Original Article

Zahedan Journal of Research in Medical Sciences

Journal homepage: www.zjrms.ir

Factor Structure, Validity and Reliability of the Revised Version of Skin Picking Scale

Mehdi Rabiei,*[1] Mehrdad Kalantari,[2] Kariem Asgari,[2] Fatemeh Bahrami[3]

1. Department of Clinical Psychology, Baqiyatallah University of Medical Sciences, Tehran, Iran
2. Department of Psychology, University of Isfahan, Isfahan, Iran
3. Department of Counseling, University of Isfahan, Isfahan, Iran

Article information

Article history:
Received: 12 Nov 2012
Accepted: 12 Dec 2012
Available online: 10 Mar 2013
ZJRMS 2014 Sep; 16(9): 40-44

Keywords:
Skin picking disorder
SPS-R
Assessment
Factor analysis

*Corresponding author at:
Department of Clinical Psychology, Baqiyatallah University of Medical Sciences, Tehran, Iran.
E-mail:
rabiei_psychology@yahoo.com

Abstract

***Background*:** The purpose of this study was to examine the factor structure, validity and reliability of the Skin Picking Scale-Revised Version.

***Materials and Methods*:** In this descriptive and validation study, participants were 550 (250 male and 300 female) of the University of Isfahan were selected randomly from 15000 students. In order to examine the factor structure of the SPS-R we conducted both exploratory and confirmatory factor analyses and Cronbach's alpha.

***Results*:** Convergent validity of SPS-R with YBOCS-BDD, OCI-R and DASS 21-item were r=0.45, r=0.51 and r=0.70 (p<0.001). Exploratory and confirmatory factor analyses revealed two factors, one assessing impairment and the other symptom severity (4 items each). These factors could determine 58.1% of the variance. The Cronbach's alpha for the two factors were above 0.88. Also, results were shown to possess good psychometric properties, as well as discriminant validity and classification accuracy, in both clinical and community populations.

***Conclusion*:** It can be concluded that this instrument is a useful measure for assess skin-picking disorder symptoms in clinical assessment.

Introduction

The concept of the obsessive–compulsive (OC) spectrum has been discussed in the literature and increasingly studied. The term ‘‘spectrum’’ has been used to mean many things; in the literature, and in this article, ‘‘OC spectrum’’ refers to a group of disorders that are presumed to be distinct from, but related to, obsessive– compulsive disorder (OCD), and which are characterized by repetitive thoughts and/or behaviors [1]. Richter et al. [2] found greater lifetime rates of comorbid OCSDs, such as tic disorders, BDD, trichotillomania, skin-picking, and eating disorders in OCD patients (37%) compared with patients with panic disorder and social anxiety disorder, suggesting specificity for segregation of OCSDs above anxiety disorders in general [3]. Skin picking disorder (SPD) is a disorder characterized by recurrent and ample picking of the skin that is not solely due to a dermatological condition. Patients usually experience an urge prior to picking and have difficulty controlling the behavior. Picking usually results in tissue damage and may lead to permanent disfigurement [4]. Recently, a work group formed by the American Psychiatric Association suggested that SPD be included as a specific diagnosis in the fifth edition of the Diagnostic and Statistical Manual for Mental Disorders (DSM-V [5]. Skin-picking was the most common lifetime (10.4%) and current (7.8%) impulse-control disorder, followed by nail-biting (4.8% and 2.4%, respectively). OCD subjects with current impulse-control disorders showed significantly worse OCD symptoms and poorer functioning and quality of life [6]. There is also growing awareness of the distress and disability associated with other stereotypic behaviors such as skin picking [7, 8]. SPD has received limited research attention, and few validated measures of skin picking exist. For example, the Yale-Brown Obsessive Compulsive Scale modified for Neurotic Excoriation (Y-BOCS-NE) is a semi-structured clinician-rated measure that has been used to evaluate treatment efficacy in adults with compulsive skin picking (CSP) [9, 10]. The most widely used instrument forth e assessment of SPD is the Skin Picking Scale (SPS; 8), a six-item self-report questionnaire designed to assess SPD severity over the past week. Keuthen et al. [8] examined preliminary psychometric properties of the scale in small samples of SPD patients (N=28) and non-pathological skin pickers (N=77; i.e., college students admitting to occasional skin picking). The findings showed the SPS had good internal consistency (a=0.80) and was capable of discriminating between the SPD patients and the non-pathological skin pickers [8, 10]. Although these studies have provided some basics about instruments skin picking disorder, still there is some problems in diagnostic and assessing skin picking disorder and there is a need for a standard assessment tool to assess special skin picking disorder. In the current study, we examined the psychometric proper- ties of a revised eight-item version of the scale, the Skin Picking Scale-Revised (SPS-R). A positive feature of the SPS-R is that the scale now includes items that cover each of the

three impairment domains in a proposed DSM-5 diagnostic criteria for SPD (i.e. skin lesions, subjective distress and functional impairment [11]. The main aim of this study was to presentation a strong standard assessment tool to assess skin picking disorder and determine its validity (construct and concurrent), reliability and comparison of its factors in patients with SPD and normal peoples.

Materials and Methods

Participants: In this descriptive study the data for the Iranian sample were collected in 2012. The Iranian sample consisted of 550 students participants (250 male and 300 female) attending University of Isfahan of Iran. Participants ranged in age from 16 to 35 years (10.5±2.4). Missing values were estimated in SPSS, using the Estimated Means (EM) procedure. Multi-stage cluster sampling method was used to select the sample. In the first step, 5 colleges were selected randomly among all colleges. In the second step, among selected colleges, 2 academic branches were selected in a random manner. And in the third step 40 classes and among 280 male and 320 female students were selected randomly and participated in the study. Moreover, we had 20 patients with skin picking disorder and 20 peoples without skin picking disorder for assessment of the diagnostic validity. Patients were drawn from consecutive referrals made by general practitioners and psychiatrists to dermatologist and cosmetic surgery clinics in the city of Isfahan, Iran. Skin picking disorder diagnosis was established using the structured clinical interview for DSM-IV diagnoses (SCID, based on the Diagnostic and Statistical Manual of Mental Disorders-4th Edition, Text Revision (DSM-IV-TR) [12]. The diagnoses were made by the first author, holding a master's degree in clinical psychology. Thirty-one individuals met the criteria for diagnosis of Skin picking disorder set by DSM-IV-TR, of which 20 individuals were willing to participate in our research study; their major problem was Skin picking disorder. **Measure:** The measuring tools in this study have been Skin Picking Impact Survey, Yale-Brown Obsessive Compulsive Scale Modified for BDD and Depression Anxiety Stress Scales 21-item version. Skin Picking Impact Survey (SPIS): [13]. The SPIS is a comprehensive survey covering a wide range of SPD related issues. The portion of the survey used in the current study included the questionnaires described below (i.e. SPS-R, DASS-21, & SDS) and questions concerning time spent picking per day and the level of urge/arousal prior to picking. Skin picking scale-revised (SPS-R). The SPS-R is a self-report measure designed to assess these verity of SPD symptoms during the past week. The original SPS [8] contains six items covering the following domains: 1. frequency of urge to pick, 2. intensity of urge to pick, 3. time spent picking, 4. interference due to skin picking, 5. distress due to picking/distress when prevented from picking and 6. Avoidance behavior due to picking. In the revised 8-item version, the distress item was replaced with a less ambiguous emotional distress item, and items assessing control over the behavior and skin damage due to picking were added. The new items were not administered along with the SPS, but later in the survey. All items of the SPS-R are rated on a 5-point scale from 0 (e.g., none) to 4 (e.g., extreme). Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS) [14]: This is a reliable and valid 12-item semi-structured clinician administered instrument that evaluates current BDD severity. It assesses BDD-related preoccupations, repetitive behaviors, insight, and avoidance [3]. The reliability and validity of the BDD-YBOCS Farsi version was and translated version was demonstrated by Rabiei et al. [15]. In both healthy and clinical samples, they showed that alpha coefficients ranged from 0.78 to 0.93 for the BDD-YBOCS total score and for its subscales (preoccupations, repetitive behaviors). Depression Anxiety Stress Scales 21-item version (DASS-21) [16]: The DASS-21 is a self-report measure designed to assess current symptoms of depression, anxiety and stress. On each of the three (7-item) scales, participants are asked to rate how much the items applied to them during the past week using a Likert scale from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time). Thus, scores can range from 0 to 21 on each scale. Previous studies have demonstrated acceptable psychometric properties of the DASS-21 and data from a non-clinical sample showed average score of 3.51 (SD¼ 3.78), 2.12(SD¼ 3.64), and 1.22 (SD¼ 1.77) for the stress, depression and anxiety scales, respectively [17]. OCI-R [18]: The OCI-R is an 18-item self-report questionnaire that assesses obsessive-compulsive symptoms, with a total score ranging from 0 to 72 and subscale scores ranging from 0 to 12. The original version was translated to German by two of the authors (S.G. and W.E.) and back-translated by a bilingual psychotherapist. The back-translation was verified by the authors of the original version.

Data analysis: In order to examine the factor structure of the SPS-R we conducted both exploratory and confirmatory factor analyses. We split up the sample into two subsamples and conducted exploratory factor analysis in one sub sample, and then verified the factor structure with confirmatory factor analysis in the other sample. We used principal axis factoring (PAF) for exploratory factor analyses. PAF was chosen because we were interested in exploring the factor structure of the SPS-R by identifying underlying common factors that could then be validated and tested in a separate sample using confirmatory factor analysis. To test the factor structure validity of the Iranian version of the SPS-R and a tow correlated factors model were tested by means of Confirmatory Factor Analyses (CFA). For these analyses the Structural Equation Modeling program AMOS 5 was used [19]. Values of the Goodness of Fit Index (GFI) and the Adjusted Goodness of Fit Index (AGFI) close to 1 represents a good fit, values of the Root Mean Square Residual (RMR) and Standardized Root Mean Square Residual (SRMR) below 0.05 represents a good fit, and values less than 0.08

represents an acceptable fit. In order to examine possible differences of SPS-R factors within the patients with SPD cohort, we performed a multivariate analysis of variance test (MANOVA) on the scores with patients with SPD and peoples without SPD as independent variables. Since in large sample sizes the delta $\Delta\chi^2$ is likely to be significant.

Results

Scale validity: Considering table 1, the KMO measure of sampling represents the sufficiency of sample size of this study for factor analysis. If the amount of KMO is between 0.8-0.90, it shows that the sample size is good and barttlet's test of sphericity significant (p<0.01). As observed in table 2, 2 factors have been derive from SPS-R in total, that these 2 factor have extracted 58 .01% of total variance of the scale. As observed in table 2 the loads under 0.4 have been omitted and 2 factors have been extracted.

The SPS-R structure: The factor structure of the Iranian version of the SPS-R was examined by means of CFAs. The model was separately tested for the overall sample and the results of these analyses were subsequently compared. Findings, reported in table 3, demonstrated that the model had overall fit to the data. As the model had the best fit to the data and is closely related to the theoretical assumptions of the SPS-R.

Note: N: number of participants; GFI: Goodness of Fit Index; AGFI: Adjusted Goodness-of-Fit Index; RMR: Root Mean Square Residual; SRMR: Standardized Root Mean Square Residual.

Convergent validity: The convergent validity was supported by testing correlation between SPS-R and (BDD-YBOCS), OCI-R and DASS-21. SPS-R and its subscales were positively associated with (BDD-YBOCS), OCI-R and DASS-21 (p<0.001). Table 4 shows correlation results between the total score of scale and its factors after factor analysis.

Discriminant validity: The discriminant validity of the SPS-R was examined by comparing the scores of clinically SPD peoples with those of control peoples. Results indicated that clinically SPD peoples reported significantly more SPD than control group.

Internal consistency: Internal consistency coefficients were computed version of the SPS-R using the data of the total sample. Cronbach's alpha coefficients of the total score were generally high, indicating a high degree of homogeneity. The internal consistencies of the subscales were moderate to high (Factor 1=0.88, Factor 2=0.91 and total Factor= 0.89).

Discussion

The current study examined the psychometric properties, factor structure, and convergent, divergent, and discriminant validity of the Iranian version of the SPS-R. Results from the present study indicate that the SPS-R has acceptable psychometric properties, with reliable and valid sub-scales assessing symptom severity and impairment. The model showed an acceptable fit in the sample. This confirms the construct validity of the measure and the underlying assumption of distinct symptom dimensions/subtypes belonging to category SPD. Findings of this study revealed that the Iranian version of the SPS-R has a clear two-factor structure, congruent with its theoretical conceptualization (see Table 2 and 3).

Table 1. KMO (Kaiser-Meyer-Olkin measure of sampling adequacy) and Bartlett's test of sphericity

KMO test	0.914
Bartlett's test of sphericity	3219.210
Significance level	0.001

Table 3. Model fit indices for the two-factor model of the Iranian version of the SPS-R

Two -factor model	N	GFI	AGFI	RMR	RMSEA
	550	0.97	0.96	0.04	0.01

Table 4. Correlation results of SPS-R and its factors with (BDD-YBOCS) and OCI-R and DASS-21

Variable	SPS-R	Factor 1	Factor 2
(BDD-YBOCS)	0.45	0.47	0.44
OCI-R	0.51	0.50	0.67
DASS-21	0.70	0.69	0.71
Significance	0.001	0.001	0.001

Table 2. Factor analysis of SPS-R and its constituent elements

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	Variance%	Cumulative %	Total	Variance%	Cumulative%
1	5.761	44.316	44.316	5.761	44.316	44.316
2	1.780	13.695	58.011	1.780	13.695	58.011

Table 5. Analysis of Multivariate of the effect of group membership for variables

Dependent variables	Df	Mean square	F	p-Value	Partial eta squared	Observed power
Factor 1	1	328.61	19.52	0.002	0.56	0.95
Factor 2	1	355.66	22	0.001	0.59	0.99
Total	1	362.21	28.88	0.001	0.61	0.99

This is congruent with the results of [8-20]. In addition, results indicated the higher positive correlation and significance of this scale and its factors with depression, anxiety, stress and BDD represents good convergent validity of this scale (Table 4). Furthermore, our results strongly support the discriminant validity of the SPS-R. The result showed that the SPS-R scores in SPD group were significantly more than normal group that is indicator of its satisfied diagnostic validity (see Table 5). SPD patients had higher scores than peoples without SPD on the SPS-R and its subscales. This is results congruent with results of [13]. The scale possesses high internal consistency, and the magnitude of the inter-item correlations is suggestive of a low to moderate overlap indicating low item redundancy. Internal consistency coefficient of 0.89 for the total scale and the coefficients of 0.88 to 0.91 for subscales indicate validity and high internal consistency of this scale. This is congruent with the results of [8, 21]. The results of the present study are consistent with those reported in previous studies in confirming the factor structure, reliability, and validity of the subscales of the SPS-R, despite the fact that the other studies have used either a mixed sample of patients with SPD. The fact that all studies have found a good fit for the six subscales suggests that SPD subtypes may manifest in similar patterns in clinical and non-clinical groups. In summary, our findings demonstrate that the Iranian version of the SPS-R is, like the original version, a brief, psychometrically sound and valid measure for the assessment of a broad range of skin-picking disorder symptoms, appropriate for the use in clinical and research settings.

The present study replicated and extended previous findings with the original scale in a different cultural context. It would be necessary to determine the structure and reliability over time and with other samples. In addition studies are required to examine the sensitivity of scale to treatment effects and recovery if the scales are to prove useful treatment evaluation tools. Moreover, it is suggested that non volunteer participants, lower educated and other age ranges, and particularly with larger sample sizes. In addition studies are required to examine the sensitivity of both scales to treatment effects and recovery if the scales are to prove useful treatment evaluation tools. Ultimately, only self-report measures were included for each construct. Future studies may help these findings to be improved through using multiple measures of each construct and through using different response formats (e.g., clinician-rated, self-report, interview). However, despite these limitations, All in all, it can be concluded that this instrument is a useful measure for assess skin-picking disorder symptoms in clinical assessment. In conclusion, the current study further demonstrates that the SPS-R is a psychometrically sound, brief instrument that examines many of the main symptom subtypes of SPD. It is easy to administer.

Acknowledgements

The authors would also like to acknowledge the assistance of participants and all of the clinicians and research assistants who conducted the assessments.

Authors' Contributions

All authors had role in design, work, statistical analysis and manuscript writing.

Conflict of Interest

The authors declare no conflict of interest.

Funding/Support

Baqiyatallah University of Medical Sciences.

References

1. Mataix-Cols D, Frost RO, Pertusa A, et al. Hoarding disorder: A new diagnosis for DSM V? Depress Anxiety 2010; 27(6): 556-72.
2. Richter MA, Summerfeldt LJ, Antony MM and Swinson RP. Obsessive-compulsive spectrum conditions in obsessive-compulsive disorder and other anxiety disorders. Depress Anxiety 2003; 18(3): 118-127.
3. Phillips KA. Understanding body dysmorphic disorder: An essential guide. New York: Oxford University Press; 2009.
4. Arnold LM, McElroy SL, Mutasim DF, et al. Characteristics of 34 adults with psychogenic excoriation. J Clin Psychiatry 1998; 59(10): 509-514.
5. Stein DJ, Fineberg NA, Bienvenu OJ, et al. Should OCD be classified as an anxiety disorder in DSM-V? Depress Anxiety 2010; 27(6): 495-506.
6. Hollander E, Kim S, Braun A, et al. Obsessive-Compulsive Spectrum Disorders. Refining the Research Agenda for DSM-V. Erlington, Virginia: American Psychiatric Association; 2011.
7. Arnold LM, Auchenbach MB, McElroy SL. Psychogenic excoriation: Clinical features, proposed diagnostic criteria, epidemiology and approaches to treatment. CNS Drugs 2001; 15(5): 351-359.
8. Keuthen NJ, Wilhelm S, DeckersbachT, et al. The Skin Picking Scale (SPS): Scale construction and psychometric analyses. J Psychosom Res 2001; 50(6): 337-341.
9. Arnold LM, Mutasim DF, Dwight MM, et al. An open clinical trial of fluvoxamine treatment of psychogenic excoriation. J Clin Psychopharmacol 1999; 19(1): 15-18.
10. Grant JE, Odlaug BL, Chamberlain SR and Kim SW. A double-blind, placebo-controlled trial of lamotrigine for pathological skin picking: treatment efficacy and neurocognitive predictors of response. J Clin Psychopharmacol 2010; 30(4): 396-403.
11. Bohne A, Wilhelm S, Keuthen NJ, et al. Prevalence of body dysmorphic disorder in a German college student sample. Psychiatry Res 2002; 109(1): 101-104.
12. American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, 4th ed. Washington, DC: American Psychiatric Association; 2000.
13. Stein DJ, Grant JE, Franklin ME, et al. Trichotillomania (hair pulling disorder), skin picking disorder, and stereotypic movement disorder: Toward DSM-V. Depress Anxiety 2010; 27(6): 611-26.
14. Tucker BT, Woods DW, Flessner CA, et al. The skin picking impact project: Phenomenology, interference, and

treatment utilization of pathological skin picking in a population based sample. J Anxiety Disord 2011; 25(1): 88-95.
15. Phillips KA, Hollander E, Rasmussen SA, et al. A severity rating scale for body dysmorphic disorder: Development, reliability, and validity of a modified version of the Yale-Brown Obsessive-Compulsive Scale. Psychopharmacol Bull 1997; 33(1):17-22.
16. Rabiei M, Khormdel K, Kalantari K and Molavi H. Validity of the Yale-Brown obsessive compulsive scale modified for Body Dysmorphic Disorder (BDD) in students of the University of Isfahan. Iran J Psychiatry Clin Psychol 2010; 15(4): 343-350.
17. Lovibon PF, Lovibond SH. The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. Behav Res Ther 1995; 33(3): 335-343.
18. Antony MM, Bieling PJ, Cox BJ, et al. Psychometric properties of the 42-itemand 21-item versions of the depression anxiety stress scales in clinical groups and a community sample. Psychol Assess 1998; 10(1): 176-181.
19. Foa EB, Huppert JD, Leiberg S, et al. The obsessive-compulsive inventory: Development and validation of a short version. Psychol Assess 2002; 14(4): 485-495.
20. Cerny BA, Kaiser HF. A study of a measure of sampling adequacy for factor analytic correlation matrices. Multivariate Behav Res 1977; 12(1): 43-47.
21. Snorrason I, O´lafsson RP, Flessner CA, et al. The Skin Picking Scale-Revised: Factor structure and psychometric properties. J Obsessive Compuls Relat Disord 2012; 1(1): 133-137.

Please cite this article as: Rabiei M, Kalantari M, Askari K, Bahrami F. Factor Structure, Validity and reliability of the revised version of skin picking scale. Zahedan J Res Med Sci. 2014; 16(9): 40-44.