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ORIGINAL ARTICLE

Comorbidity of psychiatric and dermatologic disorders with skin picking disorder and validation of the Skin Picking Scale Revised for Brazilian Portuguese

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Objective: Skin picking disorder (SPD) affects up to 5.4% of the population. Less than half of patients are correctly diagnosed and treated. Developing tools to recognize SPD can help professionals and patients alike. This trial aimed to validate the Skin Picking Scale-Revised (SPS-R) for the Brazilian population and assess the psychiatric and dermatological comorbidities of patients with SPD.
Methods: Brazilians with a primary diagnosis of SPD, 18 years or older, were recruited from a community sample by media advertising and evaluated by a dermatologist and a psychiatrist. Self-report instruments were used: SPS-R, Dermatology Life Quality Index (DLQI), General Anxiety Disorder-7 (GAD-7), and Patient Health Questionnaire-9 (PHQ-9). Confirmatory factor analysis (CFA) was performed to evaluate the SPS-R, and Pearson correlation (r) was used to assess the relationship between instruments.
Results: Overall, 124 patients were included. The SPS-R demonstrated good internal consistency (Cronbach's coefficient = 0.84). CFA found a good fit to the model according to all indices (χ^2 = 29.67; degrees of freedom [df] = 19; p = 0.056; root mean square error of approximation [RMSEA] = 0.067; comparative fit index [CFI] = 0.969; non-normed fit index [NNFI] = 0.954). SPS-R correlated with DLQI (r = 0.73), GAD-7 (r = 0.51), and PHQ-9 (r = 0.43). The sample had a high prevalence of psychiatric disorders, mainly generalized anxiety disorder (62.1%) and current (32.3%) and past (37.1%) depressive episodes.
Conclusion: The Brazilian version of the SPS-R presents good psychometric properties. The severity of SPD is related to severity of depression, anxiety, and impairment in quality of life.
Clinical trial registration: ClinicalTrials.gov, NCT04731389

Keywords: Psychometrics; validation studies; skin picking disorder; excoriation disorder; psychodermatoses

Introduction

Skin picking disorder (SPD) is characterized by recurrent skin picking causing injury, failed attempts by the patient to stop the habit, functional impairment, and absence of any other cause (medical conditions or use of prescription drugs) to explain the condition.[1,2] This habit leads to skin lesions, which are sometimes chronic or even incapacitating, ranging from superficial erosions to deep ulcerations.[1] The most commonly affected areas are the face, scalp, hands, and the upper and lower limbs.[3] SPD has a chronic course, and 75% of patients experience significantly impaired quality of life.[1] Most have psychiatric comorbidities, such as depression (45%), psychoactive substance abuse (30%), and anxiety (up to 23% of cases).[4] Manipulation can occur on healthy skin, but frequently begins on minor skin irregularities such as pores and their adjacent areas or even on pre-existing dermatoses.[5] The chronic course of these dermatoses, with symptoms such as itching, pain, or subjective

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paresthetic sensations, may corroborate the habit of pinching the lesion.[6] Patients sometimes use objects to poke lesions on the skin, such as tweezers and knives, which can cause skin infections. Cases of sepsis and even deaths have been reported.[4]

Among persons who seek a dermatologist, 33% complain about psychiatric symptoms.[7] On the other hand, patients with psychiatric conditions also have more dermatoses when compared to the healthy population.[8] Despite the interaction between dermatology and psychiatry, there is still a gap in the literature regarding the best way to diagnose and treat patients with psychocutaneous conditions, as well as a lack of awareness of professionals regarding this issue.[9] A study assessing how much SPD is diagnosed by dermatologists found that only 2.5% of cases were identified by these physicians, while 56% of cases were identified by psychiatrists.

Assessment of the severity of SPD is based on the use of self-report scales that address the severity of the symptoms, others that evaluate the impact of the symptoms on the life of the patient, and scales administered by a trained examiner. The Skin Picking Scale-Revised (SPS-R) assess the cutaneous damage caused by the habit through eight questions scored on an ascending scale of severity from 0 to 32. This self-report instrument has two factors: one related to the severity of the symptoms (items 1 to 4) and another related to the impairment caused by SPD on the individual's life – avoidance, emotional distress, and skin damage due to picking (items 5 to 8). The scale has high internal consistency and discriminant and concurrent validity.[10] Currently, only the Skin Picking Impact Scale (SPIS) has been validated for use in the Brazilian population; this scale is not able to assess the severity of SPD independently of its impact.[11] It is known that patients with lower impact can have higher severity of illness and vice versa, depending more on the affected body area than the severity of the lesions themselves.[11]

Identifying both the impact and the severity of SPD is essential to individualize treatment for each patient. The main objective of this study is to validate the SPS-R for use in the adult Brazilian population. The study also aims to assess the frequency of psychiatric and cutaneous comorbidities associated with SPD.

Methods

Sampling and design

This cross-sectional study is part of a randomized clinical trial that enrolled a community sample of patients with SPD from January to August 2021. Patients were recruited by media advertising on Facebook and Instagram profiles and blogs related to SPD. Participants proficient in Brazilian Portuguese were eligible for this study. To be included, subjects had to be 18 or older, have a primary diagnosis of SPD, and have internet access. The baseline assessment included a dermatologic interview and a psychiatric interview. Patients could have (or not) a diagnosis of primary dermatoses such as acne, atopic dermatitis, psoriasis, and rosacea. Patients were excluded if they had cognitive deficits, dementia, acute psychotic disorder, an acute episode of bipolar disorder, substance use disorder (except for tobacco), severe major depressive disorder, or suicidal ideation. Subjects meeting the exclusion criteria were referred to support in their communities.

Procedures and instruments utilized

All patients were initially assessed by two trained dermatologists to identify possible dermatoses through a video interview. The dermatological consultation consisted of a structured history and review of systems to evaluate current dermatological symptoms, previous dermatological history, and previous and current dermatological treatments, with a summary analysis of the lesions observed on the patient. Then, four psychiatrists trained in application of the study instruments evaluated the individuals to confirm the SPD diagnosis, check if they met the other eligibility criteria of the study, and apply the Mini International Neuropsychiatric Interview (MINI) so as to identify any psychiatric comorbidities.[12] Baseline self-reported assessment was done on the RedCap® digital platform (https://www.redcapbrasil.com.br/) with the following instruments: SPS-R, Dermatology Life Quality Index Scale (DLQI), Generalized Anxiety Disorder Assessment Scale (GAD-7), and Patient Health Questionnaire-9 Scale (PHQ-9).

The DLQI is a self-report questionnaire consisting of 10 questions that assess the impact of the dermatologic condition on one's quality of life across different domains, resulting in a score that can range from 0 to 30. This is a traditionally used scale in many different skin conditions, published in 1994 as the first skin-specific quality of life questionnaire, and is available in over 110 translations.[13] The DLQI was validated in Brazilian Portuguese in 2004 with the original author's approval and showed satisfactory psychometric properties.[14]

The GAD-7 scale is self-applied and consists of seven items that assess anxiety symptoms in the 2 preceding weeks. The items inquire about how the patient felt disturbed by being nervous or anxious, unable to control their concern, worried exceedingly about various things, had problems relaxing, was uneasy, easily irritable, or had excessive fear. It has high sensitivity and specificity for the diagnosis of general anxiety disorder and moderate sensitivity for the diagnosis of other anxiety disorders.[15] The scale is valid for use in the Brazilian population with good reliability (Cronbach's alpha coefficient, $\alpha = 0.916$; rho composite reliability coefficient, $\rho = 0.909$).[15,16]

The PHQ-9 scale consists of nine questions that assess the presence of each of the symptoms of a major depressive episode as described in the DSM-5. The scale can be self-administered and has been translated and tested in the Brazilian population.[17]

The SPS-R was translated and adapted to Brazilian Portuguese by a bilingual psychiatrist. It was then back-translated by two bilingual authors and approved by the authors of the original version (Supplementary Material S1, available online only). The final scale was applied,

in online format, to patients with a current psychiatric diagnosis of SPD.

Statistical analysis

The internal consistency of the scale was examined using Cronbach's alpha coefficient. The instrument structure was tested using confirmatory factor analysis (CFA), which offers a variety of tests and indices to assess the goodness-of-fit of the data.[18,19] The indices used included chi-squared goodness-of-fit statistics (χ^2), the root-mean-square error of approximation (RMSEA), the comparative fit index (CFI), and the non-normed fit index (NNFI). As recommended by current literature, a model was considered good if it had an RMSE < 0.06, a chi-squared goodness-of-fit test with $p > 0.05$, a CFI > 0.90, and an NNFI > 0.8.[20] The level of significance was set at $p < 0.05$. Concurrent validity was analyzed by Pearson correlation with the Dermatology Life Quality Index (DLQI) and General Anxiety Disorder scale (GAD-7) scales, as well as with the Patient Health Questionnaire (PHQ-9). Data were analyzed in SPSS version 16.0, while CFA was conducted in *R* version 4.1.2, using the "lavaan" package.

Ethics statement

All patients provided written informed consent to participate. This study was conducted in accordance with the Guidelines and Norms Regulating Research Involving Human Beings (Brazilian National Health Council Resolution No. 466/12), and followed the ethical principles of the Declaration of Helsinki. The protocol was approved by the Ethics Committee of Hospital de Clínicas de Porto Alegre (opinion no. 2020-0453).

Results

A total of 345 candidates were recruited. Of these, 124 had all the steps concluded at the time of production of this study and were included in this analysis. The mean age was 32.6 years (standard deviation [SD] = 9.6); 123 were female and 1 male. Figure 1 depicts the flow of patients throughout the study and Table 1 shows the sociodemographic characteristics of the sample.

For validation of the SPS-R, CFA was performed, which confirmed the two-factor distribution of the original scale. The scale demonstrated good internal consistency with a Cronbach's alpha coefficient of 0.84 for the total score, 0.82 for factor 1 (severity), and 0.75 for factor 2 (impact). The CFA showed a good fit to the model according to all indices ($\chi^2 = 29.67$; degrees of freedom [df] = 19; p = 0.056; RMSEA = 0.067; CFI = 0.969; NNFI = 0.954). Factor loadings and factor correlations are shown in Table 2. The concurrent validity demonstrated correlation with the DLQI (r = 0.73), GAD-7 (r = 0.51), and PHQ-9 (r = 0.43) scales. The average DLQI score, regardless of the dermatoses, was 12.07 (range, 10.98-13.16).

As the factor loading for the skin damage item (item 8 of the SPS-R) was low, disagreeing with the past literature,[10] a CFA separating individuals with or without dermatological comorbidities was conducted. Patients with dermatological conditions had a loading of 0.16 for

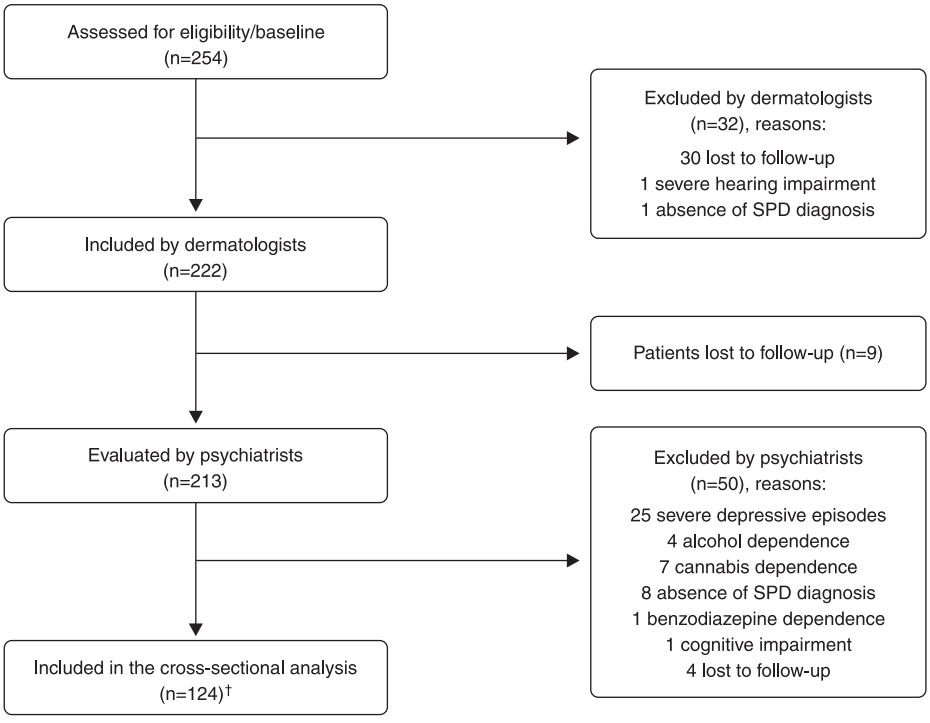

Figure 1 Flow diagram of patient progress through the phases of the study. SPD = skin picking disorder. † 39 patients from the main clinical trial were not included in this cross-sectional analysis because it was performed before the end of the clinical trial.

Table 1 Sociodemographic characteristics of the sample

Overall sample	n=119[†]
Female gender	118 (99.2)
White	80 (67.2)
Marital status	
Married	47 (39.5)
Single	65 (54.6)
Divorced	6 (5.0)
Widowed	1 (0.8)
Religion	
Catholic	43 (36.1)
Spiritist	8 (6.7)
Protestant	2 (1.7)
Evangelical	11 (9.2)
Lutheran	1 (0.8)
Other	13 (10.9)
No religion	41 (34.5)
Religiousness	
Yes	48 (40.3)
No	33 (27.7)
No religion	38 (31.9)
Occupation	
Employed	88 (71.0)
Student	38 (30.6)
Housewife	14 (11.3)
Unemployed	11 (8.9)
Retired	5 (4.0)
On medical leave	1 (0.8)
Educational attainment	
Secondary education	12 (10.1)
Some higher education	24 (20.2)
Undergraduate degree	41 (34.5)
Postgraduate studies	42 (35.3)
Have you ever seen a psychiatrist due to your skin picking disorder?	
Yes	49 (75.4)
No	16 (24.6)
Do you have any skin related diseases?	
No	75 (63.0)
Yes	44 (37.0)
Acne	30 (24.2)
Rosacea	2 (1.6)
Prurigo nodularis	2 (1.6)
Psoriasis	3 (2.4)
Atopic dermatitis	19 (15.3)
Folliculitis	12 (9.7)
Keratosis pilaris	9 (7.3)
Psychiatric disorders[‡]	**n=124**
Current depressive episode	40 (32.3)
Past depressive episode	46 (37.1)
Dysthymia	11 (8.9)
Bipolar disorder	15 (12.1)
Panic disorder	12 (10.5)
Agoraphobia	15 (12.1)
Social anxiety	24 (19.4)
Obsessive compulsive disorder	17 (13.7)
Previous psychosis	4 (3.2)
Nervous anorexia	1 (0.8)
Bulimia	4 (3.2)
Posttraumatic stress disorder	3 (2.4)
Generalized anxiety disorder	77 (62.1)

Data presented as n (%).
[†] Five participants did not complete the self-administered sociodemographic data scale; thus, the sample size for this data point is n=119. They completed all other study instruments and procedures.
[‡] According to the Mini International Neuropsychiatric Interview (MINI).

Table 2 Factor loadings and factor correlations according to confirmatory factor analysis (CFA)

Items	Factor 1 (symptom severity)	Factor 2 (impairment)
Frequency of the urge to pick	0.725	
Intensity of the urge to pick	0.576	
Time spent on picking	0.612	
Control over the behavior	0.427	
Emotional distress due to skin picking		0.739
Interference due to skin picking		0.699
Avoidance due to skin picking		0.792
Damage to the skin due to skin picking		0.333

Factors' correlation: 0.667

Table 3 Skin Picking Scale Revised (SPS-R) scores in individuals according to dermatological condition

	Dermatological comorbidities		
	Yes (n=44)	No (n=75)	p-value
SPS-R[†]	19.23±4.76	17.29±4.76	0.03*
Severity[‡]	10.32±2.90	9.72±2.72	0.26
Impairment[§]	8.30±2.69	6.95±2.88	0.01*

Data expressed as mean ± standard deviation.
SPS-R = Skin Picking Scale Revised.
* Statistically significant.
[†] SPS-R total score.
[‡] SPS-R subscore that assesses severity (factor 1, items 1 to 4).
[§] Skin Picking Impact Scale (SPIS) subscore that assesses impairment (factor 2, items 5 to 8).

this factor versus 0.37 in patients without dermatological conditions. When comparing the SPS-R scores between those groups, we found the differences shown in Table 3.

The prevalence of psychiatric comorbidities was high, with 23% of all individuals evaluated by psychiatrists being excluded from the study due to severe psychiatric disorders. The most prevalent psychiatric illnesses were depressive and anxiety disorders. Sociodemographic characteristics, as well as the dermatological and psychiatric diseases diagnosed in the sample, are shown in Table 1.

Discussion

This study validated the Portuguese version of the SPS-R as a reliable instrument to be used in the Brazilian population. This instrument is self-reported, not depending on clinician knowledge about SPD, which is important as the majority of clinicians are not aware about this condition and how to recognize it.[9] Moreover, as SPD is a prevalent condition, patients may seek help from many different types of professionals, many of whom are non-psychiatrists.[1] The SPS-R, being self-reported, can be used by all these professionals, even if they are not psychiatrists, dermatologists, or psychologists, providing a reasonable tool to increase assessment of SPD diagnosis and severity, overcoming the barrier of low referral to treatment.[21,22]

The SPS-R has acceptable psychometric characteristics, with reliable and valid subscales assessing symptom severity and impairment. Having a scale with those two different dimensions can help understand the degree of severity and impact of SPD in each patient specifically, so treatment can be better tailored. Greater severity is not always associated with greater damage; the severity of lesions can be high but lesions may be located in a body region the patient can hide, leading to low social impairment; on the other hand, patients with lesions on the face may experience greater distress, social impact, and avoidance, even if the lesions are milder or if they pick less often.[4,11,23] In addition, the severity and impact dimensions can be related to different skin picking subtypes (automatic or focal), and identifying these clinical differences between these latent classes may be useful to tailor future treatments by focusing on particular treatments, making it possible to ascertain whether the treatments offered are capable of improving one or both dimensions.[24] The factor loading for the skin damage item was low, unlike in the original scale,[10] especially in individuals with dermatological comorbidities. One hypothesis is that these individuals present skin damage as a result of another dermatosis, while the question considers only the damage produced by the picking behavior. Also, having a dermatological disease comorbid with SPD can explain the higher total and impairment scores in the SPS-R. In addition, in Brazil the term "excoriation" is used only since the DSM-5, as before we used the English term "picking", which is also not understood by many people. These cultural and language differences can make the scale difficult to understand. More studies addressing psychoeducation about SPD and evaluating its comorbidities are warranted to elucidate these findings.

The study found a high prevalence of psychiatric disorders in individuals with a diagnosis of SPD. This is in agreement with the literature, which shows that more than 30% of patients with dermatological disorders have psychiatric conditions and that individuals suffering from

SPD have a high prevalence of comorbidities, especially anxiety and mood disorders.[1,7,25] A recent study found that patients with SPD were up to 24 times more likely to having some other psychiatric diagnosis than healthy individuals.[22] In our sample, more than 23% of patients evaluated by psychiatrists were excluded from the study due to severe comorbidities, especially severe depressive episode and substance abuse disorder (Figure 1). The exclusion of these individuals was necessary to refer them to face-to-face support and thus ensure the safety of participants, as well as to test the effectiveness of the intervention evaluated in the main clinical trial, since the inclusion of patients with severe conditions might have reduced adherence to the intervention and confounded findings of efficacy. However, this may have compromised the external validity of our study.

Our findings also demonstrate that the severity of SPD is related to the severity of anxiety and depression, as assessed by two validated instruments (GAD-7 and PHQ-9), which is in accordance with the literature.[22,25] This finding highlights the importance of investigating and treating comorbid psychiatric disorders in patients with SPD, as most of them have some such comorbidity which, left untreated, can perpetuate SPD. It is likely that comorbidities are both a cause and consequence of higher SPD severity, and treating both leads to better outcomes.[22,26,27] Although up to 70% of patients with SPD experience significant impairment in their quality of life, this problem is often underestimated, with up to 85% of patients seeking cosmetic interventions first and less than 20% seeking professional help, probably because both providers and patients are unaware of the treatment options available for SPD.[1,28]

The interface between dermatology and psychiatry poses a great challenge, especially when handling chronic pruriginous conditions. On the one hand, dermatology demands adherence to treatments, which often have to be incorporated as changes in habits. Moreover, those suffering from chronic dermatoses often develop changes in the way they manipulate their own skin, which can lead to SPD, making psychiatric intervention necessary. A study addressing the quality of the current treatments for SPD found that only 53% of patients reported having received a correct diagnosis of their condition and, after treatment, 54.7% of the subjects reported their clinical condition was either unaltered or worsened; only 11% of the patients said they felt better with treatment. When questioned about the awareness of their providers, 85% of the patients reported that the professional did not seem to have knowledge about the clinical condition.[1]

This study revealed that 37% of the patients with a diagnosis of SPD had some comorbid dermatosis, with acne (24%) and atopic dermatitis (15%) being most common. The psychological impact of both is significant and, especially for acne in adult females, substantially underestimated, even more so than in adolescents.[29] Moreover, as atopic dermatitis is a cause of severe pruritus, this can serve as a trigger for SPD, as can pain and other dermatologic symptoms. Hence, professionals qualified to treat the underlying skin condition must be aware of the diagnostic criteria of SPD in order to refer the patient for multidisciplinary management.

The present study may have some limitations. The sample was recruited through advertisements, which may have generated a selection bias, since patients with very mild conditions may not have felt motivated to seek out the study. On the other hand, those with extremely severe impact of SPD on quality of life, with associated social impairment, may not have felt well enough to seek care spontaneously. Also, as this study was conducted in a fully online setting, patients without internet access were not able to participate, creating a potential bias: usually, individuals with lower socioeconomic status are those without internet access.[30] Although the study sought to assess comorbidities present in patients with SPD, 23% of the population with this diagnosis was excluded from the study due to the severity of their psychiatric comorbidity, which may have limited our findings. Future studies that safely include critically ill patients are expected. The fact that the sample included patients with pruritic diseases may have made it difficult for examiners to distinguish whether the cause of the picking habit was the skin picking disorder, the pruritic condition, or both. The strengths of this study are the sample size, which was previously calculated to be well-powered; the well-established statistical methods used; and the innovative findings, which will allow future evaluation of skin picking severity and impact in the Brazilian population through a reliable and easily applicable scale. Moreover, the fact that all the participants were evaluated by a dermatologist and a psychiatrist to confirm the diagnosis is an important strength of the study that differentiates it from the majority of the literature in fully online studies. Finally, the analysis of patients according to the presence or absence of dermatoses is innovative and important to understand the influence of these conditions on the scales that assess SPD severity and impact.

We conclude that the Brazilian version of the SPS-R has good psychometric properties and is a good instrument to assess the severity of SPD. The scale validated herein for use in our language should facilitate adequate diagnosis of this condition and help professionals in clinical practice assist their patients in changing this habit. We also conclude that patients with SPD are at increased risk for illness due to other psychiatric and dermatological disorders, so a multidisciplinary team should actively search for these diagnoses and pursue their treatment in these patients.

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Disclosure

The authors report no conflicts of interest.

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