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Skin Picking Disorder in University Students: Health Correlates and Gender Differences

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Abstract

Objective—This study sought to examine the prevalence of skin picking disorder (SPD) in a university sample and assess associated physical and mental health correlates.

Methods—A 54-item anonymous, voluntary survey was distributed via random email generation to a sample of 6,000 university students. Current psychological and physical status was assessed, along with academic performance. Positive screens for SPD were determined based upon individuals meeting full proposed DSM-V criteria.

Results—A total of 1,916 participants (31.9%; mean age 22.7±5.1; 58.1% female) responded and were included in the analysis. The overall prevalence of SPD was 4.2% (females=5.8%; males=2.0%). SPD was associated with significantly higher lifetime rates of affective, anxiety, eating, substance use, and impulse control disorders. Men with SPD had significantly higher BMI ratings and perceived themselves as significantly less attractive to others while women had significantly higher depressive symptoms.

Conclusion—SPD is common in both genders and is associated with significant mental and physical health detriments, including as higher levels of stress, more psychiatric comorbidity, and poorer perceived health. Academic institutions, clinicians, and public health officials should be aware of the multimodal presentation of SPD and screen for it in primary care and dermatologic settings.

Keywords

body focused repetitive behaviors; comorbidity; gender; health

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INTRODUCTION

Skin Picking Disorder (SPD), also known as pathological skin picking, neurotic excoriation, or dermatillomania, has been a well-documented psychiatric condition for over a century. First described by Erasmus Wilson in 1875 [1], repetitive picking of the skin is associated with significant physical (infections and scarring) and mental (depression and anxiety) morbidity [2,3].

Over the past 15 years, the literature on the prevalence of SPD in the community has grown, with studies finding rates ranging from 1.2% to 5.4% in a variety of cohorts [4]. Most recently, Keuthen and colleagues, using a random digit dialing telephone survey (n=2,513 total sample; mean age=48.7; 65.5% female), found that 1.4% met criteria for SPD [5] while Monzani and colleagues found clinically significant skin picking rates of 1.2% in a sample of 2,518 females (mean age=53.8) [6]. To date there have been three published studies examining the prevalence of SPD in young adults (i.e., mostly students with a mean age of between 18–30 years old). In 2000, Keuthen and colleagues [7] sampled a small group of United States college students (n=105; mean age 21.0; 82.9% female) and found that 3.8% met criteria for SPD. A German study [8] found SPD in 4.6% of a sample of 133 university students (mean age 22.0; 73.7% female). Finally, a study of 245 Turkish students (mean age 22.0; 59.2% female) found that 2.4% met criteria for SPD [9].

Each of these studies illustrates the relatively high prevalence of SPD and suggests that perhaps SPD is more prevalent in young adults than in the general adult community. Therefore, it is important to examine the impact of SPD specifically within young adult populations. Little is known about the associated consequences of SPD on academic performance, socialization, and self esteem in university settings. Tucker and colleagues (2011) surveyed 1633 individuals with SPD (mean age 34.0; 94.2% female) using a web-based survey and found that individuals reported mild to moderate interference in home life, social life, relationships, work, and academics due to picking [3]. A majority of individuals reported avoiding social or entertainment events or going out into public. In terms of work, a majority of individuals with SPD reported that the picking interfered with work on at least a daily or weekly basis [3]. For those in school, approximately one-third reported some difficulties managing responsibilities at school, and almost half had difficulties studying in the past year because of skin picking [3].

Furthermore, although SPD is more commonly found in females [10], differences between the sexes have yet to be examined in detail. Although some preliminary data suggest no differences based on gender [3], other research suggests men with SPD may report more pleasure from the behavior and may pick at areas that are less noticeable to others (legs compared to face) [9]. Studies examining gender differences in trichotillomania, a disorder with phenomenologic and possible neurobiologic similarities to SPD [2,11,12], have found that females more commonly have earlier age of onset of behavior, less comorbidity, and more disability than males [13].

This study sought to examine both the prevalence of SPD in a university sample, but also examine the associated emotional and functional consequences of the disorder. Based on the previous literature, we hypothesized that SPD would be more common in females, be associated with poor self-esteem and impairments in academic performance, and with higher rates of trichotillomania, depression and anxiety disorders. In addition, we hypothesized that women with SPD were more likely than men to have poor self-esteem, more overall dysfunction and higher rates of trichotillomania, depression and anxiety disorders.

METHODS

Survey Description

The survey was distributed via random email generation to a sample of 6,000 students, including undergraduate, graduate, and professional students, enrolled at a large Midwestern university over a two month period in the spring of 2011. The survey assessed a broad range of physical and mental health variables, as well as social and academic variables. Students consented to the survey by reading an introductory page with IRB-approved language about the content of the survey, noting the fact that they were not required to participate, and clicking on a 'begin survey' link. To incentivize students, weekly drawings were held for portable music players and for a \$250, \$500, and \$1000 gift card at the conclusion of the survey. Students were informed that they did not need to complete the survey in order to be entered in the drawings. No identifiable information required for the drawings was linked to student responses, and drawings were performed by a university organization independent of the researchers.

Assessments

The current diagnosis of SPD was based on questions that mirror the proposed DSM-5 criteria (www.DSM5.org): 1) Recurrent skin picking resulting in skin lesions; 2) repeated attempts to decrease or stop skin picking; 3) the skin picking causes clinically significant distress or impairment in social, occupational, or other important areas of functioning; 4) the skin picking is not due to the direct physiological effects of a substance (e.g., cocaine) or a general medical condition (e.g., scabies; Prader-Willi Syndrome); and 5) the skin picking is not restricted to the symptoms of another mental disorder (e.g., skin picking due to fixed beliefs about skin infestation in delusional disorder, preoccupation with appearance in body dysmorphic disorder).

The survey also contained questions to assess the prevalence of impulse control disorders derived from the Minnesota Impulsive Disorders Interview (MIDI) [14]. Although originally developed as a clinician-administered tool, the MIDI has been used in self-report version in a previous study of impulse control disorders in college students and has good diagnostic validity and reliability [15]. Students were also asked about lifetime diagnoses of other psychiatric disorders.

Academic performance was assessed through student-reported cumulative grade point average (GPA). Measures of general health included a calculation of body mass index (BMI) based on reported height and weight, perceived attractiveness (by self and others), perception of physical and mental health over the 30 days preceding the survey, and the number of days in which they engaged in exercise over the previous 30 days.

Other valid and reliable scales included the Patient Health Questionnaire (PHQ-9), a client-administered, nine-item measure of depressive symptoms based directly on DSM-IV criteria [16,17] and the Perceived Stress Scale, a ten-question client-administered scale asking about stress during the prior 30 days [18].

Statistical Analysis

Only students who responded fully to the SPD questions were included. Means were compared using unpaired t-tests. Categorical variables were compared using chi-square testing or Fisher's exact tests where appropriate. An alpha was 0.05 was established and utilized for clinical significance.

RESULTS

Of the 6,000 students that were emailed the survey, 2,108 students (response rate of 35.1%; mean age 22.6 ± 5.1 ; 57.4% female) completed the survey. Due to the lack of reliable data, only 1,916 participants (response rate of 31.9%; mean age 22.7 ± 5.1 ; 58.1% female) were included in the sample. There were no statistically significant differences between the raw response sample ($n=2,108$ individuals) and the included sample ($n=1,916$ individuals) in terms of demographic and clinical variables. The overall rate for current SPD in our sample was 4.2% ($n=80$). While the majority individuals were under the age of 30, there were five individuals over the age of 30 who screened positive for SPD (6.3%). The exclusion of these individuals from the analysis did not reveal any statistically significant differences between the SPD and non-SPD cohorts and due to their status as university students, they were included in the SPD cohort as we did not feel their exclusion to be appropriate (given that many graduate or professional school students are older in age). Rates of SPD were significantly higher among females (5.8% [$n=64$]; compared to 2.0% [$n=16$] in males; $p<0.001$). Other than gender, there were no other significant demographic differences (Table 1).

Although individuals with SPD did not have significant impairments in academic performance as determined by overall grade point average (GPA), they had significantly worse depressive symptoms (PHQ-9 scores), significantly higher levels of perceived stress, considered themselves significantly less attractive than people without SPD, and reported significantly more days of poor physical health in the last 30 days compared to those without SPD (Table 2).

SPD was also associated with high lifetime rates of psychiatric comorbidity in our sample, including significantly higher lifetime rates of affective disorders, anxiety disorders, eating disorders, substance abuse, and impulse control disorders (Table 3). Men with SPD had significantly higher BMI ratings, classifying them as overweight, compared to men not meeting proposed criteria for the disorder, who were normally weighted ($p=0.030$).

When we compared men and women with SPD, we found no significant differences in psychiatric comorbidity (Table 4). Men perceived themselves as significant less attractive to others ($p=.006$), however, women had significantly higher depressive symptom scores on the PHQ-9 than men ($p<0.001$) (Table 5).

DISCUSSION

Our results indicate a high prevalence of SPD in university students, and SPD is associated with significant morbidity. The rate of SPD in our study (4.2%) is generally similar to those reported in other university samples (3.8% to 4.6%) [7,8] but higher than the rate found in general adult community samples (1.2 – 1.4%) [6,19]. One explanation for this higher rate among respondents is that the rate fluctuates with maturation. Skin picking may reflect one of several developmental behaviors of increased impulsivity and that with brain maturation in the mid to late 20s, the rates of the behavior diminish (93.4% of the Keuthen et al 2010 [19] sample was 25 years of age or older compared to a mean age of 22.9 ± 5.8 in our study). In our sample, however, a small yet significant proportion of our SPD population (6.3%) was over the age of 30. This would suggest that although SPD appears to be a chronic disorder for many, there may be variants of it that are time-limited and reflect maturational issues. Furthermore, young adulthood can also be a period of increased stress due to multiple transitions and more responsibilities and academic challenges [20], and stress has also been related to acne [21]. Thus it is possible that increased stress and acne could play a

role in the higher frequency of SPD found in young adults as has been implicated in previous samples (2,22). Longitudinal research is needed to answer this question definitely.

SPD in this sample is associated with significant distress. Poor self-esteem, depression, poor body image, and poor health are all associated with SPD. Because picking generally is performed on the face and arms [3,7,8,23], it is a behavior that is often noticed by others. Although people with SPD report trying to camouflage, with makeup or clothing, their excoriations, this may take considerable time and the person may avoid people or situations [24]. Although this study did not explicitly determine a causal relationship between picking and personal distress, it is fairly common for people who believe they look defective to have poor self-esteem and feel depressed.

The reasons for poor health among people with SPD may suggest a complex relationship of SPD to health correlates. Picking may result in infections but generally that is in a minority of people with SPD [2,24]. Picking may however result in decreased sleep (due to time spent picking) and increased stress due to social interactions, poor sleep, and facial outbreaks, both of which may result in a decreased immune system function [21,25,28], as well as increased skin picking [4].

The findings regarding psychiatric comorbidity support our hypothesis that people with SPD would also report higher rates of anxiety disorders. Many individuals with SPD report that anxiety worsens their picking and they find some relief from anxiety while picking [3,29], however, studies have also indicated that a minority of individuals with picking experience relief from engaging in the picking behavior [24]. Interestingly, this finding was not found in men when men and women were analyzed separately. Complicating the picture more was the fact that women with SPD appeared to have higher rates of some internalizing (depressive symptoms and anxiety) and externalizing (substance use disorders, intermittent explosive disorder, compulsive buying) disorders whereas men demonstrated no significant differences. This supports the notion that SPD, like trichotillomania, may occupy some intermediate positions between addictive behaviors and anxiety disorders [30,31] or that the heterogeneity within the disorder cuts across multiple and divergent types of other behaviors. In either case, gender represents a further complexity and desires further exploration with respect to its relationship to the interplay of skin picking and other behaviors.

There are several limitations with above study. First, subjects were surveyed anonymously and no direct interviews were conducted. This self-reporting of behaviors may have led to either over or under reporting of skin picking, psychiatric morbidity, and health indices. Additionally, dermatological conditions such as acne and psoriasis and mental conditions such as substance use or body dysmorphic disorder, which could result in picking, were not assessed with this survey. Second, no temporal relationship between skin picking and other variables such as self-esteem or depression were assessed. Whether these emotional factors lead to, result from, or are completely unrelated to picking cannot be definitely stated. Finally, the sample consisted of university students which may not reflect skin picking behaviors in the general, young adult population.

Conclusions

Skin picking disorder was relatively common in both women and men in this sample. School administrators, teachers, and health care providers should be aware of the often significant distress resulting from the picking behavior and address them with one of promising, evidence-based treatments available (for review, please see 32). In particular, this study has implications for mental health providers. The significantly higher rates of many psychiatric

conditions noted in our sample underscores the need for clinicians and other care providers engaging young adults to screen for clinically significant skin picking in both women and men in an effort address the often multimodal presentation of psychiatric concerns in the young adult population.

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Table 1

Demographics of University Students With and Without Skin Picking Disorder

Variable	SPD (n=80)	No SPD (n=1836)	Statistic	p-value
Age, Mean ($\pm$ SD) [range], years	22.94 (5.8) [18–54]	22.64 (5.09) [18–58]	t=0.5096 df=1884 SE=0.589	0.610
Sex, n (% male)	16 (20.0%)	787 (42.9%)	$\chi^2=16.462$ df=1	<0.001
Race/ethnicity, n (%) Caucasian	58 (72.5%)	1463 (79.7%)	$\chi^2=2.459$ df=1	0.117
Marital status, n (%) Single/divorced/widowed/separated	52 (65.0%)	1079 (58.8%)	$\chi^2=1.211$ df=1	0.271
Married/Partner/Engaged/Committed Relationship	28 (35.0%)	757 (41.2%)		

t=t-test;

 χ^2 =Pearson's chi-squared;

df =degrees of Freedom;

SE=standard error

Table 2

Academic and Health Indices Grouped by Skin Picking Disorder

Health Variable	SPD (n=80)	No SPD (n=1836)	Statistic	p-value
Grade point average (GPA)	3.31 ±0.47	3.35 ±0.49	t=0.7157 df=1881 SE=0.056	0.474
Body mass index (BMI)				
Male	26.88 ±13.04	24.24 ±4.22	t=2.1712 df=785 SE=1.216	0.030
Female	23.55 ±4.57	23.30 ±4.5	t=0.4278 df=1097 SE=0.584	0.669
Perceived Stress Scale	20.54 ±6.73	15.84 ±6.63	t=5.8896 df=1790 SE=0.798	<0.001
Patient Health Questionnaire (PHQ-9)	8.66 ±6.39	4.68 ±4.29	t=7.7166 df=1774 SE=0.516	<0.001
Perceived attractiveness, (1–10 scale, 1=least attractive; 10=most attractive)				
Attractiveness of self: male	5.88±2.36	7.00±1.41	t=3.0929 df=793 SE=0.362	0.002
female	6.08±1.55	6.77±1.43	t=3.7282 df=1104 SE=0.185	<0.001
Attractiveness to others: male	6.00±2.53	7.32±1.38	t=3.7057 df=794 SE=0.356	<0.001
female	7.33±1.40	7.46±1.38	t=0.7254 df=1101 SE=0.179	0.468
(N) days within the past 7 days engage in vigorous exercise for at least 20 minutes	2.26±1.82	2.70±1.97	t=1.912 df=1899 SE=0.224	0.050
(N) days within the past 7 days engage in being physically active for at least 30 minutes	3.29±2.32	3.29±2.17	t=0.0000 df=1901 SE=0.249	1.000
(N) days poor physical health, (past 30 days)	6.45±7.45	3.30±6.25	t=4.3740	<0.001

Health Variable	SPD	No SPD	Statistic	p-value
	(n=80)	(n=1836)		
			df=1900	
			SE=0.720	

All values are Mean±SD

Table 3

Lifetime Psychiatric Disorders in All Students Grouped by Skin Picking Disorder

SELF-REPORTED DIAGNOSES Non-Impulse Control Disorders	SPD (n=80)	No SPD (n=1836)	Statistic	p-value
Depression	26.3%	17.3%	$\chi^2=4.259$	0.039
Bipolar Disorder	5.0%	0.9%	f	0.010
Anorexia Nervosa	6.3%	2.1%	f	0.031
Bulimia Nervosa	3.8%	1.6%	f	0.042
Schizophrenia	0.0%	0.1%	f	1.000
Generalized Anxiety disorder	17.5%	8.4%	$\chi^2=7.82$	0.005
Panic Disorder	12.5%	5.0%	$\chi^2=8.736$	0.003
Social Anxiety Disorder	12.5%	4.0%	$\chi^2=13.44$	<0.001
Substance use disorder	7.5%	1.6%	f	0.003
Obsessive Compulsive Disorder	2.5%	2.0%	f	0.407
Attention Deficit Hyperactivity Disorder	3.8%	4.1%	f	1.000
Post Traumatic Stress Disorder	6.3%	1.8%	f	0.019
Borderline Personality Disorder	0.0%	0.1%	f	1.000
Any lifetime diagnosis	42.5%	26.1%	$\chi^2=10.53$	0.001

RESULTS OF THE MIDI Impulse Control Disorders	SPD(n=80)	No SPD(n=1836)	Statistic	p-value
Trichotillomania	3.8%	1.2%	f	0.088
Pathological Gambling	2.6%	0.7%	f	0.117
Compulsive Buying	13.9%	3.2%	$\chi^2=25.16$	<0.001
Intermittent Explosive Disorder	2.6%	0.2%	f	0.016
Kleptomania	1.3%	0.0%	f	0.043
Compulsive Sexual Behavior	5.2%	1.8%	f	0.014

f=Fisher's Exact Test;

 χ^2 =Pearson's Chi-Squared

Table 4

Lifetime Psychiatric Disorders by Gender in Students with Skin Picking Disorder Grouped

SELF-REPORTED DIAGNOSES Non-Impulse Control Disorders	Women (n=64)	Men (n=16)	Statistic*	p-value
Depression	23.4%	37.5%	f	0.340
Bipolar Disorder	4.7%	6.3%	f	1.000
Anorexia	7.8%	0.0%	f	0.577
Bulimia Nervosa	4.7%	0.0%	f	1.000
Schizophrenia	0.0%	0.0%	f	1.000
Generalized Anxiety disorder	17.2%	18.8%	f	1.000
Panic Disorder	14.1%	6.3%	f	0.677
Social Anxiety Disorder	10.9%	18.8%	f	0.409
Substance Use disorder	7.8%	6.3%	f	1.000
Obsessive Compulsive Disorder	3.1%	0.0%	f	1.000
Attention Deficit Hyperactivity Disorder	4.7%	0.0%	f	1.000
Post Traumatic Stress Disorder	6.3%	6.3%	f	1.000
Borderline Personality Disorder	0.0%	0.0%	f	1.000
Any lifetime diagnosis	42.2%	43.8%	f	1.000

RESULTS OF THE MIDI Impulse Control Disorders	Women (n=64)	Men (n=16)	Statistic	p-value
Trichotillomania	1.6%	12.5%	f	0.103
Pathological Gambling	3.1%	12.5%	f	0.177
Compulsive Buying	15.6%	6.3%	f	0.446
Intermittent Explosive Disorder	3.1%	0.0%	f	1.000
Kleptomania	0.0%	6.3%	f	0.202
Compulsive Sexual Behavior	4.9%	6.3%	f	1.000

*
f=Fisher's Exact Test used for all

Table 5

Academic and Health Indices in Skin Picking Disorder Grouped by Gender

Health Variable	Women (n=64)	Men (n=16)	Statistic	p-value
Grade point average (GPA)	3.28 ±0.49	3.44 ±0.38	t=1.2158 df=78 SE=0.132	0.228
Perceived Stress Scale	21.13 ±7.04	18.50 ±5.20	t=1.387 df=70 SE= 1.896	0.169
Patient Health Questionnaire (PHQ-9)	9.43 ±6.57	5.75 ±4.78	t=3.5946 df=741 SE=1.758	<0.001
Perceived attractiveness, (1–10 scale, 1=least attractive; 10=most attractive)				
Attractiveness of self	6.08 ±1.56	5.88 ±2.36	t=0.409 df=77 SE=0.488	0.683
Attractiveness to others	7.33 ±1.40	6.00 ±2.53	t=2.8265 df=77 SE=0.471	0.006
(N) days within the past 7 days engage in vigorous exercise for at least 20 minutes	1.82 ±1.86	2.19±1.68	t=0.7246 df=78 SE=0.511	0.471
(N) days within the past 7 days engage in being physically active for at least 30 minutes	3.11 ±2.31	4.00 ±2.28	t=1.3819 df=78 SE=0.644	0.171
(N) days poor physical health, (past 30 days)	6.19 ±7.45	7.50 ±7.62	t=0.6263df df=78 SE=2.092	0.533

All values are Mean±SD

t=t-test;

df =degrees of Freedom;

SE=standard error