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COGNITIVE-BEHAVIORAL STRESS MANAGEMENT TRAINING IN SKIN PICKING (EXCORIATION) DISORDER: A RANDOMIZED CONTROLLED TRIAL

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ABSTRACT

Skin picking (Excoriation) disorder is characterized by recurrent skin picking resulting in skin damage and psychosocial impairments. In an experimental design, 33 individuals with skin picking disorder (SPD), selected through voluntary accessible sampling. Participants randomized to experimental group who participated in 8 weekly tow-hour sessions of cognitive-behavior stress management training (n=16), and wait-list control group (n=17). To evaluate the effects of intervention, Skin Picking Scale (SPS-R), Depression, Anxiety & Stress scale (DASS), and quality of life questioner (WHOQOL- BREF) filled out by participants before, after, and 3 month after interventions. Data were analyzed using variance analysis for repeated measures (ANOVA). Findings show that stress management training can reduce physical symptoms as

well as anxiety and stress (but not depression), and improve quality of life in individuals with SPD.

Keywords: Skin Picking Disorder, Cognitive-Behavioral Stress Management, Quality of Life

INTRODUCTION

Skin picking (Excoriation) disorder also called neurotic excoriation, is characterized by (a) recurrent skin picking resulting in skin damage, (b) repeated attempts to decrease or stop skin picking, (c) clinically significant distress or impairment in social, occupational or other important areas of functioning, (d) that is not attributable to physiological effect of substance or another medical condition, and (e) is not better explained by the presence of another mental disorder (American Psychiatric Association, 2013). In general population the life time prevalence for skin picking disorder (SPD) in adults ranges from 1.4% to 5.4% in various populations (Hayes, Storch, & Berlanga, 2009; Keuthen et al., 2000; Keuthen, Koran, et al., 2010), and females are clearly more likely to engage in skin picking than males (Teng, Woods, Twohig, & Marcks, 2002).

SPD can result in physical skin damage including scarring, sores, and infections, and social problems such as avoiding social events and going out in public (Woods, Friman, & Teng, 2001; Tucker, Woods, Flessner, Franklin, & Franklin, 2011). Impairment in academic and occupational functioning has also been noted (Flessner & Woods, 2006). In another study Individuals with SPD report significant social and occupational difficulties due to skin picking (Arnold et al., 2001). Guilt, shame, and embarrassment about appearance are also reported (Bohne et al., 2002).these individuals in comparison to healthy people have poorer quality of life even when affective disorders and work status were taken into account (Odlaug, Kim & Grant, 2010; Arbabi et al. 2008) The disorder is time-consuming. Different studies reporting one to over eight hours per day picking skin (Neziroglu, Rabinowitz, Breytman, & Jacofsky, 2008; Flessner & Woods, 2006; Arnold et al., 1998), and suggests that the mean duration of symptoms ranges between 5 and 21 years, although the behavior waxes and wanes throughout this period (Arnold et al., 1998; Flessner & Woods, 2006; Simeon et al. 1997). In Odlaug et al. (2008) study many of the subjects reported that their

picking behavior had initially been less frequent but that the intensity and frequency of their behavior had increased over time.

In Roberts's, et al. (2013) in clinical and non-clinical samples, individuals with Body-focused repetitive behaviors (BFRBs) including SPD, consistently report that emotions such as boredom, anxiety, tension, and frustration are present prior to BFRB and decrease during or after episodes of this behavior. Furthermore it has been demonstrated that individuals who pick skin have elevated rates of comorbid psychiatric disorders often anxiety and depression. Such findings suggest that stress is generated by external causes and subsequently maladaptively regulated through skin picking. In other word individuals with BFRBs including SPD, have difficulty with emotion regulation, and use BFRB such as skin picking as an effort to regulate affect (Roberts, O'Connor, & Bélanger, 2013). It follows that individuals with SPD could benefit from treatments designed to teach alternative strategies for tolerating or regulating difficult emotions.

After 140 years from coining the term "neurotic excoriation" by ErasmusWilson (Odlaug & Grant, 2012), and despite the common prevalence of skin picking in the general population and its complications and chronic nature, there is still a paucity of treatment research about the disorder. Gelinas & Gagnon (2013) in a preliminary meta-analysis about Pharmacological and psychological treatments of SPD, demonstrated that Psychological interventions for SPD have involved cognitive behavioral therapy (CBT) and related behavioral interventions such as acceptance and commitment therapy (ACT) and habit reversal therapy (HRT). The efficacy of CBT for SPS has been investigated through randomized controlled trials (Schuck, Keijsers, & Rinck, 2011), and case series via telephone-administered therapy (Yeh, Taylor, Thordarsons, & Corcoran, 2003). These treatments appeared to be effective in reducing SPD; however the maintenance of treatment gains at follow-up was inconsistent. HRT is a behavioral treatment used to modify habitual behaviors. Using HRT with SPD has resulted in decreased skin picking; however there are mixed reports regarding relapses (Rosenbaum &Ayllon,1981; Teng, Woods, & Twohig, 2006; Twohig &Woods,2001). Furthermore whereas HRT emerged as effective across all prior studies, these investigations are limited by several factors,

most notably small sample sizes and uncontrolled designs (Moritz et al. 2012). Finally ACT is a behavior analytic psychotherapy that specifically targets behavioral rigidity and the dominance of verbal rules over one's behavior. ACT has also demonstrated success in decreasing skin picking and associated depression and anxiety; however, not all participants maintained their treatment gains at follow-up (Twohig, Hayes, & Masuda, 2006). In examination of comparative efficacy of pharmacological and psychological treatments of SPD, Large effect sizes supported the effectiveness of both pharmacological and psychological interventions in the treatment of SPD severity. The difference between effect sizes for the moderator variables indicated that psychological interventions may be more effective in reducing SPD severity. Currently there is a dearth of systematic research in this area, and until a higher volume of controlled research is produced, little can be said about the comparative efficacies of specific types of drugs or types of psychological treatments. Although pharmacological methods appear to also be effective in reducing comorbid OCD symptoms, and less effective in treating depressive and anxiety symptoms, the effect of psychological methods remains unclear (Gelinas & Gagnon, 2013). Therefore interventions for PSP should take comorbid depressive and anxiety symptoms into account. On the other hand stress that is widely considered the most popular psychological etiology for the onset, exacerbation, and reoccurrence of many skin conditions (Pavsky & Friedman, 2007), should also be taken into account. In this study we aimed to examine the effectiveness of cognitive behavioral stress management training on SPD severity, depression, anxiety, stress and quality of life in individuals with SPD. Such intervention probably in addition to help affected individuals to reduce stress, includes strategies (e.g. cognitive restructuring & progressive relaxation) that target comorbid depression and anxiety (Bolhari, et al., 2008)

MATERIALS AND METHODS

2.1. Sample

This study first was conducted on 40 individuals with SPD (31 females and 9 males; mean age 32.35 ± 11.26 years) selected through voluntary accessible sampling among individuals with SPD who referred to psychosomatic research center of Isfahan University of medical science through 6 month from Isfahan dermatology

and psychiatric clinics. These individuals were literate (at least able to read and write) in at least 6 month after diagnosis of SPD. Drug abuse, need to hospitalization because of complications, were exclusion criteria.

2.2. **Measurements**

2.2.1. Skin Picking Scale–Revised (SPS-R; Snorrason et al., 2012): The SPS-R is an eight-item self-report measure of skin picking, producing a total score and two subscale scores: symptom severity and impairment. In an Internet study of 652 skin pickers, mean total score was 15.48 (SD = 4.92), mean symptom severity was 8.61 (SD = 2.69), and mean impairment was 6.90 (SD= 2.95; Snorrason et al., 2012). Factor structure, internal consistency, convergent validity, and discriminant validity were found to be acceptable (Snorrason et al., 2012). We used the Iranian version of the SPS-R that also has acceptable psychometric properties, such as factor structure, and convergent, divergent, and discriminant validity (Rabiei et al. 2014).

2.2.2. Depression Anxiety and Stress Scale-21 (DASS-21): The DASS-21 is a general self-report measure of depression, anxiety, and stress used to measure symptoms across clinical and non-clinical populations (Henry & Crawford, 2005; Lovibond & Lovibond, 1995a) The DASS-21 demonstrates high internal consistency. Cronbach's alpha scores for depression (.88-.94), anxiety (.82-.87), and stress (.90-.91) subscales are high (Antony, Bieling, Cox, Enns, & Swinson, 1998; Henry, & Crawford, 2005). The DASS-21 depression subscale shows strong convergent validity with the Beck Depression Inventory (.81), while the anxiety subscale shows moderate convergent validity with the Beck Anxiety Inventory (.74) (Lovibond & Lovibond, 1995a).

2.2.3. WHOQOL-BREF: The WHOQOL-BREF is a 26-item version of the WHOQOL-100 assessment. It includes four domains of quality of life: physical, psychological, social and environmental. Analyses of internal consistency, item total correlations, discriminant validity and construct validity through confirmatory factor analysis, indicate that the WHOQOL-BREF has good to excellent psychometric properties of reliability and performs well in preliminary tests of validity. These results indicate that overall, the WHOQOL-BREF sounds, cross-culturally valid assessment of QOL, as reflected by its four domains: physical, psychological, social and environment. (Skevington, S.M., Lotfy, M., O'Connell, K.A. 2004). It is envisaged that the

WHOQOL-BREF will be most useful in studies that require a brief assessment of quality of life, for example, in large epidemiological studies and clinical trials where quality of life is of interest. In addition, the WHOQOL-BREF may be of use to health professionals in the assessment and evaluation of treatment efficacy (THE WHOQOL GROUP 1998).

Design and Intervention

The design of our research was randomized clinical trial which was done through pre-test/post-test/follow up with wait-list control group. All 40 participants filled out consent form, SPS-R and DASS-21. Then they randomly assigned to intervention group (n=20) and wait-list control group (n=25). Our intervention was 8 weekly 2-hours session of cognitive-behavioral stress management training, included these topics: *what is stress & coping styles?, progressive relaxation, problem solving, time management, anger management, cognitive restructuring (2 sessions) and healthy life style* (Bolhari, et al., 2008). Immediately after the last session of intervention and 3 month later, all participants except drop outs filled out SPS-R and DASS-21 again. After follow up assessment, an exactly identical cognitive-behavioral stress management training rendered for control group. 4 individuals of intervention group and 3 individuals of control group dropped out through intervention and after that and did not attend post-test or follow-up assessments. So finally results of 33 participants (26 females and 7 males; mean age 32.57 ± 11.51 years) analyzed.

Statistical analysis

Statistical analyses were performed using the SPSS. Results were analyzed through repeated measures ANOVA.

RESULTS

Some demographic characteristic of participants are presented in table1. There is no difference between two group in age (t= -0.521, P = 0.60), duration of SPD (t= 0.896, P = 0.89) and education (t= -0.846, P = 0.404)

Participants' baseline scores are given in Table 2, which demonstrates no significant differences between the two groups in pre test in SPS-R, depression, anxiety, stress and quality of life.

Table 1: Some demographic characteristic

group	Age (year)	Duration of SPD (year)	Education (year)
intervention	**32.68 (13.15)**	**5.56 (3.22)**	**13.5 (2.68)**
control	**34.82 (10.33)**	**4.70 (2.20)**	**14.35 (3.08)**
total	**33.78 (11.63)**	**5.12 (2.73)**	**13.93 (2.88)**

Table 2: baseline variables measures

variables	intervention	Control	differences	t	P. value
SPS-R	14.43 (6.40)	13.94 (7.06)	0.496	0.211	0.83
Depression	9.18 (4.19)	9.35 (4.37)	-0.165	-0.111	0.913
Anxiety	7.43 (2.96)	7.23 (3.91)	0.202	0.166	0.896
Stress	8.06 (3.71)	8.29 (4.07)	-0.231	-0.170	0.860
Quality Of Life	71.93 (11.41)	73.47 (12.84)	-1.533	-0.362	0.720

The results of repeated measures ANOVA indicate that our intervention were effective in general, in decreasing of SPS-R (P = 0.029), anxiety (P = 0.036) and stress (P = 0.022) but not depression (p= 0.087) mean scores and increasing quality of life (P = 0.007) mean score in post-test and follow up compare to pre-test (Table 3).

To interpret the significant interaction between time and group, simple effects tests (or simple main effects) are conducted. Results of tests between subject effects (Table4) show that differences between two groups are significant for all measures (P < 0.001), and observed power for all variables are reasonable (Δ = 1.00).

This test examines the main effect of one explanatory variable at a fixed level of the other explanatory variable (here: time point). A simple effects test can be used to examine the effect of group at each level of time, that is, whether there is a difference between time points within each group. This comparison is usually of most interest. Simple effects analysis in SPSS cannot be tested directly in SPSS. But with a simple syntax command it can be done (Barton & Peat, 2014, p176). Result of pairwise comparisons are presented in table5

Table 3: Tests of within-subject Effects

variables	Type III sum of square	df	F	P. value	Partial eta square	Observed power
SPS-R	90.590	2	3.732	0.029	0.107	0.663
Depression	26.264	2	2.538	0.087	0.076	0.490
Anxiety	15.555	2	3.505	0.036	0.102	0.663
Stress	34.983	2	4.056	0.022	0.116	0.702
Quality Of Life	551.948	2	5.400	0.007	0.148	0.827

Table 4: Tests of between-subject Effects

variables	Type III sum of square	df	F	P. value	Partial eta square	Observed power
SPS-R	16539.853	1	144.128	<0.001	0.823	1.00
Depression	7355.818	1	194.040	<0.001	0.862	1.00
Anxiety	4549.191	1	164.881	<0.001	0.842	1.00
Stress	5377.940	1	156.125	<0.001	0.834	1.00
Quality Of Life	571538.449	1	1596.765	<0.001	0.981	1.00

Table 5: Pairwise comparisons

	Means	Mean Difference

groups	variables	Pre-test (1)	Post-test (2)	Follow-up (3)	(1) – (2)	(1) – (3)	(2) – (3)
intervention	SPS-R	14.438	11.313	11.063	3.125*	3.375*	0.250
	Depression	9.188	7.313	8.125	1.875*	1.063	0.812
	Anxiety	7.438	5.625	5.687	1.813*	1.750*	0.062
	Stress	8.063	6.250	5.813	1.813*	2.250*	0.437
	Quality Of Life	71.938	80.750	79.938	8.812*	8.00*	0.813
control	SPS-R	13.941	13.529	12.882	0.412	1.059	0.647
	Depression	9.353	8.706	9.059	0.647	0.294	0.353
	Anxiety	7.235	7.529	7.176	0.294	0.059	0.353
	Stress	8.294	8.118	7.706	0.176	0.588	0.412
	Quality Of Life	73.471	75.535	74.647	1.882	1.176	0.706

***p<0.05**

In intervention group there are significant differences ($p<0.05$) in pre-test/post-test, and pre-test/follow-up comparisons, for all measures except depression. But there is no difference in post-test/follow-up comparison. For depression there is only a difference in pre-test/post-test comparisons. However there is no difference in pre-test/post-test, and pre-test/follow-up comparisons, for wait-list control group. It shows the effectiveness of intervention for all measures in post-test and maintenance of this effect for all measures except depression in follow-up.

DISCUSSION

Significant differences for skin picking (SP) severity mean scores and anxiety, stress and quality of life mean scores observed between time points (i.e. pre-test, post-test & follow-up) and between groups (i.e. intervention & wait-list control) due to intervention. In other words cognitive behavioral stress management training was effective in reducing SP severity, anxiety, stress and quality of life in individuals with SPD.

Findings of this study are consistent with previous cognitive behavioral trails in the field of SPD (e.g. Schuck, Keijsers, & Rinck, 2011; Teng, Woods &Twohig, 2006). Teng, et al. (2006) conducted a pilot investigation comparing brief habit reversal training (HRT) to a wait-list control condition for individuals reporting chronic SP that resulted in either social impairment or physical injury. HRT was significantly superior to the wait-list condition in decreasing self-reported picking and decreasing skin damage. Between-group differences in improvement were maintained at 3-month follow-up. In another randomized controlled trial, Schuck, et al. (2011) compared four sessions of CBT for pathological SP to a wait-list control condition. The authors found that CBT was superior to the wait-list condition in reducing SP severity, SP impact, dysfunctional cognitions related to SP, and skin damage,

and gains were maintained at 3-month follow-up. Schuck and colleagues presented direct intervention for dysfunctional cognitions related to SP. But the cognitive behavioral stress management training used in present study (Bolhari, et al., 2008) was not specified for SPD. Therefore the effect of intervention may be attributable to improvement in other comorbid difficulties such as anxiety, stress or even depression through learning more adaptive strategies to cope with these undesirable negative emotions. Several authors have investigated the relationship between psychopathology and BFRBs by exploring correlations between skin SP severity and psychopathology severity. For example Hayes et al. (2009) found significant correlations between SP severity and depressive, impulsive, anxious, and obsessive compulsive symptom severity in 222 skin-pickers in a non-clinical community sample. Emotion regulation (ER) model for body-focused repetitive behaviors (BFRBs) including skin picking,(and also hair pulling an nail biting) proposes that individuals with BFRBs have difficulty controlling certain emotions and engage in body-focused behavior to avoid, decrease, or attenuate aversive affect; BFRBs persist despite negative consequences because they are negatively reinforced by distraction or escape from undesired emotions or difficult events (Roberts, O'Connor, & Bélanger, 2013). The ER model further suggests that individuals with BFRBs are characterized by a general deficit in ER that promotes the adoption of maladaptive coping methods (Snorrason et al., 2010). Applied to all problematic body-focused behaviors, Snorrason and colleagues' model implies that, in individuals with BFRBs, chronically high levels of emotional arousal are coupled with a fundamental deficit in ER, prompting the adoption of maladaptive ER strategies such as skin picking. Such findings suggest that stress is generated by external causes and subsequently maladaptively regulated through BFRBs. Regarding results of present study, it seems cognitive behavioral stress management can help affected individuals to substitute maladaptive ER strategies (i.e. skin picking) with more adaptive ones presented in intervention.

Findings of this study show that in addition to reducing SP severity, anxiety and stress, cognitive behavioral stress management improves quality of life in individuals with SPD. As mentioned above, individuals with SPD in comparison to healthy people have

poorer quality of life even when affective disorders and work status were taken into account (Odlaug, Kim & Grant, 2010; Arbabi et al. 2008). Arbabi et al. (2008) also reported that the quality of life impairment in patients with PSP increased more with greater severity of SP. There are some reasons for more impairment of quality of life status: Firstly, when the severity of SP increased the rate of psychiatric co morbidity enhanced which can negatively influence the status of quality of life in other medical or dermatologic problems (Picardi , et al. 2000). Secondly, severe SPD usually are accompanied with more time consuming scratching behavior and disfigurement (Odlaug & Grant, 2008) that can deteriorate health and quality of life status. So the improvement in quality of life in our study may be result of improvement in comorbid difficulties (i.e. decrease in anxiety, stress and even depression) and more adaptive strategies to regulate such undesirable negative emotions. In conclusion cognitive-behavioral stress management training as a simple and relatively short intervention is effective for individuals with SPD. This is not an expensive intervention where as having good effects on SP severity, psychological well-being and quality of life.

This study has some limitations. In order to explore underlying mechanisms of change, broader range of assessment is needed. Especially assessment of emotion regulation strategies can be useful and suggested for future studies. The other limitation of this study is that the intervention was not specified for SPD. Specific interventions regarding characteristics SPD may be result in better achievements.

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