



Original Article

Predicting changes in perception of itching in chronic skin diseases by personality characteristics, anxiety, and depression

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Abstract

Introduction: Itch is the main symptom in many skin diseases with a significant impact on the quality of life, while it is affected by psychological factors itself. This research aimed to investigate the changes in perception of itching in chronic skin diseases by personality characteristics, anxiety, and depression.

Materials and Methods: In study, 200 patients diagnosed with psoriasis, atopic dermatitis, and chronic urticaria referred to phototherapy unit or dermatology clinics of Imam Reza and Ghaem hospitals in Mashhad during the summer and autumn of 2014 were selected through random sampling. Participants fulfilled the inclusion criteria and gave consent to participate in the study. They answered to d-type personality questionnaire, Self-Consciousness Scale, and Hospital Anxiety and Depression Scales. In order to assess perception of itching, Visual Analog Scale and quality of life in patients with pruritus questionnaire (Itchy QoL) were used. After data collection, data were analyzed using SPSS version 16, Pearson correlation and multiple regression analysis.

Results: The findings suggest that personality characteristics and psychological distress in total can explain 70.5% of the variance of itch perception. Depression ($P<0.0001$), negative mood ($P<0.0001$), public awareness ($P<0.004$), and social inhibition ($P<0.009$) had the largest share in this regard.

Conclusion: Personality characteristics, anxiety, and depression can affect perception of itching.

Keywords: Anxiety, Depression, Itch, Personality, Skin disease

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Introduction

Itch is an unpleasant feeling which stimulates the desire to scratch the skin. This is a widespread phenomenon in public population (1) and especially in skin diseases (2) and is considered a major symptom in patients suffering atopic dermatitis, hives, and psoriasis (3).

Itch can be local or outspread; however, it is different from very mild to extremely severe or from itch and a feeling of tingling to burning and prickling. When it is local and temporary, it creates a slight irritation, but when it is severe and outspread, it is intolerable and debilitating which can even lead patients toward suicide (5).

In a study done on psoriasis patients it was reported that itch influenced the mood in 60 %, sleep in 35%, sexuality in 21%, and appetite in 11% of patients (6). Itch may have various reasons and there are different biological reactions accompanied by it (7). However, itch is also associated with patients' psychological variables such as their mood conditions. For instance, in a recent study, it was indicated that negative emotions associated with watching films could increase the severity of itch in healthy women (8).

In another study anger was associated with the increase of itch in patients suffering chronic hives, while depression has been associated with increase of itch in psoriasis patients (9). Moreover, in patients suffering psoriasis, itching as well as anxiety was accompanied by increase in self-evaluation of itch in four weeks later and only at the times when there were a lot of daily pressures (10).

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Such findings along with the fact that itch cannot be always justified with the severity of skin disease lead to theory of bio-psycho-social model (11). In this model it is assumed that internal factors (such as personal characteristics) along with external factors (such as stressors) lead to specific cognitions, reactions, or social behaviors which may increase or decrease physical responses (12).

The present study aims to predict changes in itch perception in chronic skin diseases based on personality characteristics, anxiety, and depression. It also aims to understand new aspects of personality which are supposed to be associated with itch perception but which have not been investigated as far as the researchers know.

Materials and Methods

Given the objective and tests used, the present study is a correlation research, while it is applied regarding application of results by planners and providers of mental health services.

Research participants included patients who referred specialized dermatology clinics of Imam Reza and Ghaem hospitals as well as their phototherapy units in Mashhad during the summer and fall of 2014.

Since no comprehensive information was available about the number of affected patients, G.power software was used to select ample size from statistical population and accordingly, a sample size including at least 170 people was suggested. In the present study, as an additional precaution 210 people were selected from whom 10 people were deleted from the process due to incomplete questionnaires. These people have been selected purposefully based on available random sampling (since sample is available in special environments such as clinics, doctor's office, and hospitals and access to these patients in such places is representative of this group).

After diagnosis of disease by specialists and considering inclusion criteria, patients who had consented to enter into the study filled out questionnaires. Participants received sufficient explanations about the objective of the study and were assured about the confidentiality of test data. They were also assured completely that withdrawal was optional if they didn't want to continue.

Inclusion criteria: literacy, diagnosis with psoriasis, hives, and atopic eczema by doctor, minimum age of 14 years and maximum age of 65 years, no anti-itch medication 24 hours before the study, no history of hospitalization due to skin disease.

Exclusion criteria: Accompanied conditions such as rheumatoid arthritis, heart, respiratory, and renal problems, pregnancy, diabetes, drug abuse, and severe mental disorders for which the patient receives medicine.

Research instruments

- *Visual Analog Scale (VAS)*: In order to determine itch severity, visual analog scale (VAS) was used which is a scale of 10 degrees through which participants can rate the amount of itch experienced.

- *Questionnaire of itch quality of life (Itch QoL)*: It was proposed by Desai and colleagues in 2008 and includes 26 questions which evaluate three main axes including symptoms, performance, and emotions. This questionnaire is set according to Likert scale (never, rarely, sometimes, often, and always) and scoring is done from 1 for never to 5 for always. This questionnaire has been validated by Tari and colleagues (1391) in Iran for skin diseases accompanied by itch. Results of Chronbach's alpha were 0.66 for symptoms, 0.84 for performance, and 0.84 for emotions (13).

- *Questionnaire of demographic data*: It includes information about age, sex, and marital status, history of disease, affected area, and disease diagnosis.

- *Hospital Anxiety and Depression Scale (HADS)*: is a questionnaire including 14 questions designed in order to evaluate existence and severity of depression and anxiety symptoms during the last week. Seven questions evaluate anxiety and the remaining seven questions measure depression. Overall, 21 scores can be obtained from each part. A score between zero and seven means that the person is healthy, while eight to ten will indicate borderline disorder and scores of 11 and higher are considered suspected to disorder. The cut-off point for anxiety and depression scales was 6.

Target population of this scale includes adolescents over 16 years to elders. This questionnaire is a useful and brief screening tool for depression and anxiety symptoms in patients with physical problems and its validity as well as reliability has been investigated by Montazeri in Iran ($\alpha=0.78$) (14).

- *Self-Consciousness Scale (SCS)*: includes 24 items which will be answered using Likert's five-point scale from completely agree to completely disagree. The scale consists of three components of private self-awareness, general self-awareness, and social anxiety. Latifian and Seif investigated its reliability and validity in students through a study. According to evidence obtained from internal correlation between the scale dimensions along with

the results found by Rillo and Elik (1998), validity of scale structures was confirmed. Reliability of triple dimensions of this scale was determined by estimation of Chronbach's alpha. These coefficients which were 0.71, 0.57, and 0.84 for private self-awareness, general self-awareness, and social anxiety, respectively indicate acceptable internal consistency of the scale's scores (15).

- *Personality type-D Scale*: which consists of 14 questions and has been designed by Denollet in 1998 is used with two general features including negative mood and social inhibition. Each participant answers each item based on a five-option scale consisting of never, rarely, sometimes, often, and always.

Chronbach's alpha coefficient was 0.88 for negative affection and 0.86 for social inhibition (16). Data were analyzed using statistical tests of Pearson correlation coefficient and multiple-regression model by SPSS 16 software.

Results

In this research, 200 patients with diagnosis of psoriasis, hives, and atopic eczema were assessed and their demographic data were presented in Table 1.

Table 1. Demographic characteristics and descriptive data related to patients with diagnosis of psoriasis, hives, and atopic eczema

Variables		Frequency	Percentage	SD
Gender	Female	143	71.5	0.43
	Male	57	28.5	
Marital status	Married	125	62.5	0.48
	Single	75	37.5	
Disease	Eczema	86	43	0.62
	Hives	16	8	
	Psoriasis	98	49	
Disease history	Less than 2 years	60	30	0.85
	2-5 years	50	25	
	Over 5 years	90	45	
Affected area	Body	10	5	1.11
	Hand	26	13	
	Foot	10	5	
	Sporadic	101	50.5	
	Face	53	26.5	

Table 1 shows descriptive information about research sample. According to information, most

participants were female and married. Moreover, patients suffering psoriasis have assigned a higher percentage of participants to themselves and in most patients the problem has been spread.

Table 2. Correlation coefficients between itch perception and sub-scales of personality type D, self-awareness, and hospital anxiety and depression

Predictive variable	The criterion variable (itch perception)		
	Correlation coefficient	Number	Level
Negative mood	0.61	200	0.0001
Social inhibition	0.42	200	0.0001
Hospital anxiety	0.65	200	0.0001
Hospital depression	0.78	200	0.0001
General self-awareness	0.265	200	0.003
Private self-awareness	-0.048	200	0.0001
Social anxiety	0.59	200	0.0001

According to Table 2, all predictive variables had a significant relationship with itch perception criteria. This relationship had the highest degree regarding anxiety and hospital depression as well as negative mood, while it showed the lowest degree regarding private self-awareness. Moreover, private self-awareness and itch perception had a reverse relationship.

Table 3. Results of simultaneous regression analysis of perception of itching in skin patients based on sub-scales of personality type D, self-awareness, and hospital anxiety and depression

Variables	F	R	B	t	P
Negative mood			1.06 0.31	3.26	0.0001
Social inhibition			-0.607 -0.213	-2.62	0.009
Hospital anxiety			0.39 0.102	1.72	0.087
Hospital depression	65.57	84 70.5	2.09 0.56	9.08	0.0001
General self-awareness			0.548 0.062	1.28	0.004
Private self-awareness			-0.84 -0.127	-2.89	0.202
Social anxiety			0.342 0.106	1.40	0.163

Linear multiple-regression (Table 3) indicated that variables entered into model could explain 70.5 % of itch perception variance. In this regard, negative mood and hospital depression had a higher contribution compared to other variables.

Table 4. Results of multiple regression analysis of perception of itching and sub-scales of personality type d, self-awareness, and hospital anxiety and depression using stepwise method

Criterion variable	Statistical index of predictive variables	MR	RS	(F)	B and regression coefficients			
					1	2	3	4
Itch perception	1. Depression	77.9	60.7	F=305.68 P=0.0001	B=2.92	B=2.35	B=2.36	B=2.32
					=0.78	=0.63	=0.63	=0.62
					t=17.48	t=12.79	t=13.30	t=13.15
					P=0.0001	P=0.0001	P=0.0001	P=0.0001

2. Depression and negative mood	81.4	66.3	F=194 P=0.0001	B=0.96 =0.28 t=5.74 P=0.0001	B=0.85 =0.25 T=5.16 P=0.0001	B=1.35 =0.40 t=4.95 P=0.0001
3. Depression, negative mood, and general self-awareness	82.9	68.7	F=143.51 P=0.0001		B=-1.05 =-0.16 t=-3.87 P=0.0001	B=0.90 =0.14 t=3.27 P=0.0001
4. Depression, negative mood, general self-awareness, and social inhibition	83.4	69.5	F=111.31 P=0.0001			B=-0.48 =-0.17 t=-2.29 P=0.023

According to Table 4 and based on multiple-regression analysis with stepwise method, from variables of psychological disorders, depression has a significant relationship with itch perception by multiple-correlation coefficient of 77.9 and RS=60.7 at level of $P=0.0001$. Therefore, the first hypothesis is confirmed. On the other hand, from components of personality type d, negative mood, and social inhibition, and from components of self-awareness only general self-awareness had a predictive role in itch perception. Other variables were removed from the model since they didn't have a significant role in model capability. At the second step, simultaneous inclusion of depression and negative mood as predictive variables increased multiple-correlation coefficient to 81.4 and coefficient of determination to RS=66.3 at level of $P=0.0001$. At the third step, inclusion of general self-awareness increased test capability (MR=82.9, RS=68.7, and $P=0.0001$). Inclusion of social inhibition at the fourth step increased multiple-correlation coefficient to 83.4 and coefficient of determination RS=69.5 at level of $P=0.0001$.

Discussion

In the present study the relationship between itch, psychological disorders, and personality characteristics was investigated among a range of skin itch disorders with psychosomatic components including psoriasis, atopic dermatitis, and chronic idiopathic hives. All these diseases have an immunologic component and immunology-mental neurology factors may play a mediating role in psychosomatic response (12).

Itch experienced, its duration and peak depends on personality variables. Multi-variable regression modeling in Misery's study showed that about 70 % of overall variance is predicted by personality variables in these measurements (such as neuroticism, anxiety, and levels of depression) (17).

According to the results of the present study, psychological disorders and personality

characteristics have all a significant relationship with itch perception and in general 70.5 % of itch perception variance can be predicted by them while depression has the highest relationship with itch perception. Regarding depression, findings show that clinical status of depression may affect itch severity, for example itching area before and after standard skin treatment (such as local steroid or B ultra violet radiation) in patients suffering psoriasis has been accompanied by significant changes in depression before and after treatment (11).

Along with the results of the present study, in Rich and colleagues' study severity of atopic dermatitis has been associated with an increase in the level of anxiety in children, while depression has been related to severity of itch in atopic dermatitis, psoriasis, and chronic hives (6).

Involuntary aspect of self-scratching may be decreased using specific anti-depressants such as Klum Imipramine and Fluoxetine which can simultaneously reduce itch through weakening itch-itching cycle. Effectiveness of anti-depressants in itch status is usually associated with their antihistaminic capabilities; therefore, their real fundamental effectiveness mechanism is unknown. On the other hand, like specific kinds of pain, itch is directed by short nerve fibers without myelin and second level neurons accompany ascending spinothalamic; therefore, both itch and pain have the same central nervous path. The relationship between pain and depression has long been known, even though its main base may be multifactorial and needs more studies. However, itch and depression may be related in a similar way (18).

Regarding personality characteristics, the results show that psychological moderators proposed for itch can be responsible for personality differences in reporting experiences with visual analog scale. Personality characteristics may have an indirect relationship with itch; in other words, they have been associated with itch perception through influencing the degree of anxiety and depression as

well as fear and helplessness which are considered as cognitive components of anxiety and depression (17).

One of personality characteristics whose role in mental health attracted more attention during the past two decades was self-awareness. Self-awareness includes three dimensions of private self-awareness, general self-awareness, and social anxiety.

Among these, general self-awareness which showed a higher relationship with itch perception consistent with the results obtained by Schut and colleagues (12) is considered as overall awareness about one's self as a social personality, particularly from others' perspective. Social anxiety is considered as individuals' anxiety and distress about being with others and their desire to be alone (15).

Patients suffering atopic dermatitis as well as psoriasis feel stigmatized due to their skin disease (19); therefore, the feeling of being observed by others' critical looks or rejected by them is created in these patients. This explanation is along with the finding that patients suffering atopic dermatitis have an uncertain and more determinate feeling toward themselves compared to health groups, while their self-esteem is also lower in this group of patients (12).

It has been also indicated that stigmatization is associated with high levels of itch in patients suffering psoriasis and atopic dermatitis (20).

Personality type-d also includes two major dimensions of negative mood and social inhibition. Negative mood is associated with experiencing strong negative emotions such as anxiety, anger, hostility, irritability. Social inhibition is defined as individuals' unwillingness to express their negative emotions and behaviors related to these feelings (21).

Ulnik's study on patients suffering psoriasis indicates that psoriasis patients tend to avoid distance from others and disagreeing with them.

This is consistent with their high scores in seeking agreement, less unpleasantness, and less domination which can be used as a protection mechanism in patients who are afraid of being rejected or discriminated. Other studies have shown that psoriasis patients have lower scores in narcissism and their behavior is usually altruistic with an orientation toward others while they show less aggression against criticism (22).

Therefore, internal personality factors may make people more vulnerable against itch or may increase its probability when an individual encounters stressors in life (2).

Clinical studies are limited to subjective and variable nature of itch and there are some difficulties in their rating which can be considered as one of research constraints. On the other hand, given impossibility of evaluation of disease severity for researcher, this factor has been neglected as an influencing element in itch perception. It would worth if future studies pay attention to this important issue.

Conclusion

In patients with neurological dermatitis, conflicts such as stressful (exhausting) communications, humiliation, and executive requests can be predictive of worsening itch. Therefore, attention to psychological treatments along with medical treatment can provide the chance for a more comprehensive treatment of patients suffering skin diseases accompanied by itch.

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