

# Prevalence of and Risk Factors for Skin Picking Disorder Symptoms Among Adults in an Arab Middle Eastern Population: A Cross-Sectional Study

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**Introduction:** Skin Picking Disorder (SPD) is a skin-related disease, also recognized as psychogenic excoriation, dermatillomania, or excoriation disorder. SPD is defined as a habitual picking of skin, which in turn harms skin tissue. Given the paucity of information on SPD symptoms, their prevalence, and risk factors in Saudi Arabia, the present study seeks to fill this gap by investigating these factors in a community sample from Jeddah.

**Methods:** This descriptive cross-sectional study was conducted in the city of Jeddah. The Skin Picking Scale-Revised (SPS-R) scale was administered to a convenience sample of 520 respondents. A partial least squares path model (PLS-PM) for “impairment” and “symptoms severity” subscales was assessed by evaluating the validity of measurement and structural models.

**Results:** Skin picking behavior was reported by 28.8% (n=150). A significant level of skin picking disorder symptoms was present in 1.2% (n=6). Skin picking visual effect, depressive symptoms, and being unmarried were the only positive independent predictors of the total SPS-R score.

**Conclusion:** SPD symptoms are relatively common among the adult population in Jeddah, but those with threshold symptoms indicative of SPD are relatively few. Such behavior is particularly common in vulnerable groups such as those with depressive symptoms and the unmarried. More attention to this condition by clinicians will improve the quality of life of those affected, and reduce the emotional and physical health consequences of this often unrecognized condition.

**Keywords:** skin picking disorder, dermatillomania, excoriation disorder, prevalence, risk factors, The Skin Picking Scale-Revised scale

## Introduction

Skin Picking Disorder (SPD) is a skin-related disease, also recognized as psychogenic excoriation, dermatillomania, or excoriation disorder. SPD is defined as a habitual picking of the skin, which in turn harms skin tissue.<sup>1</sup> The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) has formally classified SPD as a category of obsessive-compulsive (OCD) related disorder.<sup>2</sup> SPD has been of particular interest to researchers because of the recent attention this disorder has received as well as its relatively high prevalence, morbidity, and comorbidity.<sup>3</sup> Lochner, Roos & Stein report that the prevalence of SPD ranges from 1.4% to 5.4%.<sup>4</sup> The disorder is particularly common during adolescence, often coinciding with the onset of puberty. Prochwicz et al have recently examined skin picking in persons from a range of different cultures.<sup>5</sup> The results of

that study indicated that the overall prevalence of SPD was 7.7%. In Turkey, the prevalence of skin picking among students has been estimated to be nearly 90%, although extreme symptoms are present in only 2%.<sup>6</sup> Bohne et al conducted a study of skin picking in German students, also finding a prevalence of nearly 90%, although only 4.6% showed symptoms of clinical impairment and possible SPD.<sup>7</sup> Skin picking symptoms in the latter study were driven by a range of triggers, conditions, and emotions. The study found that 85% pinched their skin and 77% clawed their skin; the location of the skin picking was on the face in 95% of cases or cuticles in 53% of cases. In 20%, the picked skin was actually eaten.

The most common behavior in SPD is the near-constant rubbing, picking, or scratching of the skin, leading to skin discoloration, scarring, and infection. In its mildest form, SPD is a self-limited condition.<sup>8</sup> Some individuals, however, experience an inability to control their picking leading to unconscious skin picking throughout the day, which not only influences their social and work life but also results in scars, skin ulcers, and even physical deformities.<sup>8,9</sup> Keuthen et al have reported that about 1 to 2% of the general population meets the full SPD diagnostic criteria.<sup>10</sup>

Studies in community samples indicate that skin picking is common and often occurs in conjunction with other psychiatric disorders.<sup>10</sup> Initially, its occurrence is focused and conscious, which after a certain time, becomes automatic and unconscious.<sup>11</sup> This progression is similar to the features of grooming disorder and trichotillomania.<sup>12</sup> In addition, SPD should be approached as a heterogeneous spectrum in terms of presentation. Skin picking is usually triggered by stress, boredom, anxiety, or physical sensations (unevenness of the skin).<sup>13,14</sup> Individuals with SPD often feel ashamed to come forward and seek help due to perceived social embarrassment and its stigma as a bad habit or untreatable disease, aggravating its severity.<sup>15</sup> Difficulties with emotional regulation and reactivity have also been shown to escalate picking behavior to control anxiety, depression, and other disturbing emotions.<sup>16</sup> Feeling that the skin is bumpy or uneven or looking blemished or discolored is recognized as worsening SPD.

Grant et al have found that SPD behavior can have a substantial detrimental impact on the tissues resulting in medical complications, eg, localized infections and even septicemia (reported in 38% of SPD cases).<sup>17</sup> This study also indicated that the excoriating nature of this condition could lead to a need for blood transfusions or skin grafting (Grant et al, 2012).<sup>17</sup> Given the seriousness of SPD and potential complications, it is surprising that this disorder is often unrecognized and untreated.

Commonly reported characteristics across cultures among those with SPD are fright, guilt, outrage, worry, and gloom, indicating that these may be common underlying personality traits. One major concern associated with SPD is the lack of studies on this disorder despite its relatively high prevalence across different cultures.<sup>6</sup> Prochwiczet et al emphasized the need for future studies to gather insights on how to treat this disorder and reduce the impairment it causes.<sup>5</sup> Given the paucity of information on SPD, its prevalence, and risk factors in Saudi Arabia, the present study sought to fill this gap by investigating these factors in a community sample from Jeddah. The rationale for a Saudi population is that, to our knowledge, there has been no published research on SPD in this country. Therefore, we examine here the prevalence of and risk factors for SPD symptoms in a general adult population in Jeddah.

## Methodology

### Study Design and Setting

A descriptive cross-sectional study was carried out in Jeddah, a port city in the western region of Saudi Arabia with a population of approximately 4 million people. The study was carried out from May 2017 to October 2017, complied with Declaration of Helsinki, and was approved by the Institutional Review Board (IRB) of King Abdulaziz University Hospital. Written informed consent was obtained from all participants.

### Participants

The study included participants from across the city of Jeddah. Participants were a convenience sample of consenting adults aged 18 and above from four major shopping malls in the city. The shopping malls were geographically distributed equally across the city. A total of 553 adults were asked to complete the questionnaire, and 520 agreed to do so (94% response rate). The participants were approached politely and reassured that their privacy would be protected, hence the high response rate. The calculation of sample size was done using the following formula.<sup>18</sup>

$$= \frac{(z^2 \times p \times q)}{d^2} n$$

A sample size of 532 achieves 90% power to detect a difference (P1-P0) of 7% using a two-sided exact test with a significance level (alpha) of 0.05.

## Data Collection

Demographic information collected included nationality, sex, age, education, social situation, living dynamics, employment status, and monthly income. This information was collected using a demographic data form on iPads. For assessing the SPD symptom severity, the Skin Picking Scale-Revised (SPS-R) was used.<sup>16</sup> This is an 8-item self-administrated symptom scale; not a diagnostic measure. The items on the SPS-R assess the frequency of skin picking, the time spent on skin picking, the intensity of skin picking behaviors, control over the behavior, avoidance of consequences, interference with daily activity, emotional distress from picking, and degree of skin damage due to the picking. Response options are on a 4-point Likert scale, ranging from 0 to 4, with the total score ranging from 0 to 32. Higher scores reflect a higher level of symptom severity. The first four questions form the “symptom severity” subscale and the remaining items make up the “impairment” subscale. Studies have demonstrated the validity and reliability of the SPS-R.<sup>16,19</sup> The original English version of the SPS-R was translated into Arabic by two independent native Arabic-speaking physicians with excellent knowledge of English. This Arabic version was back-translated into English by two independent native English-speaking physicians with excellent knowledge of Arabic, and any discrepancies were resolved jointly.

## Statistical Analysis

Categorical variables were presented as frequencies (n, %). Cronbach alpha coefficients were calculated for the overall SPS-R, the symptom severity subscale, and the impairment subscale. The alpha was evaluated using the guidelines suggested by George and Mallery (2016) where > 0.90 is excellent, > 0.80 good, > 0.70 acceptable, > 0.60 questionable, > 0.50 poor, and ≤ 0.50 is unacceptable.<sup>20</sup>

A partial least squares path modeling (PLS-PM) analysis was conducted to determine whether the latent variables – symptom severity and impairment – adequately described the data. Forward stepwise regression was used to identify significant factors related to SPS-R. Predictors significant at >0.05 (gender, age, education, job status, income, and OCD) were excluded from the model. Data were analyzed using IBM SPSS Statistics version 23 and The R Project for Statistical Computing.

## Results

Most respondents were Saudi (n= 466,90%) and the majority were female (n= 287,55%). Two-thirds of participants had completed a bachelor’s degree from college (n= 334,64%). Around 50% were single (n= 267), and most lived with their families (n= 490,94%). The most frequent job category was employed (n= 217,42%), although almost half of the respondents reported a monthly income of < 5000 SR (n= 248,48%). Most respondents did not report having been diagnosed with depression (n= 486,93%) or OCD (n= 490,94%). Almost 29% reported skin-picking behavior (n= 150,28.8%). The threshold for significant skin-picking on the SPS-R was exceeded by only 1.2% of respondents (n=6). Frequencies and percentages are presented in Table 1.

Internal reliability alpha for the SPS-R overall was 0.87, for the symptom severity subscale was 0.82, and for the impairment subscale was 0.78; all indicating acceptable reliability (Table 2). The PLS-PM model was examined by evaluating the validity of the measurement and structural models. The measurement model was assessed by examining the unidimensional nature of indicators, the loadings and communalities for each indicator, and the cross-loadings. Bootstrapping was used to check the significance of each loading in the model. The node diagram for the measurement model is illustrated in Figure 1. The factor loadings and communality were examined to identify any indicators with weak loadings with regard to the latent variables. The variability in each indicator should explain at least 50% of its latent variable construct (|loading| ≥ 0.707; communality ≥ 0.50), and if not, the loading is considered weak. There were no indicators with weak loadings, suggesting that each indicator explained a significant portion of its latent construct. Table 3 presents the

**Table 1** Socio-Demographic Characteristics of Respondents

		n	(%)
Nationality	Saudi	466	(89.6)
	Non Saudi	54	(10.4)
Sex	Male	233	(44.8)
	Female	287	(55.2)
Age in years	<=20	80	(15.4)
	21–30	261	(50.2)
	31–40	111	(21.3)
	>40	68	(13.1)
Education	Secondary	136	(26.2)
	Inter/bachelor	344	(66.2)
	High degree	40	(7.7)
Social status	Single/widow/ divorced	278	(53.5)
	Married	242	(46.5)
Living status	Without family	30	(5.8)
	With family	490	(94.2)
Job	Student	181	(34.8)
	Employed	217	(41.7)
	Not employed	122	(23.5)
Monthly income	< 5K SR	248	(47.7)
	5K–10K SR	123	(23.7)
	11K–15K SR	61	(11.7)
	> 15K SR	88	(16.9)
Have you ever been diagnosed with depression?	Yes	34	(6.5)
	No	486	(93.5)
Have you ever been diagnosed with obsessive-compulsive disorder?	Yes	30	(5.8)
	No	490	(94.2)
Have you ever picked your skin anywhere in your body, resulting in a visible effect?	Yes	150	(28.8)
	No	370	(71.2)
Diagnosis	No skin picking disorder	514	(98.8)
	Skin picking disorder	6	(1.2)

loadings and communalities for the measurement model of the PLS-PM. The cross-loadings were also examined to assess the validity of the model. A cross-loading occurs when an indicator has a higher absolute loading on a different latent variable compared to the specified latent variable for that indicator. There were no cross-loadings for variables in the model, indicating that the factor structure was appropriate for the data. Details are presented in [Figure 1](#) and [Table 3](#).

The results from the linear regression model were significant ( $F[3516] = 52.2$ ,  $p < 0.001$ ). The skin picking visual effect variable describes whether the respondents visually saw any effect on their skin from their picking. The skin picking visual effect variable was identified as the most significant factor ( $\beta = 3.77$ ,  $t = 10.79$ ,  $p < 0.001$ ). This indicates that those with skin picking visual effect had 3.77 higher skin picking scores on average compared to those whose skin picking did not result in any visual effect. A history of depression was also significantly related to SPS-R score ( $\beta = 2.32$ ,  $t = 3.68$ ,  $p < 0.001$ ). Those with a prior diagnosis of depression had 2.32 higher SPS-R scores. Marital status was also found to be a significant predictor for SPS-R score ( $\beta = 0.74$ ,  $t = 2.33$ ,  $p = 0.02$ ). Those who were single/divorced/widowed scored 0.74 higher on the SPS-R as compared to those who were currently married ([Table 4](#)).

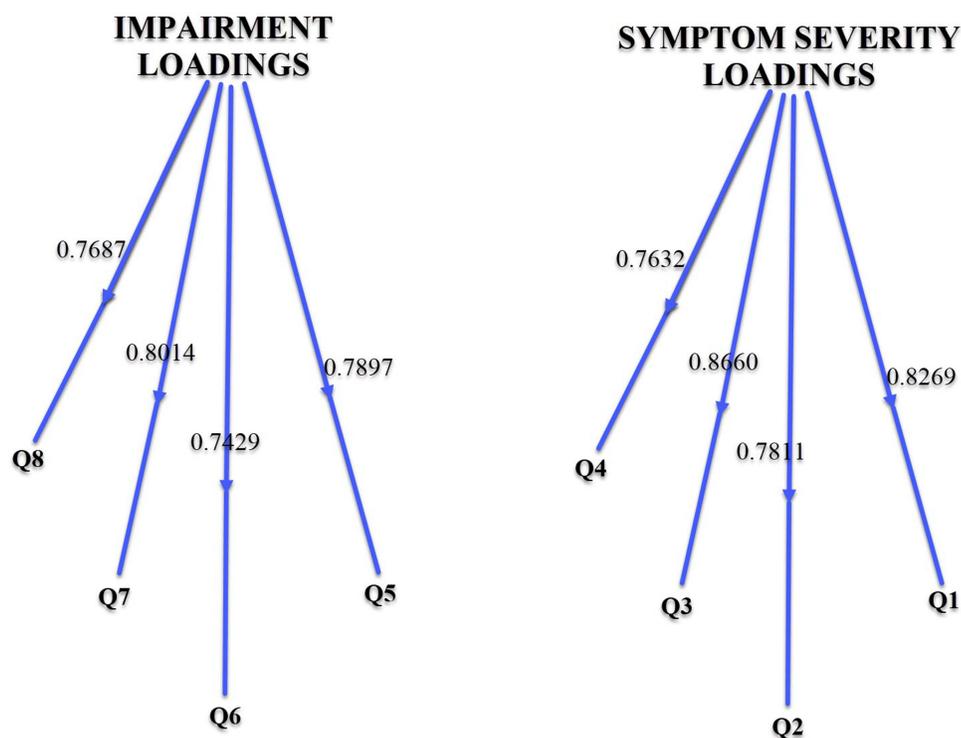
**Table 2** Distribution and Reliability of SPS-R and Its Sub-Scales

Items		0	1	2	3	4
<b>Symptom severity (Cronbach's <math>\alpha=0.82</math>)</b>						
How often do you feel the urge to pick your skin?	n	387	85	33	9	6
	(%)	(74.4)	(16.3)	(6.3)	(1.7)	(1.2)
How intense is the urge to pick your skin?	n	386	114	0	14	6
	(%)	(74.2)	(21.9)	(0.0)	(2.7)	(1.2)
How much time do you spend picking your skin per day?	n	363	113	32	10	2
	(%)	(69.8)	(21.7)	(6.2)	(1.9)	(0.4)
How much control do you have over your skin picking?	n	388	64	39	20	9
	(%)	(74.6)	(12.3)	(7.5)	(3.8)	(1.7)
<b>Impairment (Cronbach's <math>\alpha=0.75</math>)</b>						
How much emotional distress or feelings of low self-esteem do you experience from your skin picking?	n	448	37	25	7	3
	(%)	(86.2)	(7.1)	(4.8)	(1.3)	(0.6)
How much does your skin picking interfere with your social, work or performance?	n	449	48	17	3	3
	(%)	(86.3)	(9.2)	(3.3)	(0.6)	(0.6)
Have you been avoiding doing anything, going any place, or being with anyone because of your skin picking?	n	453	42	18	5	2
	(%)	(87.1)	(8.1)	(3.5)	(1.0)	(0.4)
How much damage do you currently have because of your skin picking?	n	382	119	14	4	1
	(%)	(73.5)	(22.9)	(2.7)	(0.8)	(0.2)

**Note:** Adapted from *J Obsessive Compuls Relat Disord*, 1(2), Snorrason I, Olafsson RP, Flessner CA, et al. The skin picking scale-revised: factor structure and psychometric properties. 133–137, copyright (2012), with permission from Elsevier.<sup>16</sup>

## Discussion

Skin picking behavior is relatively common among community-dwelling adults in Jeddah, with a prevalence of nearly 30%, ranging from simple skin picking to severe SPD symptoms. This prevalence is less than that reported by Prochwicz et al<sup>5</sup> in



**Figure 1** Node diagram for the measurement model of the PLS-PM model with loadings shown.

**Table 3** Measurement Model Summary Table for the PLS-PM Model

Indicator	Construct	Weight	Loading Symptom Severity	Loading Impairment	Communality	Redundancy
Q1	Symptom severity	0.30	<b>0.83</b>	0.55	0.68	0.32
Q2	Symptom severity	0.28	<b>0.78</b>	0.50	0.61	0.29
Q3	Symptom severity	0.36	<b>0.87</b>	0.64	0.75	0.35
Q4	Symptom severity	0.29	<b>0.76</b>	0.52	0.58	0.27
Q5	Impairment	0.29	0.48	<b>0.79</b>	0.62	0.00
Q6	Impairment	0.31	0.50	<b>0.74</b>	0.55	0.00
Q7	Impairment	0.33	0.54	<b>0.80</b>	0.64	0.00
Q8	Impairment	0.36	0.59	<b>0.77</b>	0.59	0.00

**Note:** The bolded items are the specified loadings for each indicator.

**Table 4** Results for Linear Regression with Social Status, Depression Diagnosis, and Skin Picking

Variable	B	SE	CI	$\beta$	t	p
(Intercept)	1.65	0.25	[1.16, 2.14]	0.00	6.62	< 0.001
Social status (Married)	-0.74	0.32	[-1.36, -0.12]	-0.09	-2.33	0.020
Depression diagnosis (Yes)	2.32	0.63	[1.08, 3.56]	0.14	3.68	< 0.001
Skin picking visual effect (Yes)	3.77	0.35	[3.08, 4.45]	0.42	10.79	< 0.001

**Notes:** CI is at the 95% confidence level. Results:  $F(3516) = 52.17$ ,  $p < 0.001$ ,  $R^2 = 0.23$ .

their Polish population, where the prevalence of skin picking behavior was found to be 47% in the population, with SPD at 7.7% (vs 1.2% in the present sample). A 5.4% prevalence of SPD has been reported in Jewish populations.<sup>21</sup> A higher prevalence of SPD has been reported in a medical student population in Karachi, Pakistan, at 9%.<sup>22</sup> The differences between our study and other studies may be attributed to differences between the studied populations, such as geographic location, religion, income, sampling methods, and how SPD was identified in each study. The SPS-R questionnaire used in the present study allowed for investigation of variables that influenced symptom severity and impairment based on its subscales.<sup>16</sup>

While most participants reported only mild symptom severity, the relatively wide prevalence of such symptoms should stimulate further investigation on how skin picking affects quality of life and how to treat more severe cases. Perceptions of psychiatric illness in Saudi populations are plagued with superstition, where people often believe that these conditions are the result of supernatural causes, such as the evil eye or magical spells cast on a person.<sup>23</sup> Individuals with SPD may feel overwhelmed with intense shame, guilt, and fear from being stigmatized by society, so they underreport symptoms or underestimate its severity to physicians,<sup>24</sup> or worse, go to supernatural healers who promise false treatments that can do more harm than good.<sup>25</sup>

SPD may also serve as a coping mechanism or way to reduce tension when dealing with work or interpersonal stressors, anxiety, or depression, and has been classified by some as a behavioral addiction.<sup>26</sup> The present study found that depression was significantly associated with skin picking behavior, similar to that reported by Nirmal et al<sup>27</sup> who also found an increase in this behavior among individuals suffering from depression. Grant & Chamberlain explained this association as due to problems with impulsivity among those with depression.<sup>28</sup> Neurobiologically similar to that of other addictions, SPD has also been reported to be more common in those with alcohol or nicotine dependence.<sup>29</sup> Alternatively, SPD may also be the cause of anxiety and depression, due to the impairment and stress it can inflict, either emotionally through poor self-esteem and self-loathing, or physically through wounds that can disfigure and increase the risk of infection.<sup>5,30</sup>

Our study found no association between SPD and OCD. This is in contrast to several studies, such as that by Keuthen et al which showed high comorbidity between SPD and OCD in patients with Trichotillomania.<sup>31</sup> One explanation for the

different findings in the current study is the way participants were asked about a prior diagnosis of OCD, which may be affected by recall bias (and many may not have presented to a health care specialist for diagnostic evaluation).

In the present study, nearly 13% of participants reported that their social life was significantly affected by their skin picking behavior. Several other studies have found that SPD had a negative effect on quality of life, such as in the Polish study described earlier, which found that nearly 6% of those affected by skin picking sought to avoid social situations because of this behavior.<sup>5,32</sup> Another study found that those with SPD experienced significant impairments in physical and psychological quality of life, although their social life was largely unaffected.<sup>3</sup>

We also found that marital status (being divorced or separated) was associated with a higher likelihood of skin picking behavior; however, it is worthy to note that the majority of our patients were < 30 years of age, which may have affected this finding. However, the association with marital status is consistent with those of Ribeiro, Ribeiro, and Von Doellinger,<sup>33</sup> who reported that problems in close relationships may promote frustration, impulsivity, and aggression, which then manifests as skin picking behavior. Other authors have hypothesized that if language cannot be used to express emotions and regulate affect, then skin picking or other forms of self-mutilation may be used as a substitute.<sup>34</sup>

## Study Limitations

The generalizability and interpretation of findings from the present study are limited by the number of study limitations. First is the study sample, ie, Saudi adults living in the large metropolitan city of Jeddah, which requires caution when generalizing these findings to those in other areas of the country. Second, the cross-sectional design prevents any conclusions about the causal nature of the skin picking correlates identified here (such as depression). Third, the majority of our patients were less than 30 years old, which may limit these results to a younger population. Fourth, depression and OCD were not identified through a structured psychiatric interview or clinical assessment, but rather participants were simply asked to self-report a diagnosis of these disorders, which may be subject to recall bias or lack of presentation to a healthcare professional for diagnostic evaluation. Fifth, we did not ask questions about addiction, anxiety, or body dysmorphic disorder, which may have been related to SPD symptoms in various ways. Sixth, no pilot study was done beforehand to test the scale characteristics of the Arabic version of the SPS-R. Finally, the use of a self-reported measure for SPD symptoms, rather than a structured clinical interview administered by a trained interviewer, may have affected the accuracy of identifying those with a true disorder. On the other hand, the SPS-R is a reliable measure with strong face validity that provides information about the severity and impairment of skin picking symptoms, thus allowing at least the preliminary identification of psychological and social correlates of this behavior.

## Conclusion

The present study found that skin picking disorder symptoms are not rare among the adult population of Jeddah, particularly in vulnerable groups such as those with depression and those who are widowed, divorced, separated, or single. A self-reported history of an OCD diagnosis was surprisingly not associated with SPD. More research, particularly longitudinal studies, is needed to further examine the causes and outcome of skin picking behavior. Education of mental health professionals and primary care medical providers about skin picking disorder is necessary to increase awareness so that identification and treatment may be instituted to reduce the impairment that severe skin picking causes. More attention to this condition by clinicians will improve the quality of life of those affected, and reduce the emotional and physical health consequences of this often unrecognized condition.

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## Disclosure

None of the authors have any conflicts of interest related to the subject of this research.

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