, sleep patterns, and day-to-day activities (Amjad et al., 2023). Excessive hair causes declining psychological health with an increase in personal issues (Ong, 2019). A perfect, hairless face is considered appealing for women based on their physical appearance. Women with facial hair may feel "unfeminine" and "inappropriate" (Ekobena et al., 2022). Management of hirsutism includes short-term and expensive solutions such as laser treatment, waxing, threading, plucking, and tweezing (Gupta, 2018). The detrimental psychological and social effects of female facial hair development are well known. It could be brought on by the time, money, and effort required for hair removal as well as the discontent that results when they don't fit the ideal of beauty set by society (Pathania et al., 2023). This causes women to feel socially isolated, bound at home, anxiety while meeting new people and strangers (Gupta, 2018).

In conclusion, these findings from Western studies unequivocally show that hirsutism has a significant psycho-social influence on women since it affects their femininity and social identities. Research has also been conducted in Pakistan on hirsutism, developing a scale called 'Psycho-social Issues in Hirsute Women Scale (PIHWS)' with two factors, i.e. psychological burden and social withdrawal due to hirsutism (Chishti & Rafiq, 2019). Still, it doesn't discuss the psychological symptoms caused by hirsutism under separate headings, i.e. Anxiety, Depression, OCD etc. None of the research discusses these issues, and no scale is constructed to measure the effect of hirsutism and its psychological symptoms, specifically in South Asia. Another research conducted in India mainly focuses on the costly management of hirsutism and the financial issues caused by it for women (Pathania et al., 2023). Another research was done in Pakistan, which was an exploratory analysis of the psycho-symptomology of hirsutism (Amjad et al., 2023) and did talk about OCD, anxiety, depression and different repetitive behaviors, but it did not construct the scale. No indigenous scale was available for the measurement of psychological symptoms of hirsutism for Pakistani people. Contemplating this existing gap, the present research aimed to construct a reliable and valid scale to measure psychological symptoms according to the Pakistani cultural context.

METHOD

This present research is the unification of three studies:

Study 1 focused on the development of a scale that can assess the psychological symptoms of hirsutism in Pakistani hirsute women through expert views, literature analysis and semi-structured interviews.

Study 2 purported to measure the psychometric properties of the constructed scale along with the confirmation of the tests' factor structure by application of Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA).

Study 3 focused on measurement of the convergent validity of the Psycho-Symptomology of Hirsutism Scale for hirsute women.

Study 1: Scale Construction

In study 1, following systematic steps were taken.

Step I: Item Generation

From an expert view and semi-structured interviews of dermatologists and hirsute women, 25 items were extracted. These were written in Urdu and formed the initial item pool for the Psycho-Symptomology of Hirsutism Scale (PSOHS).

Step II: Expert Review

A Focus Group Discussion was conducted, including three psychologists, one associate professor, 1 assistant professor and two beauticians. Three semi-structured in-depth interviews with dermatologists were conducted. Twenty-nine semi-structured interviews of hirsute women were conducted, and the interviews included three age groups (adolescents=9, early adults=10, middle adults=10). The sample of 29 hirsute women was evaluated and screened using the modified Ferriman Galway scale (mFGS). The experts were asked to review the extracted items critically. They were requested to help in the determination of the contents and to face the validity of the item. This led to some items being deleted, added or rephrased. As a result, 25 were finalized in the item pool. The interviews were analyzed through thematic analysis using the guidelines of Braun and Clarke (2006). After familiarising with data and coding, themes were generated. Initially, two themes (OCD anxiety and depression) were extracted and reviewed.

Study 2: Psychometric Properties of Psycho-Symptomology of Hirsutism Scale

The Study-2 is carried out in three phases:

Phase I: Initial Screening by mFGS

Phase I of this research involved a pilot study to analyze the practicability of items present in Psycho-symptomology of Hirsutism Scale (PSOHS). In this way, items for factor analysis were finalized (Hair et al., 2006). K-S tests of normality (Kolmogorov-Smirnov test) were carried out. Three Items (#21. I am satisfied with the way Allah has created me; #23. The criticism of

others do not affect me; #25. I am not worried by the presence of these unnecessary hairs; reverse-coded) were deleted because of non-normality. Finally, for additional analysis, 22 items were retained.

Phase II: Exploratory Factor Analysis

Phase II mainly focuses on substantiating the scale's psychometric properties and EFA is done in this phase. The present research sample size was 274 hirsute women after screening through mFGS. The age of the sample was categorized into three groups: Adolescents 15-18 years *(N=86, 31.3%)*, early adults 19-35 years *(N= 93, 33.9%)* and middle adults 36-45*(N=95, 34.6%)* with mean age of 35.76 (*SD*=7.77). Sixty two (22.6%) women had mild hirsutism, while 187 (68.3%) had moderate hirsutism and 25 (9.1%) had severe hirsutism. Data collection was done via purposive sampling methods from various Pakistani cities, including PCOS (*n* = 191) and a healthy diagnosis (*n* = 83). To obtain consent from all research participants, they were approached personally at different places.

To finalize the factor structure of the Psycho-symptomology of Hirsutism Scale, EFA was carried out on 22 items. Alpha reliabilities, the item-total correlation for scale and subscales were calculated to determine the internal consistency of the Psycho-symptomology of the hirsutism Scale. Other demographics-based variances were also determined.

Phase III: **Confirmatory Factor Analysis**

Confirmatory factor analysis (CFA) is more powerful than EFA because it provides hypothetical grounds for EFA. Hence, CFA (Confirmatory Factor analysis) was carried out to validate the factor structure of the Psycho-symptomology of the hirsutism Scale for the Pakistani Population attained through EFA.

To confirm the factor structure, an independent sample (N=226) with the age range of sample was Adolescence 15-18 years (*N*=79, 34.9%), and early adults 19-35 years (*N*= 83, 36.7%) and middle adults 36-45(*N*=68, 30.1%).

Study 3: Validation of Psycho-Symptomology of Hirsutism Scale

Study 3 was aimed to validate the psycho-symptomology of the hirsutism Scale. The sample of the current research was 667 participants with the age range of the sample Adolescence 15-18 years *(N=199, 29.8%),* early adults 19-35 years *(N= 253, 37.9%)* and middle adults 36-45*(N=215, 32.2%).* Informed consent was obtained from all individual participants included in the study. The Pearson Product Moment Coefficient of Correlation was used to establish the Convergent Validity.

RESULTS

Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) through maximum likelihood with direct oblimin rotation method was carried out to explore the dimensions of PSOHS. When the factor's number was not fixed. Two factors emerged, which were the same as expected from the qualitative study. Item numbers 3, 7, 8, 16, 22, and 24 were discarded from the scale as their factor loadings were not either .3 or >.3 (lower communalities) and loaded on multiple factors. After evaluation by EFA, 16 items were retained on two factors, and a two-factor model emerged from the data. Loading of all 16 retained items was greater than .3. As expected, item numbers 10, 11, 12,13,14,15,17,18,19 and 20 loaded on one factor with high factor loadings ranging from .37 to .75. The factor was named as Obsessive-compulsive disorder (OCD) and anxiety. Item numbers 1, 2,4,5,6 and 9 constituted a factor with high factor loading ranging from .45 to .99. Based on the item contents, the factor was labeled as depression.

Kaiser-Meyer Olkin test and Bartlett's test of Sphericity reported the adequate sample size .94 (x^2 *(274) = 4640.92, p<.001),* suggesting the suitability of data for further analysis. The communalities of the retained items were considerably acceptable (i.e., < .36). The cumulative variance from extracted factors was 53.24%, where the factor was explained by 45.52, and 7.73 was explained by factor 2. The factor structure demonstrated that two factors had an eigenvalue of ≥ 1.

Table 1
The Factor Loading of 16 items on the Psycho-Symptomology of Hirsutism Scale for Hirsute women on two Factors (N=274)

		Factors	
Item New No	Item Old No.	OCD & Anxiety	Depression
1	1		**.57**
2	2		**.45**
3	4		**.99**
4	5		**.82**
5	6		**.97**
6	9		**.46**
7	10	**.59**	
8	11	**.42**	
9	12	**.73**	
10	13	**.63**	
11	14	**.64**	
12	15	**.74**	
13	17	**.66**	
14	18	**.75**	
15	19	**.66**	
16	20	**.37**	
	Eigen Values	8.04	2.30
	% of Variance Explained	46.52	6.73
	Cumulative Variance	46.52	53. 24

Reliability Analyses

The reliability coefficient of Psycho-Symptomology of Hirsutism Scale is .93 while the reliability of its two subscales, OCD & anxiety and depression, was .88 and .92, respectively, which demonstrates a satisfactory internal consistency (Field, 2005). These values of skewness and kurtosis for Psycho-Symptomology of Hirsutism Scale and its subscales (depression, OCD & Anxiety) were less than 1, which illustrates that univariate normality was not questionable.

Table 2
Mean, Standard Deviation, Alpha Reliabilities and Descriptive of Psycho-Symptomology of Hirsutism and its Subscales (N = 274)

					Range			
Variables	*N*	*M*	*SD*	α	Potential	Actual	Skewness	Kurtosis
PS	274	67.27	8.91	.93	16-80	32-80	.78	.35
OCD & Anxiety	274	25.14	3.77	.88	10-50	20-50	.32	.12
Depression	274	42.12	5.67	.92	6-30	12-30	.05	.10

Note. M = mean; SD = standard deviation; PS = psycho-symptomology; OCD = obsessive-compulsive disorder.

Table 3
Item-Total Correlation for Psycho-Symptomology of Hirsutism (N=274)

Sr. No	Item No	Correlation with Total Score
1	1	.48***
2	2	.56**
3	3	.68***
4	4	.53**
5	5	.45**
6	6	.48**
7	7	.39**
8	8	.63***
9	9	.46**
10	10	. 36**
11	11	.59***
12	12	.61***
13	13	.73***
14	14	.49**
15	15	. 58***
16	16	. 47**

**$p < .01$, ***$p < .001$

Phase III: **Confirmatory Factor Analysis**

The two-factor structure attained through EFA was confirmed and investigated through Confirmatory factor analysis (CFA). It provided support for the construct validity of the newly developed scale. Based on initial criteria (i.e., item loading > .35), this factor structure showed a good fit to the data with chi-square = 259.38, df = 100, CFI = .97, GFI = .94, and RMSEA = .05. The portion of chi-square and df for the current CFA was 2.5 which epitomises a good model fit under the standard range. The ultimate model contains 16 items of psycho-symptomology of hirsutism, presenting a good model fit with six items in depression, 10 in OCD & anxiety sub-scale. The factor loadings ranged from .42 to .86. The results determined that the model was appropriate and replicable on other new samples.

Table 4
Stepwise Model fit indices for CFA for Psycho-Symptomology of Hirsutism Scale (N = 274)

Indexes	Chi-Square	*df*	CFI	RMSEA	GFI	TLI	RMR
Model	259.38	100	.97	.05	.94	.96	.02

Study 3: Validation of Psycho-Symptomology of Hirsutism Scale

Table 5 demonstrates the Inter-Scale Correlation as well as the Convergent Validity of the Psycho-Symptomology of Hirsutism Scale (PSOHS). The PSOHS is shown to have a significant positive correlation with its subscales (OCD & Anxiety and Depression). The PSOHS and its subscales have a significant positive relationship with depression subscales of Depression, Anxiety and Stress Scale (DASS) (Lovibond & Lovibond, 1995) and a significant negative relationship with Body Image Satisfaction (BIS) (Leone et al., 2014) . Positive & negative correlations among all scales reflected the evidence of convergent validity.

Table 5

Inter-Scale Correlations and Convergent Validity of Psycho-Symptomology of Hirsutism Scale (N = 667)

Variables	PS	OCD & Anxiety	Depression	BIS	Depression (DASS)
PS	-	.89***	.74***	-.53**	.41***
OCD & Anxiety			.77***	-.61***	.40**
Depression				-.41**	.36**
BIS					-.14**
Depression (DASS)					

Note. PS = Psycho-symptomology; *OCD* = Obsessive-compulsive disorder; *BIS* = Body Image Satisfaction

**$p < .01$. ***$p < .001$

DISCUSSION

Hirsutism, the pathological overgrowth of terminal hairs, is a matter of great concern and social stigma for many hirsute women. In their daily lives, women have to deal with decreased confidence, social awkwardness, difficulties in forming relationships and other problems, including repetitive anxious behaviors, OCD, depression anxiety, etc. As hirsutism is growing day to day with the increase in cases of PCOS with a prevalence rate of 5-15% and is the root of many psychological and financial problems in women's lives, it becomes important to study its psycho-social aspects and its effect on women well-being, quality of life, psychological health etc. Hence, present study intended to construct and validate the Psycho-Symptomology of Hirsutism Scale. It was studied in three phases, i.e., initial screening by mFGS and pilot study comprising a sample of 500 participants; Exploratory Factor Analysis (EFA) on a sample of 274 and Confirmatory Factor Analysis (CFA) on 226 participant and establishing convergent validity on 667 participants.

In Phase-I of Study 2, considering the semi-structured interview, expert view and literature review, 25 items were finalized for PSOHS. Later, the Kolmogorov-Smirnov test of normality (Hair et al., 2006) was used to test the viability of items in PSOHS, and finally, 22 items were taken for additional

analysis. In the Phase-II of Study 2, EFA was carried out to study the dimensions of PSOHS, and 16 items remained finally after exploration. Finally, 16 items were retained in the two-factor model, with 10 items in the anxiety & OCD subscale and six items in the depression subscale. This finalized version was confirmed through CFA and supported the construct validity of the newly formed scale in Study 3.

The reliability coefficient of Psycho-Symptomology of Hirsutism Scale and its two subscales, depression and OCD & anxiety was obtained as .93, .92 and .88, respectively, which designates reasonable internal consistency (Field, 2005). An exploratory research was conducted in Pakistan, which explored four categories in hirsute women i.e. psychological, emotional, physical and social problems. Further themes and sub-themes emerged from these categories. Under the heading of psychological problems explored hopelessness, avoidance low self-esteem etc., emotional problems explored anxiousness, shamefulness, comparison etc. These themes and sub-themes directly or indirectly relate with anxiety, depression and repetitive behavior, suggesting OCD (Amjad et al., 2023). According to a prior study done in Pakistan, hirsute women had a number of psycho-social problems that contributed to their poor mental health. Regardless of quality of life, self-related health condition also appears to be impacted. The degree of hirsutism affected both quality of life and psycho-social issues. While earlier research mostly concentrated on Western society, this study discovered these among South Asian women (Chishti & Rafiq, 2019). Another research conducted in the South Asian region also concluded that hirsutism affects the mental state of a woman, which leads to depression and anxiety. It further discussed that the level of anxiety and depression had a positive correlation with the severity of hirsutism (Kiran et al., 2018).

Summing up, the obtained results support that Psycho-Symptomology ff Hirsutism Scale is a reliable and valid tool to measure the psychological symptoms of hirsutism for Pakistani Hirsute women. However, this study has certain limitations which need to be considered while utilizing the scale. This scale was constructed according to the Pakistani cultural context, and the reliability might vary in different regions as social behaviors for hirsutism vary worldwide. In addition, most participants had moderate hirsutism in the sample taken. Results may vary according to the severity level of hirsutism. Despite the limitations, this study has significance as no other researches focused on measuring depression and anxiety & OCD in Pakistan. This research can be very useful in measuring these psychological symptoms in Pakistan and regions

around similar cultural contexts, significantly contributing to expanding dermatology and clinical psychology research.

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