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Comparing early maladaptive schemas, perseverative thinking, and somatoform dissociation in patients with obsessive-compulsive disorder with normal population

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Original Article

Abstract

BACKGROUND: Considering the importance of psychological factors in exacerbating diseases such as obsessive-compulsive disorder (OCD), this study was carried out aiming to compare the early maladaptive schemas (EMSs), perseverative thinking, and somatoform dissociation among normal individuals and patients with OCD.

METHODS: The causal-comparative (ex post facto) method was used in this study. The population consisted of all patients with OCD referring to the centers for comprehensive urban health services of Ardabil, Iran, in the second half of 2017. The research cluster sampling included 30 patients with OCD whose disease was diagnosed by a responsible physician or clinical psychologist, selected by random sampling method. Moreover, 30 normal people were selected in the sampling method by matching age, sex, and marital status and included in the study. The subjects responded to the Maudsley Obsessive-Compulsive Inventory (MOCI), Young Schema Questionnaire (YSQ), Perseverative Thinking Questionnaire (PTQ), and Somatoform Dissociation Questionnaire (SDQ). Data were analyzed using multivariate analysis of variance (MANOVA).

RESULTS: The results showed that the mean scores of patients with OCD in EMSs, perseverative thinking, and Somatoform dissociation were significantly higher than normal subjects ($P < 0.001$).

CONCLUSION: The results of this study showed that patients with OCD differ in a wide range of EMSs, perseverative thinking, Somatoform dissociation from normal subjects. Therefore, it is necessary to pay attention to these cognitive components in the treatment process.

KEYWORDS: Early Maladaptive Schemas, Thinking, Somatoform Dissociation, Obsessive-Compulsive Disorder

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Introduction

Obsessive-compulsive disorder (OCD) is one of the serious mental health problems imposing great social and economic cost burden on society and is the fourth common psychiatric disease following phobia, drug-related disorders, and depressive disorders. In addition, the problems associated with OCD and its distressing signs, disturb patient's interpersonal, social, and occupational functions.[1] According to cognitive perspective, the way by which a person evaluates intrusive and unwanted thoughts leads to distress and obsessive behaviors. It appears that these incorrect evaluations stem from maladaptive hypothesis that have been learned throughout life span.[2] Early maladaptive schema (EMSs) is a wide and impressive pattern that is formed by memories, emotions, cognitions, and

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physical feelings about oneself, the relations with other individuals, growth through childhood and adolescence, which is product of the life and somehow doesn't work correctly.[3] Briggs and Price[4] in a study on maladaptive experience in childhood concluded that childhood undesirable experiences was strongly related to obsessive-compulsive beliefs and signs, but after controlling anxiety and depression, this relation was not significant and only a weak relationship was observed. Wilhelm et al.[5] showed in a study that the relationship among perfectionism and obsessive thoughts with maladaptive schemas related to dependence/incapability was significant due to response to treatment. In result, cognitive changes in perfectionism/thought assertiveness and maladaptive schemas related to dependence/incapability predict the reduction of behavioral symptoms in OCD. Kwak and Lee[6] concluded that social isolation/alienation and shame/deficit schemas were active among patients with OCD, although incapability/vulnerability to loss and emotional inhibition/self-sacrifice schemas were active in panic disorder.

Among the problems that might present in cognitive area of obsessive individuals, there is questioning of "self" concept which reflects in preservative thinking. This type of thought is one of the usual characteristics of human mind and includes self-attributions derived from events, topics, and behaviors associating a negative concept for individuals. This way of thinking as well as perception alteration may limit reality invitation. Preservative thinking involves the idea that routine and natural events have a certain meaning with varying intensity for each person.[7,8] In this way, Drost et al.[9] showed in a study that individuals with high perseverative thinking will experience high levels of anxiety and depression. Rodriguez-Testal[10] examined the predictors of perseverative thinking and the results of this study showed that self-references among patients particularly patients with psychotic diagnose were significantly more than those of the control group, and psychotic thinking, thought disorders, and vulnerability to mental disorders indexes are the most important variables among others that may predict self-references. Raines et al.[11] found in a study that there was a significant relationship between rumination and unacceptable thoughts.

In recent decades, a new type of disease has been emerged in terms of somatoform disorders and diseases.[12] The term of psychosomatic disorder is used when the individual indicates physical signs that seem to be formed or intensified due to psychological factors. Emergence and occurrence of somatoform disorders require co-existence of psychological factors and physical symptoms.[13] Somatoform dissociation is a term for somatoform symptoms that usually are seen in dissociative disorders. These symptoms included anesthesia, amnesia, and indetermination.[14] OCD is associated with cognitive impairments and deficit in information processing that seem to be related with aforementioned symptoms. Tolin et al.[15] found in a study that non-clinical obsessive subjects engaging in repetitive examinations showed considerable reduction in memory confidence. Van den Hout et al.[16] found that patients with OCD will gaze at an anxiety-provoking object longer, and this reaction not only doesn't lead to more confidence, but also reduces perceptual confidence and increases the amount of memory errors. Lysaker et al.[17] reported that over-attention to thoughts and mental processes review in OCD cause disturbance of memory function.

Regarding the increasing prevalence of OCD and more rigorous recognition of factors related to this disorder, in particular childhood schemas, perseverative thinking, and somatoform dissociation, with the aim of appropriate planning for mental health among

patients with OCD and clarifying therapeutic goals, this study was carried out with the objective to compare EMSs, perseverative thinking, and somatoform dissociation among patients with OCD and normal individuals.

Materials and Methods

The current study was a causal-comparative (retrospective) study including all the patients with OCD referred to urban health service centers of Ardabil, Iran, in the second half of 2017. The study population included 30 patients with OCD who were diagnosed by a physician or psychologist using clinical interviews and questionnaires, and they were selected from 17 medical centers of 5 urban health service centers by clustered random sampling method. Moreover, 30 normal individuals who were matched based on age, gender, marital status, and lack of a history of chronic illness were selected randomly among the individuals referred to these centers during the study. The study inclusion criteria were diagnostic criteria of OCD, age of 18 years old, education level of seventh grade, and written consent for participating in the study. Moreover, the exclusion criteria included having psychotic symptoms, substance abuse, other psychological criteria, and personality disorders diagnostic criteria based on the diagnostic interview by the responsible psychologist and physician. The selection criteria for the normal group were complete health and lack of psychiatric and psychological treatments in two past years. After providing required licenses, among the patients who had been diagnosed by relevant centers, 30 patients were selected and 30 individuals were matched as normal group. Then, after stating the study goals and procedure, and getting informed consent from participants, the questionnaires were presented and participants were asked to complete them according to the instructions. Eventually, data were collected and tested by multivariate analysis of variance (MANOVA).

This inquiry was arranged by Hodgson and Rachman[18] with 30 close-ended questions (yes/no). In addition to a total score, this inquiry has several scores for controlling, washing, repetition, and doubt. The main focus of this inquiry was on obsession symptoms and it is particularly appropriate for evaluating treatment effects on these symptoms. The validity of this inquiry has been reported as 85% via retesting method, with a total validity of 84% and the convergence validity presented with Yale-Brown obsessive-compulsive scale.[19] Furthermore, the validity and reliability of this inquiry had been reported well in Iran.[20]

This questionnaire was designed by Young and Brown[21] with 75 questions assigned for investigating 15 EMSs, including emotional deprivation, abandonment/instability, mistrust/abuse, defectiveness/shame, social isolation/alienation, dependence/incompetence, vulnerability to harm, failure, entitlement/grandiosity, insufficient self-control/self-discipline, subjugation, self-sacrifice, emotional inhibition, unrelenting standards/hyper-criticalness, and entanglement. Each of 75 items of this questionnaire could be scored in a 6-point scale. The score obtained by an individual in each schema was achieved by summing the scores of questions related to that schema. High scores showed more presence of maladaptive schema. Validity and reliability of this measure has been reported to be good.[19] Besides, total reliability of this measure by internal sameness method and Cronbach's alpha was up to %70.[2]

This questionnaire was constructed by Ehring et al.[22] in order to evaluate repetitive negative thinking with 15 self-report items. Confirmatory factor analysis (CFA) showed that this questionnaire was formed by a total scale of perseverative thinking and three subscales of core characteristics of repetitive

Table 1. Mean and standard deviation (SD) of early maladaptive schema (EMS), preservative thinking, and somatoform dissociation among patients with obsessive-compulsive disorder (OCD) and normal individuals

Item	Patients with OCD	Normal group
Maladaptive schema	210.64 ± 57.23	130.73 ± 29.25
Preservative thinking	29.88 ± 7.75	9.70 ± 4.92
Somatoform dissociation	45.86 ± 9.03	28.96 ± 6.10

OCD: Obsessive-compulsive disorder

negative thinking (repetitiveness, difficulty with disengagement, and intrusiveness), perceived unproductiveness, and capturing mental capacity. This questionnaire was used for depressive patients and individuals with other mood disorders. Ehring et al.[22] reported Cronbach's alpha of 0.95 for total scale and 0.83 to 0.94 for sub-scales. In addition, good retesting reliability in 4-week interval has been reported. The scale total validity was reported to be 0.86 in Iran.[7]

This questionnaire was designed by Nijenhuis et al.[14] and included 20 items to evaluate the intensity of somatoform symptoms in three areas.[14] These symptoms included anesthesia, amnesia, and indetermination. This measure was with a good validity and reliability and its differential validity was evaluated in a study in which scores of 50 patients with dissociative disorder were compared with 50 patients without this disorder and showed significant difference. There were differences among some subtypes of dissociative disorder; for example, dissociative identity disorder in comparison with personality metamorphosis disorder. The scales of this questionnaire were correlated with one of the mental dissociation scales with a coefficient of 0.71, showing its convergence validity.[14]

In order to analyzing data, descriptive indicators [mean, standard deviation (SD)] and MANOVA were used.

Results

According to descriptive data related to demographic information, 30 patients with OCD (11 men and 19 women) with a mean age of 28.11 ± 6.53 years and 30 normal individuals (20 men and 10 women) with a mean age 27.34 ± 5.21 years participated in the current study. Other information are presents in table 1.

As it is presented in table1, mean and SD of EMSs, preservative thinking, and somatoform dissociation are listed.

Table 2 shows MANOVA results for group effects of maladaptive schemas, preservative thinking, and somatoform dissociation between groups (OCD, normal) [$P < 0.001$, $F (40 \text{ and } 20) = 22.04$].

According to results of MANOVA test, there was significant difference among EMSs (F: 36.10; $P < 0.001$), preservative thinking (F: 44.10, $P < 0.001$), and somatoform dissociation (F: 3.82, $P < 0.001$) between OCD and normal group (Table 3).

Table 2. Multivariate analysis of variance (MANOVA) method used for comparing differences in two groups

Test name	Value	F	DF hypothesis	DF error	P	Eta square
Pillai's trace	0.91	22.04	20	40	0.001	0.91
Wilks' lambda	0.08	22.04	20	40	0.001	0.91
Hotelling trace	10.47	22.04	20	40	0.001	0.91
Roy's largest root	10.47	22.04	20	40	0.001	0.91

Df: Degree of freedom

Table 3. Multivariate analysis of variance (MANOVA) results on the mean values of early maladaptive schemas (EMSs), preservative thinking, and somatoform dissociation in obsessive-compulsive disorder (OCD) and normal group

Item	Sum of squares	Mean of squares	F	Significance level
Maladaptive schema	515.48	515.48	36.10	0.001
Preservative thinking	155.50	155.50	44.10	0.001
Somatoform dissociation	228.15	228.15	3.82	0.001

Discussion

This study was conducted for the purpose of comparing EMSs, preservative thinking, and somatoform dissociation in patients with OCD and normal individuals. The study results showed that there is significant differences among EMSs in patients with OCD and normal persons (Table 3). This finding is along with the findings in other studies.[3-6] Concentered perspective to schemas emphasize on the deepest level of cognition naming EMSs instead of automatic thoughts and underlying propositions. Schemas-centered patterns define the EMSs as wide and comprehensive topics considering self and interpersonal relationships that are formed in childhood and develop by a degree of insufficiency through the life span. This perspective assumes that maladaptive schemas are the main core of personality pathology and psychological disorders such as interpersonal problems, anxiety, personality, and eating disorders.[3,4] Thus, in explaining these findings, it can be claimed that people with OCD have unpleasant experiences in childhood, and their emotionally-affected requirements have not been met. Schemas arise from harmful experiences that grow through childhood to adolescence developed during life. Moreover, these schemas develop and are fixed in early stages of life and are valid representations of unpleasant experiences of childhood, therefore, they are triggering distorted thoughts and insufficient behaviors and main core of OCD. Maladaptive schemas could have negative effects on these patients by worsening worries and these negative effects lead people to seek impossible solutions instead of correct and logical ones, hence preventing improvement and treatment.[5,6]

Moreover, there is a significant difference in preservative thinking between OCD and normal group (Table 3). This finding is along with findings in other studies.[7-11] It could be claimed that one of the cognitive characteristics of patients with OCD is preservative thinking that is a kind of repetitive internal negative discussion about unimportant issues that may escalate patient's condition. Patients with OCD are oversensitive to their signs and symptoms, especially obsessive thoughts and tend to interpret these signs negatively. Such a tendency can activate preservative thinking patterns in patients. Furthermore, preservative thinking is related to repetition of the feelings arising from the lack of solving the problems among patients with OCD and contributes to worsening the obsessive symptoms. This finding implies that attending to thought content and thinking style of patients is important in the treatment process of this disorder.[8,9]

In addition, findings showed that there is a significant difference in somatoform dissociation between OCD and normal group (Table 3). However, studies did not focus directly on this variable, and it might be along with studies by Tolin et al.[15], Van Den Hout et al.,[16] and Lysaker et al.[17] in the lack of information retrieval sub-item. It might be said that obsessive beliefs including over-responsibility and over-estimation of danger or threat in ambiguous condition control thoughts, problems in memory confidence, and information retrieval error (of dissociative

symptoms) are effective in patients with OCD and each of these beliefs causes to repetition and tendency to compulsive ritual behaviors. Moreover, patients with OCD lose their behavioral and mental balance, so that they feel that the certain thoughts, desire, or opinion are false and become so aimless (of dissociative symptoms) that act against their desires; however, they are aware of their action disutility, but cannot stop performing this feeling.[16,17]

Conclusion

In sum, it can be concluded that patients with OCD exhibit a wide spectrum of maladaptive schemas, preservative thinking, and somatoform dissociation in comparison with normal individuals. Therefore, it can be suggested to therapists and clinicians to investigate EMSs, preservative thinking, and somatoform dissociation as part of treatment process, and consider their modulation in their programs to step in mental health enhancement by appropriate training. One of the limitations of the current study was the patients referred to medical centers of Ardabil City. So, cautions should be considered in order to generalize the result. Finally, it can be suggested that other studies be conducted among other clinical and non-clinical groups.

Conflict of Interests

Authors have no conflict of interests.

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A study on the relationship between spiritual health and quality of life in patients with type 2 diabetes mellitus

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Original Article

Abstract

BACKGROUND: Diabetes mellitus (DM) is one of the most common chronic diseases and one of the major health problems in all countries worldwide. Considering the role of mental health in improving the health and quality of life (QOL) of patients with chronic diseases, this study was carried out aiming to determine the relationship between spiritual health and QOL among patients with type 2 DM.

METHODS: This was a correlation descriptive study in which 330 patients with DM were selected using systematic sampling. Demographic, spirituality (Parsian and Dunning), and World Health Organization Quality of Life Brief Version (WHOQOL-BREF) questionnaires were used for collecting data. Moreover, descriptive statistics, Spearman's correlation coefficient, simple linear regression, and multiple regression tests were exploited to analyze the data.

RESULTS: The mean scores of the patients' spiritual health and QOL were 62.04 ± 14.36 and 67.85 ± 11.79, respectively. Spiritual health and all of its four dimensions had a direct and significant correlation with QOL. Meanwhile, two dimensions of self-awareness (r = 0.542) and spiritual needs (r = 0.511) had the highest correlation with QOL in these patients (P < 0.001). Furthermore, spiritual health and its two aspects, including self-awareness and spiritual needs had a significant effect on the QOL of the patients (P < 0.001).

CONCLUSION: The results showed that spiritual health affected QOL of the patients significantly; moreover, two of its dimensions, self-awareness and spiritual needs, had the greatest effect. Therefore, to improve the QOL of such patients, it is necessary to design and implement appropriate training programs with emphasis on these two dimensions.

KEYWORDS: Type 2 Diabetes, Spiritual Health, Quality of Life, Iran

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Introduction

Diabetes mellitus (DM) is the most prevalent metabolic disorder. In fact, as believed generally, it is the most common endocrine disease with the highest rate of threatening the global health.[1] Today DM is the fifth cause of death in western communities and the fourth prevalent cause for referring to a physician. This complication is responsible for 4 million deaths annually, which includes 9% of all

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kinds of death in the world.[2] During the last decades, DM prevalence has been increased remarkably in most of the Middle East countries.[3] According to the reports published by the International Diabetes Federation (IDF), more than 240 million people are suffering from DM and it is estimated that the population of patients with DM will reach more than 330 million individuals by 2025, 75% of whom living in developing countries.[4] In Iran, DM has the highest incidence rate among the non-contagious diseases and it is estimated that more than 3 million people are suffering from this disease. The rate of 7% for prevalence and 13% for hidden DM among the adults together imply that nearly 20% of Iranians suffer from DM or they are about to be affected by this complication.[5]

The swift economic development, urbanism, and also changes in life style have resulted in a decrease in the level of physical activities, in addition to the increased purified carbohydrate consumption, obesity, and aging, which have subsequently led to the increased incidence of DM in the society.[6] DM affects the patients' physical, psychological, individual, and social functions and it was regarded as a serious public health problem threatening the patients' quality of life (QOL).[7]

In medical sciences, the functional QOL is related to the health of individuals, i.e. ones' mental evaluation of his current health condition, sanitary care, and the activities promoting health and allowing people to follow precious goals.[8,9] The World Health Organization (WHO) has defined QOL as the individuals' perception of their own life status in the context of culture and value systems in which they live.[10] This is associated with the individuals' goals, expectations, and concerns; higher QOL was the concern of all researchers in the present century. In fact, health is the cornerstone of QOL, and since the phenomenon of QOL cannot be covered completely in the health system, studying the concept of health in relation to QOL which is defined as the concept of "QOL associated with health".[11]

Moreover, spiritual health is one of the fundamental concepts in chronic diseases which gives meaning and goal to life[12] and it is considered as an important solution to promote health and QOL, so as during the recent years, spirituality along with its relationship with QOL was increasingly emphasized.[13] Spiritual health is defined as one of the unique forces which is composed of physical, psychological, and social aspects[14] and is referred to as one of the basic aspects of health in the definition given by WHO.[15] Studies illustrated that without spiritual health, the other biological, psychological, and social health dimensions could not function properly and the utmost level of QOL would not be achieved.[16] It is claimed that people with chronic illnesses use spirituality as a tool to get along with their illnesses and to bring about a sense of meaning and goal to their life and tolerate their illnesses.[17] Spiritual health and tolerance are leading parameters in evaluating QOL relating to health, treatment tolerance, treatment outcomes, and reflecting the ability of the patient in confronting the illness in the illness-health path.[18] The result of different studies illustrated that spiritual health had positive influence on the QOL of the patients with chronic diseases.[19,20]

Considering the importance of spiritual health and spiritual status in promoting QOL through decreasing stressful experiences like pain and tolerance in chronic illnesses[20], the current study was accomplished aiming at defining the relationship between spiritual health and QOL of patients with type 2 DM referred to the Diabetes Clinic of Tohid Hospital in Sanandaj City, Iran.

Materials and Methods

This was a correlation descriptive study with the statistical population including patients with type 2 DM who referred to the Diabetes Clinic of Tohid Hospital in Sanandaj in 2017, among whom 330 were selected through

systematic sampling.

The inclusion criteria included having informed consent to participate in the study, literacy, age of above 18 years, and having a history of more than one year of type 2 DM. In addition, the study exclusion criteria were dissatisfaction in continuing the study and not fully completing the questionnaires. The sample size included 385 patients which was calculated based on the probability of type I error (5%), the probability of regular referral of patients to the clinic (it was supposed to be 50% of all patients) (P = 0.500), and using Cochran sample size formula. Finally, to avoid missing data, 400 patients were entered into the study.

A demographic questionnaire consisting questions about age, gender, place of residence, level of education, type of employment, state of health insurances, and marital status as well as the questionnaire by Parsian and Dunning used to measure spirituality and its dimensions, were exploited. The second questionnaire included 29 items and the participants had to specify the extent to which they agreed or disagreed with each of the phrases in a 4-point Likert scale (from strongly agree = 4 to strongly disagree = 1). This questionnaire lacked any reverse questions. The questionnaire consisted of 4 subscales as self-awareness, importance of spiritual beliefs in life, spiritual activities, and spiritual needs with 10, 4, 6, and 9 items, respectively, all of which were designed to examine the spirituality level of individuals, and the range of spirituality score was between 29 and 116, as the level of spiritual health increased with increasing the score. In the study by Pirasteh Motlagh and Nikmanesh, the reliability of this questionnaire was obtained using Cronbach's alpha coefficient (0.93) and it was approved.[17]

The World Health Organization Quality of Life Brief Version (WHOQOL-BREF) questionnaire was also used to measure the dimensions of QOL. The questionnaire was employed to evaluate four areas of physical health, mental health, social relationships, and environmental health with 7, 6, 3, and 8 items, respectively. Using a five-option Likert scale, the range of scores was between 24 and 120. The scoring was straightforward for most of the items, and it was calculated inversely only for items 3, 4, and 26. Moreover, the first two items did not belong to any of the areas and were used to assess the health status and QOL in general; therefore, this questionnaire accounted for 26 items in total. After performing the necessary calculations in each area, a score between 4 and 20 was obtained for each area, with 4 and 20 indicating respectively the worst and the best condition for that area. These scores could be converted into a scale of 0-100 in which, the raw score of each area was deducted from the minimum possible raw score (number 4) and the result was divided into raw material range (number 16) and multiplied by 100.[21] Nejat et al. investigated the validity and reliability of this questionnaire in a study, with the reliability of the questionnaire measured using the Cronbach's alpha coefficient and intra-cluster correlation obtained using a re-test. Moreover, the validity of the questionnaire-its ability to differentiate among the participants-was evaluated in healthy and patient groups using linear regression. Correlation matrix of the questionnaire with domains was used to measure the structural factors of the questionnaire. The results indicated validity, reliability, and acceptability of the structural factors of this tool in healthy and patient groups in Iran.[22]

All relevant ethical principles, including the confidentiality of the questionnaires, the informed consent of the participants to take part in the study, and the discretion of leaving the study were respected. The patients responded fully to the questionnaire items and they were assured that all information requested in the questionnaire would be used confidentially. Furthermore, the study was approved with ethics code IR.MUK.REC.1394.296.

Table 1. Demographic information of the participants

Variable		n (%)
Gender	Women	227 (68.8)
	Men	103 (31.2)
Marital status	Single	2 (0.6)
	Married	328 (99.4)
Place of residence	Living in city	280 (84.8)
	Living in village	50 (15.2)
Level of education	Illiterate	209 (63.3)
	Primary level	85 (25.8)
	High school	30 (9.1)
	Associate or bachelor degree	6 (1.8)
Type of employment	Unemployed or housewife	260 (78.8)
	Worker	17 (5.2)
	Employee	2 (0.6)
	Having a governmental job	33 (10.0)
	Retired	18 (5.5)
Having health insurance	Yes	247 (74.8)
	No	83 (25.2)

The data were analyzed using descriptive statistics, Spearman's correlation coefficient, and simple and multiple linear regression tests in SPSS software (version 16.0, SPSS Inc., Chicago, IL, USA).

Results

In this study, 400 patients with type 2 DM were enrolled and 70 patients were excluded due to lack of answering all items of the questionnaires, as well as their unwillingness to participate in the study (response rate was 82.5%). The mean age of the subjects was 59.70 ± 9.70 with a range of 28 to 89 years. In addition, 227 (68.8%), 328 (99.4%), and 280 (84.8%) of the participants were women, were married, and lived in the city, respectively. Moreover, 209 (63.3%), 260 (78.8%), and 247 (74.8%) of the subjects were illiterate, were unemployed or housewives, and had health insurance, respectively. Table 1 demonstrates other demographic information of the patients.

The results showed that the mean scores of patients in four dimensions of spiritual health, including self-awareness, spiritual beliefs, spiritual activities, and spiritual needs were 20.70 ± 5.78, 7.50 ± 2.71, 16.16 ± 3.68, and 17.92 ± 4.59, respectively. Moreover, the mean score of patients in total spiritual health was 62.04 ± 14.36 out of 116, and the mean total score for the QOL was 67.85 ± 11.79 out of 120 as well.

The results also showed that there was a direct and significant correlation between total spiritual health and QOL ($P < 0.001$). Furthermore, there was a direct and significant correlation between the four dimensions of spiritual health and QOL. Meanwhile, self-awareness ($r = 0.542$) and spiritual needs ($r = 0.511$) had the highest correlation with QOL ($P < 0.001$) (Table 2).

Table 2. Relationship between spiritual health and its four dimensions with the patients' quality of life (QOL)

Spiritual health and its four dimensions	R	P
Spiritual health	0.598	< 0.001
Self-awareness	0.542	< 0.001
Spiritual beliefs	0.404	< 0.001
Spiritual activities	0.466	< 0.001
Spiritual needs	0.511	< 0.001

Table 3 showed that the overall spiritual health was related to QOL, and the QOL increased with an increase in spiritual health ($P < 0.001$).

Table 3. Simple linear regression analysis: relationship between spiritual health and quality of life (QOL)

Variable	Non-standardized coefficients		Standardized coefficients	T	P
	Total B	SD	β		
Fixed value	37.450	2.360	-	16.18	< 0.001
Spiritual health	0.490	0.036	0.597	13.48	< 0.001

SD: Standard deviation

Table 4 indicated that the dimensions of self-awareness and spiritual needs were related to the QOL of the patients, so that the patients' QOL increased with the increase in these variables (P < 0.001). However, the dimensions of spiritual beliefs and spiritual activities did not show a significant relationship with the QOL of the patients (P > 0.050).

Discussion

The study findings revealed that the patients' QOL was moderate, which was consistent with the results of the studies conducted by Panahi et al.,[23] Hosieni et al.,[24] Allahbakhshian et al.,[12] Estaji et al.,[25] Jadidi et al.,[26] and Soltani et al.[27] However, this finding contradicted the results of the study by Farhadi et al.,[28] in which the QOL was reported to be below the average level. The reason for this contradiction might be the differences between the two studies such as the difference in the age range of the patients, their area of residence, and the education level as well as the kind of QOL assessment tool.

Moreover, the results showed that the patients' spiritual health level was moderate, which was in line with the results of studies by Allahbakhshian et al.[12] and Jadidi et al.,[26] which respectively examined the spiritual health among patients with multiple sclerosis (MS) and the elderly residents of Kahrizak Nursing Home, Tehran, Iran.

In addition, there was a direct and significant correlation between total spiritual health and QOL levels. Moreover, there was a direct and significant correlation between all four aspects of spiritual well-being and QOL. Meanwhile, self-awareness and spiritual needs had the highest correlation with QOL. Furthermore, significant correlation between the four dimensions of spiritual well-being and QOL suggested that these dimensions, together, could also provide the components necessary to have a favorable QOL in these patients. These results were consistent with the results of the study by Jadidi et al.[26]

Moreover, the results showed that spiritual well-being and two of its aspects-self-awareness and spiritual needs-affected QOL of the patients, so that their levels increased with the increased QOL and vice versa.

These results were in line with the results of the studies by Jadidi et al.,[26] Büssing et al.,[29] Burkhardt and Nathaniel,[30] Finkelstein et al.,[31] Rippentrop et al.,[32] and Johnson et al.[33] To justify these results, it can be stated that spirituality acted as a buffer against physical and psychological problems of the disease.[12]

Table 4. Multiple linear regression analysis: relationship between the four dimensions of spiritual health and quality of life (QOL)

Variable	Non-standardized coefficients		Standardized coefficients	T	P
	Total B	SD	β		
Fixed value	35.866	2.520	-	14.320	< 0.001
Self-awareness	0.728	0.124	0.350	5.850	< 0.001
Spiritual economy	0.292	0.271	0.067	1.102	0.271
Spiritual activities	0.240	0.212	0.075	1.134	0.258
Spiritual needs	0.605	0.147	0.236	4.113	< 0.001

SD: Standard deviation

On the other hand, spirituality could help relieve pain and anxiety in these patients; therefore, spirituality could support them in difficult conditions and encourage them to be hopeful and optimistic about the future of their disease. In other words, higher spirituality could be associated with better health outcomes.

Considering the fact that this study was conducted only among patients with type II DM referred to the Diabetes Clinic of Tohid Hospital in Sanandaj, the results cannot be generalized to other patients with DM in other parts of the country. Therefore, it is recommended to replicate this study in different populations throughout the country. It is also suggested that qualitative studies be conducted to assess how spirituality affects the QOL in these patients. Moreover, the gathered data was self-report and this was one of the limitations of the present study.

Conclusion

In general, the results indicated that the patients had moderate levels of spiritual health and QOL. Considering the correlation between spiritual health, self-awareness, and spiritual needs with QOL, and also the impact of self-awareness and spiritual needs on improving the QOL of the patients, appropriate educational programs with emphasis on these two dimensions are suggested to be designed and implemented in order to improve the QOL of such patients.

Conflict of Interests

Authors have no conflict of interests.

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Identifying the effective factors on depression in patients with multiple sclerosis using structural equation modeling approach: The role of stress, self-esteem, and mindfulness

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Original Article

Abstract

BACKGROUND: The purpose of this study was to identify the effective factors that are related to depression in people with multiple sclerosis (MS).

METHODS: This study utilized a cross-sectional, descriptive, and correlational design. Statistical population of this research included all patients with MS in Mazandaran Province, Iran, in 2016. The sample consisted of 147 patients who were selected via the available sampling method. For data collection, the Depression, Anxiety, and Stress Scale-21 items (DASS-21), Rosenberg Self-Esteem Scale (RSES), and Freiburg Mindfulness Inventory-Short Form (FMI-SF) were administered for all patients. Then the data was analyzed via SPSS and AMOS software using confirmatory factor analysis (CFA) and structural equation modeling (SEM).

RESULTS: The results of the CFA to review the construct validity of the questionnaires indicated that the model was consistent with the data. SEM indicated that self-esteem served as a mediator between both stress and depression. Also, mindfulness had the role of mediator variable in the relationship between self-esteem and depression.

CONCLUSION: This study adds to the existing literature by providing SEM for depression in patients with MS. Theoretical and practical implications of presented results and model are also discussed.

KEYWORDS: Depression, Life Stress, Self-Concept, Mindfulness, Multiple Sclerosis

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Introduction

Multiple Sclerosis (MS) is a chronic,[1] demyelinating,[2] autoimmune,[3] and progressive disease[4] of the central nervous system (CNS). Chronic diseases such as MS which damage the ability to move, work, and well-being of patients due to various symptoms,[1] increase the risk of developing psychiatric disorders, such as depression.[5] Research evidence suggests that the lifelong prevalence of depression following MS is about 50%, so the prevalence of depression in these patients is more than other chronic or neurological diseases.[6] Therefore, the correlation of depression in these patients seems necessary.

In the same vein, patients with MS face a wide range of psychological challenges such as unpredictable illnesses, side effects of medications, interpersonal relationships management, and job difficulties. The degree of success in coping with these challenges is determined by measuring the psychological

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stress of these individuals.[3] Addressing the issue of stress in these patients is very important because it is significantly related to the adaptability of people with this disorder.[7]

In addition, in some studies, stress is known as a strong predictor of the frequency of relapse of depression[8] and increased stress susceptibility, which reduces the response of individuals to positive stimuli, which are among the main symptoms of depression.[9] Some psychological characteristics affect the level of stress in these patients, and several studies have confirmed the role of self-esteem in stress.

Along with the above line, studies show that people with low self-esteem show limited resources and perceive their environment as uncontrollable, which subsequently increases the risk of depression. In particular, high tension levels can reduce self-esteem.[10]

The interactive model of depression claims that tension-related events reverse self-esteem, which subsequently increases the symptoms of depression. Therefore, the effects of tension-related events on symptoms of depression may be affected by self-esteem. In fact, previous research has shown that self-esteem can play a role in interrelationships between stress events and depression.[11]

Also, self-esteem is directly related to depression, and two vulnerability models[12] and the scar model[13] have explained this relationship. As a result, it can be stated that not only self-esteem is directly related to depression and reduces the symptoms of depression, but also indirectly by reducing stress can reduce the symptoms of depression. In addition to the role of self-esteem in the relationship between stress and depression, mindfulness can also effectively address coping strategies and adaptation strategies by encouraging these patients to communicate with the psychological and physical symptoms, taking into account the multiple and varied consequences of MS.[14]

Change in consciousness is inversely related to changes in the level of stress, in which there is a negative correlation between perceived consciousness and tension and subsequent anxiety.[15] As a result, mind consciousness reduces the amount of stress in patients with MS, and subsequently research literature points out that lower levels of tension are associated with decreasing depression.[16] Also, mindfulness can reduce the symptoms of depression by influencing self-esteem. In this regard, the relationship between mindfulness and self-esteem was studied in some researches.[17] According to what has been said, on the one hand, self-esteem and mindfulness are mutually interrelated and on the other hand, are associated with tension and depression at the same time. Accordingly, the main question of the present research is whether the suggested model for depression in patients with MS is fit with the observed data?

Materials and Methods

The purpose of this study was fundamental, and in terms of collecting and analyzing information, it was a descriptive correlational study based on the structural equation modeling (SEM). The statistical population of this study was all patients with MS in Mazandaran Province, Iran, in 2016, which their disease was diagnosed by a neurologist. Given that the path analysis was performed in SEM based on correlation, a total of 100 to 200 samples were sufficient for this purpose.[18] Accordingly, due to the difficulty of accessing all patients, the sampling method was non-random sampling and therefore, 147 people were selected to participate in the study. Including criteria were having reading and writing skills and adequate physical and mental ability to complete research tools, and excluding criteria included the disease duration of less than one year, presenting in an acute or severe stage of the disease, cognitive impairment, or other chronic physical and psychological illnesses. In order to observe ethical considerations, the participants entered the study with informed consent and were ensured that their personal

information would remain confidential.

Collected data were analyzed by SPSS (version 21, IBM Corporation, Armonk, NY, USA) and AMOS (version 23) statistical software.

Depression, Anxiety, and Stress Scale-21 items (DASS-21): The questionnaire includes 21 questions about depression (7 questions), anxiety (7 questions), and stress (7 questions), which is a shortened version of the DASS-42. The scale was first introduced by Lovibond PF and Lovibond SH in 1995. The items of the questionnaire are designed in a Likert scale with options including not at all, low, medium, and high. The lowest score for each question is zero and the highest score is 3. The validity of this questionnaire in Iran Samani and Joukar determined the validity of the test for subscales of depression, anxiety, and tension to be 0.80, 0.77, and 0.77, respectively, and Cronbach's alpha for each of the subscales has been reported as 0.81, 0.74, and 0.78, respectively.[19] Depending on the purpose of this study, the subscales of depression and stress were used. Finally, the rates of depression and tension were calculated separately for each patient. In the present study, Cronbach's alpha for depression and stress subscales was 0.87 and 0.81, respectively.

Rosenberg Self-Esteem Scale (RSES): The questionnaire was designed by Rosenberg in 1965. This scale consists of 10 self-reports that express the overall sense of value or acceptance, positively. Also, it includes a five-point Likert scale (totally agree to completely disagree), ranging from 1 to 5. In addition, the minimum and maximum scores are from 10 to 50, respectively, with higher scores representing high levels of self-esteem in a person. Rajabi and Karjo Kasmai in 2011 calculated the coefficient of female consistency in the student sample as 0.84.[20] In this study, Cronbach's alpha coefficient of 0.83 was used to examine the internal consistency of the questionnaire items.

Freiburg Mindfulness Inventory-Short Form (FMI-SF): We used a short form of the FMI. The questionnaire was compiled by Walach et al. and included 14 questions. The subject was asked to answer questions on a 4-point Likert scale (rarely = 1, almost always = 4). It should be noted that phrase 13 is reversed. The minimum score for this questionnaire is 14 and its maximum is 56. A higher score indicates more mindfulness. In Iran, Ghasemi Jobaneh et al. examined its validity and reliability, and Cronbach's alpha was reported to be 0.92 and the reliability test coefficient was 0.83.[21] In this study, Cronbach's alpha coefficient was 0.86 for internal consistency.

Results

The mean age of participants was 35.22 years with a standard deviation (SD) of 6.33. For gender, 43.5% (64 people) were men and 56.5% (83 people) were women. One-way analysis of variance (ANOVA) was used to examine gender differences with each of the variables. The results of the ANOVA showed that gender had no significant effect on any of the variables used in the analysis ($P < 0.050$). Since the SEM for the distribution of abnormal variables can be sensitive, the Kolmogorov-Smirnov test (K-S test) was used to verify the normal distribution of the data, which was confirmed by the normal distribution of variables.

According to table 1, the results of the correlation test among the research variables indicated that there was a significant correlation between all variables at the level of 0.01.

Table 1. Correlation matrix of research variables

Variables	Stress	Self-esteem	Mindfulness	Depression
Stress	1			
Self-esteem	-0.235*	1		
Mindfulness	-0.215*	0.309*	1	
Depression	0.315*	-0.448*	-0.433*	1

* $P < 0.010$

Table 2. Fitness of the hypothesized model of research with data based on fitness indices

Fitness indices	χ^2	df	χ^2/df	CFI	IFI	GFI	TLI	RMSEA	P
Hypothetical model	916.5	659	1.391	0.859	0.862	0.763	0.850	0.052	< 0.001
Modified model	651.3	623	1.045	0.985	0.985	0.829	0.983	0.983	0.209

Df: Degree of freedom; CFI: Confirmatory fit index; IFI: Incremental fit index; GFI: Goodness of fit index; TLI: Tucker–Lewis index; RMSEA: Root mean square error of approximation

The highest correlation coefficient was related to the relationship between depression and self-esteem. In order to investigate the effective factors in depression in patients with MS, the normalized modeling approach has been used (Table 1).

The quality of the SEM was measured on the proper equality between the data and the hypothesized model. In table 2, Fitness indices represent the weak fit of the hypothesized model with the data. In other words, the values of most indicators indicate that the model needs to be corrected. To this end, according to the output of the initial model, the direct effect of stress on the mind awareness and the error of some of the observable variables associated with each structure were linked together. The results of the modified model showed that fitness indices indicated the optimal fit of the modified research model with data. Therefore, the modified or finalized model had acceptable fitness. Comparison of the indexes of the hypothesized model with the modified model confirmed the improvement of the final model to the hypothesized model.

The direct effect coefficients and total effect are given in table 3. So, based on standard coefficients, the direct effects of stress on depression (β = 0.201, P = 0.252), self-esteem on depression (β = -0.385, P = 0.108), and the effect of mindfulness on depression (β = -0.336, P = 0.122) were significant. Also, the effect of each of the stress (β = 0.267, P = 0.024), self-esteem (β = -0.399, P = 0.103), and mindfulness (β = -0.367, P = 0.110) variables was significant on depression. To test the indirect paths, Sobel test and percentile bootstrap test were used. Due to the low volume of the research sample, the percentile bootstrap test was used because it has high power and reduces the type-1 error.

Table 3. Direct effect and the total effect of predicted variables on the criterion variable

Tested path	Direct effect	Total effect
Stress on depression	0.201*	0.267*
Self-esteem on depression	-0.385*	-0.399*
Mindfulness on depression	-0.336*	-0.367*

* P < 0.010

The indirect path test results with two intermediate variables are reported in table 4. So, for the effect of stress on depression through self-esteem, the lower limit of the confidence interval (CI) was 0.052 and the upper limit was 0.212. For the effect of self-esteem on depression, through the mindfulness, the lower and upper limits of CI were -0.175 and -0.031, respectively. Given that in both cases, zero is placed outside these CIs, these indirect paths are significant. Therefore, the mentioned model indicates the role of interpersonal self-esteem in the relationship between stress with depression and the role of mindfulness in the relationship between self-esteem and depression.

Table 4. Estimation of the indirect path of the model by using percentile bootstrap

Parameters / Indirect path	β	Percentile bootstrap 95% CI		
		Low	Up	P
The effect of stress on depression with mediator of self-esteem	0.127	0.052	0.212	0.010
The effect of self-esteem on depression with mediator of mindfulness	-0.106	-0.175	-0.031	0.011

CI: Confidence interval

Figure 1 shows the direct and indirect pathways of the variables related to the factors influencing depression in patients with MS. According to the present model, 0.41% of depression changes in these patients are explained by three variables: stress, mindfulness, and self-esteem.

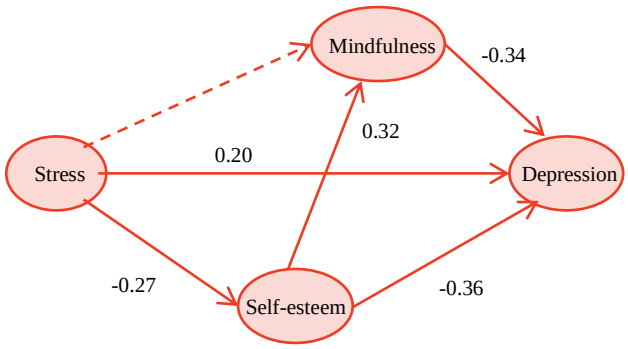

Figure 1. Corridor path coefficients of modified structural research model (dashed lines: deleted path)

Discussion

The purpose of this study was to investigate the relationship between stress, self-esteem, mindfulness, and depression in the form of SEM. The results indicate that assessment of variables relationship as latent variables is stronger than assessing one as an observed variable. This finding challenges the results of research in this field, which sought to investigate this relationship through correlation coefficient based on classical methods of measurement. Structural analysis results showed that stress had a direct positive and significant effect on depression in patients with MS. This finding is consistent with studies conducted by Admon et al.,[8] Pechtel et al.,[9] and Anens et al.[22] In explaining the role of stress on depression, research literature emphasizes the role of biological components. Clinical and paraclinical studies suggest that repeated stresses are responsible for structural and functional changes in specific areas, including prefrontal cortex,[23] which ultimately leads to depression. In addition, self-esteem has a direct effect on the depression of these patients.

These results are consistent with studies by Orth et al.[16] and Bajaj et al.[17] that emphasize the role of self-esteem in depression. The nature of MS is associated with low levels of self-efficacy due to various symptoms and complications[24] and self-esteem of these patients.

Kivimaki and Kalimo[10] argue that individuals with low self-esteem show maladaptive coping styles in confronting life-stressing situations that lead to uncontrollable perceptions of the environment, and the consequence of this low self-esteem is depression. Another finding of this study is the direct effect of mindfulness on the depression of patients with MS. In the literature, the findings are related to Petrocchi amd Ottaviani[23] and Desrosiers et al.[25] In explaining this finding, it can be said that mindfulness in individuals leads to an unresponsive attitude toward distressing thoughts and feelings, which is associated with a reduction in depressive symptoms.[20]

The results of percentile bootstrap show that the indirect effect of stress on depression through self-esteem is significant. These findings suggest that self-esteem is associated with stress and depression simultaneously and plays a mediator role in this regard. The indirect effect of stress on depression is less than the direct effect, which indicates that this is the observed relationship between stress and depression influenced by a third variable called self-esteem. Contrary to what was suggested in the conceptual model of research, mindfulness was not able to play a mediating role in the relationship between stress and depression. In explaining this finding, since the self-report tool was used to measure patients' mindfulness, the non-correlation can be attributed to the inadequacy of the information gathering tool. As a result, in future research, the use of other information gathering tools including interviewing, is necessary to achieve more accurate results. Also, the findings indicated that mindfulness

played a role of intermediate between self-esteem and depression. This result is consistent with the studies by Bajaj et al.[17] In explaining this finding, it can be said that high mindfulness encourages people to keep attention for the experiences of the present, making them less involved with negative beliefs or critical thoughts. As a result of increased consciousness, self-esteem will also increases followed by depression. In general, the results of SEM showed that the hypothesized model of research had a good fit among people with MS, so that the variables in the research model explained 41% of variance of depression variable. Since one-way ANOVA results showed that gender had no significant effect on any of the variables used in the analysis ($P < 0.050$), it is possible to use these variables and the proposed model to identify the factors affecting the depression of these patients, regardless of their gender. Among the limitations of the present study, the low volume of sample members and the sampling method were available. It is suggested that other researchers use a random sampling method to increase the external validity of the research and its generalization of the results to the community of patients with MS in the country. The results of this research can be considered at two theoretical and practical levels. At the theoretical level, the findings of the present study confirmed the assumptions of models related to the relationship between research variables. At the practical level, the results of this study can be an empirical basis for developing educational, interventional, and therapeutic programs.

Conclusion

This study adds to the existing literature by providing SEM for depression in patients with MS. Based on the results of this study, effective factors in the depression of patients with MS should be considered for designing psychological intervention. In this context, the role of stress, self-esteem, and mindfulness are important.

Conflict of Interests

Authors have no conflict of interests.

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Non-complaining female patients with tinea pedis: A clinicomycological study

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Original Article

Abstract

BACKGROUND: Tinea pedis (TP) is a common public problem that its prevalence is raising due to the change in the environment and reduction in immune reactivity of individuals. Fungal species apart from dermatophytes are isolated from cases of TP. In spite of the hidden cases or occult TP, the prevalence of this disease it is growing. In this study, we tried to identify hidden and non-complaining cases of TP among population attending for other complaints rather than foot problem.

METHODS: 46 female patients were included in this study, who attended outpatient department of Erbil Dermatology Teaching Center, Erbil, Iraq, for other dermatological problems. The anamneses were taken, clinical examination was done, and direct microscopy and culture of specimens taken from their foot were carried out.

RESULTS: 24 (52%) patients of the study sample showed positive culture growth. The most common symptoms among culture-positive patients were itching (84.6%) and bad odor of foot (63.6%). The most frequent affected areas among the sample patients were 4th interdigital web of foot (69.6%-76.1%) and heels (82.6%). The most common species identified were Trichophyton rubrum (n = 6, 23.1%) and Trichophyton mentagrophyte (n = 6, 23.1%). The next most frequent was Trichosporon spp (n = 5, 19.2%). Occult TP among culture positives was 16.6%.

CONCLUSION: Prevalence of TP is very high among women (52%). Non-complaining of these women about their conditions reflects lack of foot care awareness that needs improvement.

KEYWORDS: Tinea Pedis, Occult Tinea Pedis, Foot Care

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Introduction

Foot mycosis is a common disease that has a big impact on the public health all over the world.[1] It can interfere with quality of the life of patients because of its characteristic, chronic course, and relapses after treatment trials.[2] Foot mycosis may be either tinea pedis (TP) or tinea ungum. TP prevalence is 15%-25%;[3] it is traditionally thought to be caused solely by dermatophyte species.[4] But new reports proved that TP and similar clinical conditions can be caused by dermatophytes, yeast, and non-dermatophyte molds.[1,5,6]

It is known that dermatophyte species and yeasts are never normal flora of the skin. When the skin, especially the foot, has contact with these microorganisms, they will remain on the skin up to 12 hours as transient normal floras. If they are not removed from the skin mechanically by the means of washing, pedicure, or any other method, they will penetrate the skin and cause TP.[7] Yeast species are known to be opportunistic pathogens that under certain circumstances like immune suppression can cause diseases.[8]

There are many risk factors and daily habits which can stand as facilitating means for the incidence of TP like diabetes mellitus (DM),

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suppressed cellular immunity, sex, age, occupation, climate, walking barefoot, lack of washing feet, ignorance of foot cleaning from debris, wearing slippers, etc.[3,7,9]

Recently, a new term has been emerged as occult TP or asymptomatic TP in some reports that is perceived variably. In some reports, this term stands for the TP in patients who have symptoms on foot subjectively but are objectively without signs or vice versa.[4,10,11] In another study, they regarded occult TP when the patient was without symptoms and there were no signs of this disease.[3]

In this study, we tried to search for cases of occult TP and non-complaining female patients who had TP and attended dermatology outpatient department for other problems rather than TP. To the best of our knowledge, there are no studies done in this direction neither in Kurdistan Region nor in Iraq.

Materials and Methods

This prospective study was conducted on 46 patients. This sample was randomly selected from women attending dermatology clinic of "Erbil Dermatology Teaching Center" in Erbil, Kurdistan Region, Iraq, from January 2018 up to May 2018. The inclusion criteria were women who came to the dermatology center for other problems apart from TP. Patients were excluded from the study if they sought help for their foot problems and those who did not give consents to participate. All the patients were interviewed face to face to go through a developed questionnaire containing sociodemographic data and habits regarded as risk factors. Then the clinical examination was done which consisted of a detailed inspection of the toe web spaces and planter surfaces of the foot with a search for the presence of any sign or symptom of TP.

The specimens were collected for microbiological analysis. For all subjects, a sample from the toe web, sole, and heels skin was collected by scraping with a sterile scalpel. The procedure was performed after cleansing the selected area of the skin with alcohol and allowing it to dry, then scraping of skin surface was done by a sterile scalpel No. 15 blade or glass slide.

Specimens collected were sent for direct microscopy and culture. Microscopic examination of the skin scale material was carried out after preparation with potassium hydroxide solution (20%); then, the slide was treated by a special stain (lactophenol red stain for fungi). If the result of direct microscopy was positive then the remaining specimen was sent for culturing in Petri dishes containing Sabouraud Dextrose Agar (SDA). These Petri dishes then were kept in the incubator at 25 ˚C and examined every 3 days for fungal growth up to 3 weeks. The sample obtained from growth in the culture media was treated by lactophenol red stain for fungi on a slide for good visualization. Both morphology of colonies on the culture media and microscopy were taken into consideration to identify the species of the fungi. For the non-dermatophyte growth, we used Analytical Profile Index (API) 20E, a biochemical test to identify the genus and species of the fungal growth.

All the data obtained were analyzed using SPSS software (version 22, IBM Corporation, Armonk, NY, USA).

Results

A total of 46 female patients were enrolled in the study. Their age ranged between 15-80 years, with the mean age of 39.9 ± 15.3 years. Majority of the patients were housewives consisting of 38 (82.6%) patients and the rest were students (17.4%). Residents of Erbil City were 32 (69.6%) patients and subjects from Erbil peripheries were 14 (30.4%) (Table 1).

Asking about subjective feeling of the patients, 19 (41.3%) of them were asymptomatic. Itching was the only symptom in 14 (30.4%) cases.

Table 1. General characteristics of the patients

Characteristics	Mean ± SD
Age (year)	39.9 ± 15.3
	n (%)
Occupation	
Student	8 (17.4)
Housewife	38 (82.6)
Address	
Inside Erbil	32 (69.6)
Peripheries of Erbil	14 (30.4)

SD: Standard deviation

Burning sensation of the foot was positive in only 3 (6.5%) patients. 10 (21.7%) had both itching and burning sensation at their foot. Regarding family history of TP or other fungal skin infections, it was positive in 10 (21.7%) subjects. 7 patients (15.7%) had contact with animals. DM was present in 9 (19.6%) patients (Table 2).

Table 2. History elements of the patients

History		n (%)
Associated symptoms	No symptoms	19 (41.3)
	Itching	13 (28.3)
	Burning sensation	3 (6.5)
	Bad odor	11 (23.9)
Family history of TP or fungal skin infections	Yes	10 (21.7)
	No	36 (78.3)
History of contact with animals	Yes	7 (15.2)
	No	39 (84.8)
History of DM	Yes	9 (19.6)
	No	37 (80.4)

TP: Tinea pedis; DM: Diabetes mellitus

All patients were asked through a questionnaire about number of activities related to the foot care and hygiene. Wearing only slippers as footwear was observed in 37 (80.4%) patients and the others were using slippers only at home (n = 9, 19.6%). Majority of the subjects in our study sample were never wearing socks (n = 37, 90.4%). Only 9 (19.4%) patients were wearing socks half a day time. No one was using socks all the day. Never drying foot after washing them was a dominant behavior which was consistent in 34 (73.9%) patients. 7 (15.2%) patients were drying their foot sometimes after washing. Walking barefoot in the house was another behavior interrogated which was done never in 9 (19.6%), sometimes in 21 (45.7%), often in 11 (23.9%), and always in 5 (10.9%) patients. Removing excessive skin of the foot (pedicure) by the patients was another question considered, but the majority were not practicing it (n = 30, 65.2%). 12 (26.1%) patients were doing pedicure sometimes. Only 3 (6.5%) patients were doing it always (Table 3).

Table 3. Behaviors of the patients related to the foot hygiene

Behavior		n (%)
Wearing slippers	Always	37 (80.4)
	At home	9 (19.6)
Wearing socks	All the day time	0 (0)
	Half a day time	9 (19.6)
	Never	37 (90.4)
Drying foot after washing	Never	34 (73.9)
	Sometimes	7 (15.2)
	Often	2 (4.3)
	Always	3 (6.5)
Walking barefoot indoor	Never	9 (19.6)
	Sometimes	21 (45.7)
	Often	11 (23.9)
	Always	5 (10.9)
Foot dead skin removing (pedicure)	Never	30 (65.2)
	Sometimes	12 (26.1)
	Often	1 (2.2)
	Always	3 (6.5)

On physical examination of the foot for TP, the foot was divided into interdigital webs, planter surface, and heels. Majority of the patients had no clinical signs in the first and second interdigital spaces (73.9%-78.3%). In the third interdigital web on both right and left sides, about half of the patients had no clinical signs (50%-52.2%). While majority of the subjects were observed to have a sign or more of TP in the fourth interdigital web (69.6%-76.1%). Soles of the patients also predominated to be without any clinical signs of TP (84.8%). Again heels of these women dominantly had signs suspecting of TP (82.6% of patients) (Table 4).

Table 4. Clinical signs on examination of foot of the study patients

Site of examination		No clinical findings [n (%)]	Cracks [n (%)]	Macerations [n (%)]	Flour-like scales [n (%)]	Fine scales [n (%)]	Redness [n (%)]	Ulcerations [n (%)]	Vesicles [n (%)]
First interdigital web	Rt	35 (76.1)	1 (2.2)	0 (0)	1 (2.2)	9 (19.6)	0 (0)	0 (0)	0 (0)
	Lt	35 (76.1)	2 (4.3)	0 (0)	1 (2.2)	8 (17.4)	0 (0)	0 (0)	0 (0)
Second interdigital web	Rt	34 (73.9)	0 (0)	7 (15.2)	0 (0)	5 (10.9)	0 (0)	0 (0)	0 (0)
	Lt	36 (78.3)	0 (0)	5 (10.9)	0 (0)	5 (10.9)	0 (0)	0 (0)	0 (0)
Third interdigital web	Rt	23 (50.0)	0 (0)	17 (37.0)	0 (0)	3 (6.5)	1 (2.2)	2 (4.3)	0 (0)
	Lt	24 (52.2)	0 (0)	13 (28.3)	0 (0)	4 (8.7)	3 (6.5)	2 (4.3)	0 (0)
Fourth interdigital web	Rt	14 (30.4)	0 (0)	18 (39.1)	0 (0)	2 (4.3)	6 (13.0)	5 (10.9)	1 (2.2)
	Lt	11 (23.9)	0 (0)	24 (52.2)	0 (0)	2 (4.3)	7 (15.2)	1 (2.2)	1 (2.2)
Planter surface of foot	Rt	39 (84.8)	1 (2.2)	0 (0)	1 (2.2)	1 (2.2)	0 (0)	0 (0)	0 (0)
	Lt	39 (84.8)	1 (2.2)	0 (0)	1 (2.2)	5 (10.9)	0 (0)	0 (0)	0 (0)
Heels	Rt	8 (17.4)	22 (47.8)	0 (0)	1 (2.2)	15 (32.6)	0 (0)	0 (0)	0 (0)
	Lt	8 (17.4)	20 (43.5)	0 (0)	1 (2.2)	17 (37.0)	0 (0)	0 (0)	0 (0)

Rt: Right foot; Lt: Left foot

Results of the cultures: Generally, 22 (48%) patients had no growth of fungi and 24 (52%) patients showed positive growth of the fungi in the culture media. 2 patients had combined 2 fungal growth. Totally, 9 genus of fungi had been identified, 6 genus of yeast and 3 genus of dermatophytes. Trichophyton rubrum and Trichophyton mentagrophyte were the most common isolated fungi, their frequencies were 6 (23.1%) and 6 (23.1%) of the patients, respectively. Other genus identified were Trichosporon, Cryptococcus neoformans, Candida albicans, Candida tropicalis, Candida albidus, and Trichophyton verrucosum, and their frequencies were 5 (19.2%), 3 (11.5%), 2 (7.6%), 1 (3.8%), 1 (3.8%), and 1 (3.8%), respectively (Tables 5-7).

Table 5. Culture results

Fungal genus isolated	n (%)
Candida albicans	2 (7.6)
Candida tropicalis	1 (3.8)
Cryptococcus albidus	1 (3.8)
Cryptococcus neoformans	3 (11.5)
Rhodotorula mucilaginosa	1 (3.8)
Trichosporon	5 (19.2)
Trichophyton rubrum	6 (23.1)
Trichophyton mentagrophyte	6 (23.1)
Trichophyton verrucosum	1 (3.8)

Table 6. Age group of patients in relation to the results of culture

Age group (year)	Culture results for TP		Total [n (%)]
	Negative [n (%)]	Positive [n (%)]	
15-25	8 (72.7)	3 (27.3)	11 (100)
26-35	3 (37.5)	5 (62.5)	8 (100)
36-45	4 (36.4)	7 (63.6)	11 (100)
46-55	4 (40.0)	6 (60.0)	10 (100)
56 and older	3 (50.0)	3 (50.0)	6 (100)

TP: Tinea pedis

Discussion

In this study, our subjects' age was ranging from 15-80 years. The youngest age group (15-25 years) had least percentage of TP (27.3%), while the 36-45 years age group had the highest (63.6%) prevalence, which is higher than prevalence in a study done by Priya and Janaki[12] (38.46%).

Table 7. Culture result in cases having itching and bad odor in their foot

Fungal species	Itching (n = 13)	Bad odor (n = 11)
No growth [n (%)]	2 (15.4)	4 (36.4)
Positive growth [n (%)]	11 (84.6)	7 (63.6)
Candida albicans	1	1
Cryptococcus albidus	1	0
Cryptococcus neoformans	0	1
Trchosporon spp	2	3
Trichophyton mentagrophyte	4	2
Trichophyton rubrum	3	0

This increasing in the prevalence in this specific age group may be due to reduced immune status and less foot care behaviors at those ages. In our study, the most common symptoms were itching and bad odor of foot. It was found that majority of subjects (84.6%) with itching had positive culture and the most common fungal growth in these patients belonged to dermatophytes. Regarding bad odor, 63.6% had positive culture results and the majority of cultures were yeast genus. These two results suggest for the fungal species-specific symptoms, where itching is a characteristic of dermatophytes and bad odor is from yeasts infections.

The study searched for the correlation of the foot care behavior to the prevalence of TP, but statistically no significant association was found within study sample of positive and negative culture results. However, the prevalence of TP in our study sample is higher than the study done in Canada, where the prevalence was 15%;[10] this may be related to foot care habits, especially using slippers always as footwear compared with other communities. On the other hand, nearly such a high prevalence (40%) was found in a report done in western countries.[12] The most common clinical signs observed by us were fourth interdigital web lesions (69.6% on right side and 76.1% on the left side) and cracked heels (82.6% on both sides). These results emphasize that mentioned clinical signs must be taken seriously in clinical search for TP, also these two locations may be a favorite site for specimen taking for culturing. TP is a fungal infection caused by dermatophytes or yeasts. Its prevalence is suspected to change dynamically because of the change in the environments and risk factors.[1] The prevalence of TP in our study was 52% of the sample which is much higher than the ordinary registered TP (14%-20%).[3] This high rate of TP in our locality is most probably due to poor foot care and too much use of open slippers among women that increases the incidence of contact with soil and environment containing fungi.

Among 24 culture-positive patients, the incidence of occult TP, i.e., asymptomatic cases without any lesions, was seen in 4 (16.6%) cases (Trichophyton rubrum: 1 case, Trichophyton mentagrophyte: 1 case, Trichophyton verrucosum: 1 case, Trichosporon spp: 1 case). This percentage is similar to a study done in Israel.[3] Increased prevalence of occult TP among our patients may be due to reduced immune reactivity locally and also may be due to overuse of water procedure in the local culture.

In our study sample, dermatophytones isolated were half (50%) of all other growth. The rest (50%) was yeast genus. It is shown that the frequency of human infections with non-candida yeast species is increasing recently.[13] In addition, it is worthy to mention that in this study, among 13 cases of yeast-positive TP, 11 (84.6%) were non-candida yeast. Increased percentage of species of yeasts indicates that TP or TP-like conditions can be due to other fungi apart from TP. This may be due to changes in the environment and the habits of the human, in spite of the use of too much antibiotics by women for intercurrent genitourinary infections, which can lead to change in the normal flora of the skin and mucous membranes and finally to reduced immunity.

Limitations of this study were small study sample and lack of some materials needed for more precise identification of the fungi species. In terms of community health in the skin profile, we recommend further studies with larger study sample to identify reliably the causes of the high prevalence of TP among our population.

Conclusion

The prevalence of TP and foot mycosis is very high in our locality among women. Cases of non-candida TP are escalating in the frequency. Awareness of the society, especially women, should be raised for the prevention

and treatment of foot fungal infections. We recommend further study with larger sample size for determination of risk factors increasing the incidence of this disease.

Conflict of Interests

Authors have no conflict of interests.

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Comparison of pulmonary arterial pressure in patients under chronic hemodialysis with and without arteriovenous fistula

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Original Article

Abstract

BACKGROUND: Pulmonary arterial hypertension (PAH) is a progressive disorder and a newly-discovered disease in people with end stage renal disease (ESRD). In patients who are hemodialyzed through arteriovenous fistula (AVF), the incidence of pulmonary hypertension (PHT) is highly probable. Regarding the main role of the AVF in the pathogenesis of PAH and the fact that AVF is the main method of vascular access in patients undergoing dialysis, we decided to investigate pulmonary artery pressure (PAP) in patients under chronic hemodialysis.

METHODS: This was a cross-sectional study. All patients with chronic hemodialysis were divided into two groups according to the status of the fistula. The number of cases examined included 100 patients and data were analyzed by SPSS software.

RESULTS: The most common cause of ESRD was hypertension (HTN) followed by diabetes mellitus (DM), polycystic kidney disease (PKD), urologic disorders, DM and HTN, combined blood pressure (BP) and PKD, renal stones, and other items ultimately. The average creatinine level was 8.59 mg/dl. Therefore, the mean creatinine level of patients, although relative to mode and median, was in any case significantly higher than the mean, which was predictable according to the ESRD community studied. The mean phosphate level was 5.66 mg/dl, and the mean hemoglobin (Hb) was 11.56 g/dl. The mean parathyroid hormone (PTH) and PAP were 558.68 and 27.33 mmHg, respectively, and the mean of ejection fraction (EF) was 50.75%. There was a significant difference between the mean PAP in the two groups (P = 0.048), as it was higher in the AVF group.

CONCLUSION: Results of this study showed that AVF and ESRD both were risk factors for high PAP and PHT.

KEYWORDS: Pulmonary Hypertension, End Stage Renal Disease, Arteriovenous Fistula

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Introduction

Pulmonary artery hypertension (PAH) is a progressive disorder that regardless of its cause of the illness can complicate cardiac, pulmonary, and systemic diseases and also can cause an increase in mortality rate.[1] PAH is a newly-discovered disease in end stage renal disease (ESRD).[2] In patients who are hemodialyzed with arteriovenous fistula (AVF), the incidence of pulmonary artery pressure (PAP) is highly probable.[3] Recently, the prevalence of PAH in patients with ESRD is about 40%-50%[4] and in Iran, it is estimated to be 29%-66%.[5-9] The normal systolic blood pressure (SBP) of the pulmonary artery is 30 mmHg.[10] PAP is supposed to be the systolic PAP of more than 35 mmHg in resting

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position, which is estimated by Doppler echocardiography.[11] This increase in pressure can be due to cardiac, pulmonary, or systemic disorders.[4,12] AVF is the gold standard for hemodialysis, with a success rate of about 84%, which is designed to improve the effectiveness of hemodialysis.[13] The prevalence of AVF in American hemodialysis patients is 60.2%.[14] A good functional AVF is a device that provides a blood flow equivalent to 350-400 ml/min.[15] When chronic kidney disease (CKD) progresses to ESRD, renal replacement therapy (RRT) is essential for survival, and hemodialysis is the most common form of treatment.[16] Cardiovascular events are the cause of most deaths in patients with ESRD.[17] A strong direct relationship between PAP and age, duration of dialysis treatment, urea, blood creatinine, phosphate, and serum parathyroid hormone (PTH) levels, cardiac outflow, and AVF current (which is associated with anemia and increased fluid burden) and an inverse relationship between PAP and serum bicarbonate and ejection fraction (EF) have been reported in patients undergoing hemodialysis.[4] The size and location of AVF are also involved in the PAP enhancement mechanism.[18] PAH improves after renal transplantation, as well as after short AVF compression, which indicates the pathogenicity of ESRD and AVF in PAH.[19] In hemodialysis patients with PAH, there is a significant increase in cardiac output compared with patients without PAP.[4] Right ventricular SBP (RVSBP) more than 50 mmHg is related with a significant reduction in survival after transplantation[20] and the duration of hemodialysis has a strong correlation with RVSBP increase.[21] In fact, ESRD increases the risk of death and cardiovascular disease (CVD) and increases the need for special health care.[22] In clinical experience, blood shunt from right to left and increased pulmonary blood flow (PBF) are common side effects of PAH.[23] PAH can have adverse effects on the quality of life of patients, which is usually very overwhelming.[24] Kidney transplantation significantly reduces the PAP level and makes it close to the normal range.[4] In this study, we try to compare the PAP in patients on dialysis with and without AVF in Tohid Hospital, Sanandaj, Iran, during 2016.

Materials and Methods

This cross-sectional study was conducted on patients with ESRD undergoing hemodialysis in Tohid Hospital in Sanandaj City during 2016. The criteria for entering the study were all people over the age of 18 who have been undergoing hemodialysis for at least 6 months, and the exclusion criteria were the hemodialysis patients under the age of 18 years, hemodialysis patients who had undergone less than 6 months of their dialysis, those with uncontrolled BP (mean BP more than 160/100 mmHg before study entry), pregnancy, and recent malignancy. All patients with chronic hemodialysis were studied in the dialysis ward of Tohid Hospital in Sanandaj, which were 100 people. Patients were classified into two groups according to the status of the fistula. Exposure group (I) was a group of people who used AVF for dialysis, and a non-exposed group (II) was a group of people who used non-AVF method for dialysis (a permanent, temporary, or graft catheter). The case group was divided into three subgroups based on the duration of dialysis:

A: Less than 12 months since the start of their dialysis

B: Between 12-24 months since the start of their dialysis

C: Over 24 months since the start of their dialysis

For both groups, a questionnaire was administered including age, sex, cause of ESRD, history of smoking, duration of dialysis, the presence or absence of AVF, the site of AVF (brachialis or radialis), urea, creatinine, phosphate, PTH, and hemoglobin (Hb) levels

as well as the result of echocardiography, all of which were available in patients' files and were extracted from the patients' files and examination by the student, that the questionnaire was completed based on it (access to patient file information was taken from them). Echocardiography was performed by a cardiologist after a dialysis session to determine PAP for all patients. Basic characteristics and echocardiography variables (EF, PAP) were compared in both groups. Data were entered into SPSS software (version 24, IBM Corporation, Armonk, NY, USA) and analyzed by a statistical consultant for statistical analysis. Descriptive goals were quantitatively calculated with a few statements such as mean, median, faces, and tables showing graphs. For quantitative analytical purposes, the default normality was calculated by t-test and otherwise calculated with non-parametric sampling. Qualitative analytical objectives were calculated using qualitative methods such as logistic regression.

Results

Descriptive results: In this study, 100 patients were examined, that all of them (100%) were valid. Patients with AVF (positive group) included 66 patients (66%), and 34 (34%) patients did not have the fistula. 60% of patients were older than 60 years old and 40% of them aged less than 60 years. 54% of the patients were men and 46% were women. 9% of them had a history of smoking, and 91% had no history of smoking.

Table 1. Frequency distribution of causes of end stage renal disease (ESRD) in cases under study

Patients comorbidities		n (%)	Valid percent	Cumulative percent
Valid	DM	7 (7.0)	7.1	7.1
	HTN	66 (66.0)	67.3	74.5
	DM and HTN	4 (4.0)	4.1	78.6
	PKD	6 (6.0)	6.1	84.7
	HTN and PKD	3 (3.0)	3.1	87.8
	Urologic disorders	6 (6.0)	6.1	93.9
	Renal stone	3 (3.0)	3.1	96.9
	Other	3 (3.0)	3.1	100
	Total	98 (98.0)	100	
Missing System		2 (2.0)		
Total		100 (100)		

DM: Diabetes mellitus; HTN: Hypertension; PKD: Polycystic kidney disease

Table 1 lists the causes of ESRD in which major causes including diabetes mellitus (DM), hypertension (HTN), DM and BP, polycystic kidney disease (PKD), PKD and HTN, urological disorders, and renal stone problems as well as other factors are calculated. The most common cause of ESRD in the current study was HTN with 66% of cases, followed by DM, PKD, urologic disorders, DM and HTN, combined BP and PKD, renal stones, and other items ultimately.

Table 2. Mean and standard deviation (SD) of quantitative variables in the cases

Analytic parameters		Age (year)	Urea (mg/dl)	Creatinine (mg/dl)	Phosphate (mg/dl)	Hb (mg/dl)	PTH (Pg/m)	PAP (Pg/m)	EF (%)
Number	Valid	100.00	100.00	100.00	100.00	100.00	98.00	85.00	93.00
	Missing	0	0	0	0	0	2.00	15.00	7.00
Mean		60.75	78.07	8.59	5.66	11.56	558.68	27.33	50.75
Median		60.50	69.00	7.50	5.10	11.50	380.00	20.00	52.00
Mode		60.00	60.00	9.30	5.10	10.50	380.00	15.00	60.00
SD		13.26	72.12	8.59	4.76	1.68	508.69	14.28	11.04
Variance		175.98	5202.49	73.88	22.68	2.82	258775.06	204.02	122.03
Skewness		-0.04	7.30	8.15	8.87	0.90	1.82	1.03	-1.38
SES		0.24	0.24	0.24	0.24	0.24	0.24	0.26	0.25
Minimum		26.00	23.00	1.80	3.00	8.40	26.00	4.50	10.00
Maximum		94.00	711.00	88.00	51.00	19.30	2400.00	70.00	65.00
Percentiles	25	53.25	55.00	5.82	4.20	10.50	210.00	15.00	45.00
	50	60.50	69.00	7.50	5.10	11.50	380.00	20.00	52.00
	75	69.75	80.00	9.30	6.25	12.80	720.00	37.00	60.00

Hb: Hemoglobin; PTH: Parathyroid hormone; PAP: Pulmonary artery pressure; EF: Ejection fraction; SD: Standard deviation; SES: Standard error of skewness

Table 2 is the most important table for the present study. This table explores all the variables studied in this study. In the case of age, the average age of the subjects was 60.75 ± 13.26 years. The mean of urea was 78.07 ± 72.12. In the case of creatinine, the average creatinine level of 100 patients tested was 8.59 mg/dl. Therefore, the mean creatinine level of patients, although relative to mode and median, was in any case significantly higher than the mean, which is predictable according to the ESRD community studied. The average phosphate in the 100 patients examined was 5.66 mg/dl, and the mean Hb in 100 patients was 11.56. The mean PTH and PAP in 98 patients examined were 558.68 and 27.33 mmHg, respectively, and the EF mean for 100 patients was 50.75%.

Analytical results: T-test showed that there was no significant difference between the mean and standard deviation (SD) of quantitative variables in the two groups (P > 0.05). There was a significant difference between the mean PAP in the two groups (P = 0.04), as it was higher in the AVF group. Analysis of chi-square test showed no significant difference between the duration of dialysis period in patients with chronic hemodialysis in the two groups (P = 0.04).

Discussion

PAH is a progressive disorder that causes cardiovascular, pulmonary, or systemic diseases and mortality, irrespective of its cause.[1] This study was conducted on 100 patients with chronic dialysis in dialysis ward of Tohid Hospital in Sanandaj City, in 2016, in terms of the fistula in one of two groups, to determine the average PAH in chronic hemodialysis patients with and without AVF. In this study, patients with AVF (positive group) included 66 patients (66%), and 34 (34%) patients did not have the fistula. 60% of patients were older than 60 years old and 40% of them aged less than 60 years. 54% of the patients were men and 46% were women. 9% of them had a history of smoking, and 91% had no history of smoking.

Recently, the incidence of pulmonary hypertension (PHT) in patients with ESRD is estimated as 40%-50%.[4] The most important causes of ESRD in the cases studied are DM, HTN, DM and HTN, PKD, HTN and PKD, urological problems, and renal stones. The most common cause of ESRD in the current study was HTN with 66% of cases, followed by DM, PKD, urologic problems, DM and HTN, HTN and PKD, renal stones, and other items ultimately. High BP also increases the risk of hemorrhage from the fistula, in addition to the high BP side effects, and increases the risk of falling. Low BP results in blood thrombosis and fistula disruption due to a decrease in blood flow. In this study, the mean urea was 78.07 ± 72.12. In the case of creatinine, the average creatinine level of 100 patients tested was 8.59 mg/dl. Therefore, the mean creatinine level of patients, although relative to mode and median, is in any case significantly higher than the mean, which is predictable according to the ESRD community studied. The average phosphate in 100 patients examined was 5.66 mg/dl, and the mean Hb in 100 patients was 11.56 g/dl. The mean PTH and PAP in 98 patients examined were 558.68 and 27.33 mmHg, respectively, and the EF mean for 100 patients was 50.75%. Analytical results of this study showed that there was no significant difference between the mean and SD of quantitative variables in the two groups (P > 0.05). There was a significant difference between the mean PAP in the two groups (P = 0.04), as it was higher in the AVF group. Analysis of chi-square test showed no significant difference between the duration of dialysis period in chronic hemodialysis patients in the two groups (P = 0.04).

In a study conducted by Hayati et al., 60 patients undergoing hemodialysis were divided into two groups exactly like the present study. In group 1, PAP was higher than group 2 (P < 0.05). PHT was 86.64% and

0% in group 1 and 2, respectively (P < 0.05). Also, in comparing PAP prevalence in two groups, similar results were obtained in hands. It was concluded that higher PAP was associated with a higher incidence of PHT (P < 0.01). PAP and PHT were significantly higher in patients with ESRD undergoing continuous hemodialysis with AVF. Therefore, AVF was a predictive factor for a higher PAP and an increase in the incidence of PHT in hemodialysis patients,[25] which is somewhat similar to the results of our study. In a study by Acarturk et al., 32 patients under hemodialysis participated in the study, with a median time of 32.7 ± 34.1 months to build a fistula. Anatomical location was vascular dysentery in 24 radial patients and in 8 brachial patients. There was a correlation between mean PAP and cardiac index (r = 0.45, P = 0.01), but other variables such as AVF, calcium phosphate, PTH activity, fistula location, fistula formation time, and PAP were not significantly associated. In 14 patients (43.7%), PHT was diagnosed. Variables were compared between patients with and without PHT. Patients with PHT had a significantly higher cardiac index (P = 0.03), but there was no significant difference between the other variables. The mean PAP was found to be related to the cardiac index (P = 0.01). However, no relation was found between mean PAP and AVF, Hb, calcium-phosphorus, and PTH levels (P = 0.03).[3] In a study by Hemnes et al., 91 patients were divided into two groups: dialysis patients with PHT (40 patients) and without PHT (51 patients). The duration of dialysis was 40.5 ± 47.0 months. DM, HTN, or both were the most common causes of ESRD (54%). Of the 91 patients, 29 patients (32%) had hemodialysis by the catheter. 41 patients (45%) had AVF and 21 patients (23%) had AV grafts. The mean dialysis time in the AV graft or AVF group was not different from that of the catheter dialysis group (P = 0.24). There was no difference in age, sex, and race in patients with PHT and those without PHT. Patients with PHT were more likely to have long-term hemodialysis with an average of 52.6 ± 58.2 months. However, in patients without fistula, it was 31.0 ± 33.7 hours (P = 0.02). In patients with PHT, the mean serum phosphate level (P = 0.04) and calcium (P = 0.50) was lower, but the PTH level was higher (P = 0.40) than the other group, but it was not very significant. However, lower levels of creatinine were significant (P = 0.04).[26]

Conclusion

PAH is a progressive disorder and a newly-discovered disease in people with ESRD. In patients who are hemodialyzed through AVF, the incidence of PHT is highly probable. Regarding the main role of the AVF in the pathogenesis of PAH and the fact that AVF is the main method of vascular access in dialysis patients, we decided to investigate PAP in patients with chronic hemodialysis. The number of cases examined included 100 patients. It is the biggest sample in this topic until now. The most common cause of ESRD was HTN followed by DM, PKD, urologic disorders, DM and HTN, combined BP and PKD, renal stones, and other items ultimately. There was a significant difference between the mean PAP in the two groups (P = 0.04), as it was higher in the AVF group. Finally, our study showed that AVF and ESRD both were risk factors for high PAP and PHT. Of course, to confirm this hypothesis, we need a larger sample size and finally meta-analysis.

Conflict of Interests

Authors have no conflict of interests.

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The role of math learning anxiety, math testing anxiety, and self-efficacy in the prediction of test anxiety

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Original Article

Abstract

BACKGROUND: As a common educational phenomenon, test anxiety is known to be closely related to the academic performance and achievement, and even the future performance of most students. Math anxiety is considered to be one of the possible contributing factors to test anxiety._This study aimed to determine the role of self-efficacy and math anxiety in predicting test anxiety among girl students.

METHODS: In this descriptive-analytic study, the statistical population included all girl students studying in junior year in high schools of Urmia City, Iran, in the academic year of 2016. Of them, 351 students were selected using multistage cluster sampling method. The data were collected using Spielberger test anxiety inventory (TAI), Chiu and Henry mathematics anxiety scale for children (MASC), Sherer et al. and general self-efficacy scale (GSES). The collected data were analyzed using Pearson correlation and stepwise regression tests.

RESULTS: Self-efficacy and math anxiety could significantly predict test anxiety in studied students ($P < 0.010$).

CONCLUSION: The result indicated that increasing self-efficacy decreased math anxiety level and test anxiety in students. The findings imply that self-efficacy improvement and test anxiety reduction should be taken important in educational and counseling services provided for students.

KEYWORDS: Test Anxiety Scale, Mathematics, Self-Efficacy

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Introduction

Test anxiety is an educational phenomenon which is directly related to students' academic performances and achievements, and even their future performances.[1] Test anxiety is taken as a general term referring to a certain type of anxiety or specific social anxiety, making people cast doubt on their abilities and competencies, and reducing their ability to deal with conditions like an exam through which they are supposed to be evaluated. Test anxiety can also be labeled as a form of evaluation anxiety, that is, given the point of its occurrence, testing situation can be seen and assessed as a threat for those experiencing test anxiety. Test anxiety appears due to cognitive problems such as negative and worrisome thoughts regarding the exam under academic pressures. These abnormal reactions to stressful conditions reduce working memory performance.[2]

Test anxiety is one of the most prevalent and acute problems which students encounter

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during educational course negatively affecting their proper assessment by teachers through disrupting students' academic performance.[3] Based on the systematic studies by Sarason and Mendler on test anxiety as an important cognitive and emotional phenomenon, two types of drives are evoked by test situations: first, task-related drives are induced, and then the learned anxiety-related drives are elicited as task-irrelevant behaviors.[4] Spielberger et al. introduced worry and emotionality as main components of test anxiety.[5] Math anxiety is considered as one of the possible contributing factors to test anxiety.

Math anxiety can be defined as one's inability to cope with quantitative situations, including those involving numbers, particularly in mathematics.[6] Anxieties, in general, and math anxiety, in particular, disrupt mental processes and information processing procedures by increasing the distraction and invasion of negative thoughts, resulting in distorted perceptions of events including mathematical phenomena.[7] Math anxiety creates emotional and mental barriers that make it difficult to make mathematics progresses in the future. Accordingly, the student chooses a fatalistic attitude, and tends to get a poor grade on the math exam. This condition is gradually converted into a defective cycle and a self-fulfilling prophecy, such that the mathematical performance is influenced by the math anxiety.[8]

The anxiety reduction leads to better progress in the courses as well as decreased math anxiety. In a longitudinal study, researchers examined how anxiety was related to math performance in second- and third-grade students and showed that math anxiety was significantly related to math performance of 3rd-grade students. They also found that the 2nd-grade's math anxiety influenced math performance in the 3rd grade indicating the need for monitoring and paying attention to math anxiety in early eduaction.[9]

Students with higher anxiety hurriedly judge the whole test upon seeing the first few questions while those with lower anxiety postpone their judgment until the end of the exam.[10] Nowadays, self-efficacy beliefs are known as effective factors contributing to motivational regulation, guiding human behavior, and coping with anxiety and stressful situations.[11,12] Self-efficacy is one's belief in his ability to accomplish a certain activity. Bandura's self-efficacy theory put emphasis on the role of one's self-esteem and confidence in his abilities to display the behaviors expected from him.[11-13] Self-efficacy is one's assurance in displaying a particular behavior appropriate to the encountered situation and expecting its consequences.[14] Researchers have investigated the relationship between self-efficacy and anxiety, including test anxiety.[15-17] They have also suggested self-efficacy as an important factor in academic achievement in specific areas.[18-20]

Even though a little anxiety is necessary for students to perform their tasks and to help them with educational scheduling and further study, excessive anxiety reduces student's academic achievement, leads to discomfort caused by inability to accomplish activities such as math exercises, and results in math anxiety, decreased self-esteem, helplessness, distress and embarrassment, disability, nervous pressure, and lack of concentration which elucidate the necessity of doing these kinds of studies, and the importance of determining the factors contributing to test anxiety. Therefore, given the aforementioned literature review, the main issue of the present study was to determine whether test anxiety can be predicted through math anxiety and self-efficacy.

Materials and Methods

In this descriptive-analytic study, the statistical population included a total number of 1750 girl students studying in the final year of

high schools in Uremia City, Iran, in the academic year of 2016. Of them, 351 were selected according to Morgan's formula using multistage cluster sampling method. Firstly, 8 schools from different geographical areas (2 northern, 2 southern, 2 eastern, and 2 western schools) were selected randomly from 18 girls' high schools located in Uremia, and afterwards 2 classes (each class with 20 students) were selected from each high school. Then, the questionnaires were distributed among students, and completed after obtaining informed consent from them.

Pearson correlation and stepwise regression tests were employed to analyze the data.

Spielberger's Test Anxiety Inventory (TAI): This 32 item-inventory was developed by Spielberg et al.[5] Jadidi et al. determined the validity of Persian version of this questionnaire in a study on 538 high school students in Kurdistan Province, Iran (Cronbach's alpha = 0.761).[21] Correlation coefficients of TAI were 0.82, 0.72, and 0.67 using Sarason test anxiety scale, trait anxiety, and situational anxiety, respectively.[5] In our research, Cronbach's alpha calculated as 0.768.

Mathematics Anxiety Scale for Children (MASC): This 22 item-inventory was developed by Chiu and Henry.[22] To measure the validity of MASC, they calculated its correlation using different tools. They reported 0.92 and 0.71 for the correlation coefficients of this scale using mathematical anxiety scale (MARS) and Sarason's Test Anxiety Scale for Children (TASC), respectively. The reliability of MASC reported by Cronbach's alpha for all subjects was 0.92.[22] In our research, Cronbach's alpha was 0.769.

General Self-Efficacy Scale (GSES): This questionnaire, developed by Sherer et al. is composed of 17 items.[23] Asgharnejad et al. reported the reliability of Persian version of GSES as 0.88 using Cronbach's alpha coefficient.[24] Najafi and Fooladchang determined the reliability of 0.8 and the validity of 0.61 for GSES using Cronbach's alpha and its correlation with self-esteem scale, respectively.[25] In this research, Cronbach's alpha was calculated as 0.871.

Results

The descriptive indices of variables including mean, standard deviation (SD), and variables correlation are shown in table 1.

According to table 1, there was a negative significant relationship between self-efficacy and test anxiety (-0.37), while positive significant relationships was observed between test anxiety and math learning anxiety (0.29), test anxiety and math testing anxiety (0.30), and test anxiety and math anxiety (0.34). Thus, it can be concluded that test anxiety is negatively related to self-efficacy and positively related to math anxiety.

The multiple stepwise regression was used to predict test anxiety from self-efficacy and math anxiety, such that, in the first step, self-efficacy, in the second step, math testing anxiety, and in the third one, math learning anxiety were introduced into the equation and their relationships were preserved in these steps. Table 2 shows the results of regression analysis.

Table 1. Mean, standard deviation, and internal correlations of variables

Variables	Mean ± SD	Correlations				
		1	2	5	4	3
Self-efficacy	33.30 ± 12.07	-0.21*	1			
Math learning anxiety	25.43 ± 8.46	-0.15*	0.45*			1
Math testing anxiety	58.14 ± 18.29	-0.21*	0.81*		1	0.73*
Math anxiety	50.15 ± 11.60	-0.37*	0.29*	1	0.34*	0.30*

SD: Standard deviation

* P < 0.050

Table 2. Summary of regression model, analysis of variance, and statistical characteristics of test anxiety regression on predictive variables

Step	Model	Sum of squares	Degree of freedom	Mean square	F statistics	P	R	R^2	ΔR^2
1	Regression	5943.01	1	5943.01	51.19	0.001	0.37	0.14	0.14
	Residual	36333.04	313	116.08					
2	Regression	8547.35	2	4273.67	39.53	0.001	0.45	0.20	0.06
	Residual	33728.70	312	108.10					
3	Regression	9163.02	3	3054.34	28.68	0.001	0.46	0.22	0.02
	Residual	33113.04	311	106.47					

Criterion variable was test anxiety in all steps; and predictive variable(s) was self-efficacy in step 1, self-efficacy and math testing anxiety in step 2, and self-efficacy, math testing anxiety, and math learning anxiety in step 3.

Based on table 2, it can be concluded that 0.22 of the variance of the criterion variable is explained by total predictive variables, namely, three mentioned predictive variables explain 22% of the test anxiety score, out of which, 14% is explained by self-efficacy; while math testing anxiety and math learning anxiety predict 6% and 2% of the variance, respectively. The observed F level for predictive variables is significant at the level of 0.001. This finding suggests that these three variables can significantly predict test anxiety.

In table 3, standardized and unstandardized regression coefficients and their significance are presented.

According to table 3, the effect of math testing anxiety (r = 0.19) and math learning anxiety (r = 0.14) on test anxiety are positive and significant while the effect of self-efficacy (-0.32) on this variable is negative and significant; so, it can be said that increasing in self-efficacy and decreasing in math anxiety result in test anxiety reduction.

Discussion

The main objective of this study was to determine the test anxiety using math anxiety and self-efficacy. In this regard, the data were analyzed using Pearson correlation and multiple stepwise regression tests. The results showed that math testing anxiety and math learning anxiety explained 6% and 2% of the variance of test anxiety, respectively. The observed F level for predictive variables was significant at the level of 0.001 which is consistent with the findings of Rekabdar and Soleimani.[26] No study was found to be inconsistent with this finding. It can be said that studies on anxiety and individuals' performances convey the evidence that depression anxiety and, in general, psychological pressures reduce one's effective behavior in the face of different realities, especially when the requested assignments need more attention and focus. A student, who becomes anxious during a math activity, cannot think properly and organize his own knowledge into performance; so he/she often intentionally puts more effort into his activities; even though his efforts do not result in the proper learning of mathematical concepts which ultimately makes her/him desperate and depressed, and math anxiety causes fear and worry about failure in the exam.

Table 3. Stepwise regression coefficients of test anxiety on predictive variables

Indices / Variables	B	Standard error b	β	T	P
Constant (a)	53.18	3.40		15.62	< 0.001
Self-efficacy	-0.32	0.05	-0.32	-6.15	0.001
Math learning anxiety	0.13	0.05	0.14	2.40	0.020
Math testing anxiety	0.26	0.07	0.19	3.40	0.001

The results also showed that self-efficacy predicted 14% variance of test anxiety. The observed F level for predictive variables was significant at the level of 0.001. This finding is consistent with that of the studies conducted by Jex and Bliese[15] and Janice.[16] It is enough to explain this finding by the fact that people with higher self-efficacy beliefs have lower test anxiety because one' s perception of his abilities is one of the most important factors in dealing with stressful situations.[15] On the other hand, higher self-efficacy increases one's interest, effort, endurance, and diligence in performing assigned tasks, and one's confidence in his ability;[16] which, in turn, lower one's anxiety. Individuals with higher self-efficacy employ cognitive and metacognitive strategies, and diligence in doing their tasks. Therefore, self-efficacy plays an important role in academic achievement. Mehrabizadeh Honarmand et al. showed that test anxiety is negatively related to self-efficacy.[27]

According to Bandura, individuals' knowledge, skills, and previous achievements do not predict their future performance, but their beliefs regarding their skills and abilities affect their performance.[13] Alborzi and Seif in a study on students pointed out that there was a negative relationship between test anxiety and academic achievement in statistics.[28]

Conclusion

Paying attention to people's beliefs and perceptions of their abilities is very effective in improving their mental health and also their future academic and professional performances. It is recommended that, besides incorporating courses in students' curriculum, teachers receive adequate training and employ teaching methods contributing to self-efficacy improvement and the development of a strong sense of competence in order to reduce the level of test anxiety caused by low self-efficacy and to decrease the sense of incompetence in the students significantly. It is also suggested that future studies be conducted among boys and also students of both sexes studying in other educational levels.

Conflict of Interests

Authors have no conflict of interests.

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The relationship between religiosity with stress, anxiety, and depression among the students in Kurdistan University of Medical Sciences, Iran, 2017

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Original Article

Abstract

BACKGROUND: Religion affects all aspects of the life. One of the most important aspects of human health is its mental health, and how it gets affected by stress, anxiety, and depression. The purpose of this study was to evaluate whether there was any relationship between religiosity with stress, anxiety, and depression among the students of Kurdistan University of Medical Sciences, Iran.

METHODS: This cross-sectional study was conducted at Kurdistan University of Medical Sciences in 2017. The total number of 282 students were selected using a two-stage stratified sampling method to fulfill univariate religiosity questionnaire and Depression, Anxiety and Stress Scale-21 (DASS-21). All statistical analysis was performed using SPSS software.

RESULTS: The mean age of participants was 22.34 ± 3.05 years. 70.9% of participants were women, and 92.2% were single. Out of four dimensions of religiosity, only ritual dimension was found to have a significant correlation with stress (P = 0.030). The correlation between other dimensions of religiosity (belief, emotional, and consequential) and aspects of mental health found to be not statistically significant (P > 0.050).

CONCLUSION: Based on the findings of this study, religious activities can reduce the stress of individuals. Designing non-syllabus interventions is recommended in order to increase religious activities in order to improve students' mental health.

KEYWORDS: Religion, Mental Health, Students, Iran

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Introduction

Religion is "believing in a creator for the world and human, and practical instructions in accordance with these beliefs,"[1] and religiosity is to adhere to religion. Research shows that religiosity affects almost all aspects of life. Studies show a relationship between religiosity with mental health,[2,3] self-esteem,[4,5] life satisfaction,[6] happiness,[6,7] self-actualization,[8] sports participation,[9] and academic achievement,[10-12] and it promotes the level of these variables. Mental health and its related factors such as depression, anxiety, and stress are a research topic received a great attention over the past decades.

Many studies conducted on the relationship

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between spirituality and mental health show a positive effect of religion.[13,14] It has been found that religiosity is linked to greater spirituality and mental health in individuals.[15] A reverse and significant relationship has been also reported between religiosity and spirituality with mental health components such as anxiety, depression, and stress.[16,17] Mousavi showed that some religiosity elements were inversely related to mental health components, and all elements lead to reduction of depression. In addition, the components of religious belief and commitment to religious duties reduced the anxiety.[2] Ghodrati and Khormaie study on the relationship between religiosity and mental health in adolescents indicated a higher level of religiosity to be connected with higher level of mental health. This connection was established between all the components of religiosity (religious commitment, religious beliefs, and religious emotions) with four components of general health (physical complaints, anxiety, depression, and incompatibility).[18]

Among various classes of a society, healthy students are important in terms of their potential position to rule the country in future. Like other students, mental health of the students in medical sciences and community health require more attention. Students constantly face many stressors which may overwhelm their physical and mental health leading to the development of some issues such as depression, anxiety, and sleep disorders[19] that can affect their educational achievement.[20] High levels of stress, anxiety, and depression can negatively affect health, quality of life, academic achievement, and the ability of students to accept their professional roles.[21] Therefore, identifying effective factors in improving mental health and adopting appropriate strategies for their improvement is essential. Therefore, the purpose of this study was to determine the relationship between religiosity with stress, depression, and anxiety among students of Kurdistan University of Medical Sciences, Sanandaj, Iran, in 2017.

Materials and Methods

The participants of this study were 282 students of Kurdistan University of Medical Sciences who had at least one year of accomplishment in 2017. Students were selected from five university faculties using a two-stage stratified sampling approach. Within each faculty, of each academic year, proportion to enrolment size, a number of students were selected to fulfill Glock and Stark questionnaire[22] for religious data, and Depression, Anxiety and Stress Scale-21 (DASS-21) psychological information.

Glock and Stark questionnaire was designed to measure religious beliefs and religiosity.[22] The questionnaire involves five dimensions of religiosity, Ideological (beliefs), Ritualistic, Experiential (emotions), Consequential, and Intellectual (knowledge) aspects. Since it is believed that the knowledge of religious affairs is not a sign of religiousness, and teaching of religious affairs is a part of the educational system, the intellectual dimension were omitted from the questionnaire in Iran. Thus, the questionnaire reduced to 26 questions with four dimensions. The measurement scale of questionnaire is a five-point Likert scale ranging from strongly agree to strongly disagree (strongly agree, agree, neutral, disagree, and strongly disagree). A score of 0-26 indicates poor religiosity, 26-78 moderate religiosity, and 78-104 high religiosity. The overall Cronbach's alpha of this questionnaire was calculated as 0.83 in an Iranian population. It was 0.93 for belief dimension, 0.82 for emotional and, consequential dimensions, and 0.89 for ritual dimension.[23]

The DASS-21 questionnaire is a shortened version of the DASS-42. The questionnaire has 21 questions that measure three dimensions of stress (7 questions), anxiety (7 questions), and depression (7 questions).

Table 1. Interpretation of subscales scores of Depression, Anxiety and Stress Scale-21 (DASS-21)

Degree / Subscale	Normal	Mild	Moderate	Severe	Extremely severe
Stress	0-14	15-18	19-25	26-33	34 and more
Anxiety	0-7	8-9	10-14	15-19	20 and more
Depression	0-9	10-13	14-20	21-27	28 and more

The measurement scale of questionnaire is a four-point Likert scale from 0 to 3 representing at all, low, high, and a very high level. For each dimension, scores are summed and multiplied by 2. The final score is interpreted according to table 1. The reliability of the DASS-21 questionnaire in Iranian population was evaluated through internal consistency with Cronbach's alpha calculation. The calculated Cronbach's alpha for depression, anxiety, and stress subscales was 0.77, 0.79, and 0.78, respectively.[24]

Analyzing descriptive statistics was done by calculating the frequencies and related ratios, mean, and standard deviation (SD), and analytical statistics done using t, Pearson correlation coefficient, multivariate regression due to several dependent variables (stress, anxiety, and depression) and the possibility of correlation among these dependent variables, and also the univariate analysis of variance using SPSS software (version 21, IBM Corporation, Armonk, NY, USA).

Results

The characteristics of 282 participants in the study are presented in table 2. The mean age of participants was 22.34 ± 3.25 years, and 70.9% of them were women, 92.2% were single, and 63.8% were undergraduate students.

Table 3 represents the mean and SD of the students' scores for both religiosity and DASS-21 subscales in terms of their gender. The mean score of religiosity was 67.19 ± 13.74 which indicated an average level of religiosity. The mean score of stress, anxiety, and depression subscales were 13.65 ± 9.22, 9.75 ± 8.21 and 9.23 ± 8.57, respectively indicating a mild level of stress, anxiety, and depression.

Table 2. Distribution of the demographic variables of the participants

Variable	n (%)
Gender	
Girl	200 (70.9)
Boy	82 (29.1)
Marital status	
Single	260 (92.2)
Married	22 (7.8)
Grade	
Associate degree	24 (8.5)
BSc	184 (65.2)
MSc	10 (3.5)
MD	60 (21.3)
PhD	4 (1.4)
School	
Dentistry	34 (12.1)
Medicine	57 (20.2)
Paramedicine	41 (14.5)
Nursing and Midwifery	90 (31.9)
Health	60 (21.3)
Variable	**Mean ± SD**
Age	22.34 ± 3.05

BSc: Bachelor of science; MSc: Master of science; MD: Doctor of Medicine; PhD: Doctor of philosophy; SD: Standard deviation

Table 4 reports Pearson correlation between religiosity subscales and mental health. Negative correlation between dimensions showed a week reverse association between all subscales.

To investigate the significance of independent and dependent variables, multivariate regression analysis was used. The result of this analysis showed that between the four dimensional religiosity, only the relationship between ritual dimension with mental health dimensions was significant (P = 0.037) (Table 5).

Finally, an analysis of variance of a variable showed that there was a significant relationship between religious dimension with stress (P = 0.030) (Table 6).

Table 3. The mean scores of subscales in gender subcategories

Subscales	Overall (Mean ± SD)	Women (Mean ± SD)	Men (Mean ± SD)	t	P
Belief dimension	22.49 ± 4.45	22.84 ± 4.12	21.63 ± 5.10	2.09	0.019
Emotional dimension	18.23 ± 4.00	18.40 ± 3.74	17.82 ± 4.55	1.11	0.133
Consequential dimension	13.56 ± 3.59	13.82 ± 3.55	12.90 ± 3.60	1.97	0.025
Ritual dimension	12.91 ± 5.84	12.17 ± 5.09	14.69 ± 7.07	-3.35	< 0.001
Stress	13.65 ± 9.22	14.15 ± 8.99	12.42 ± 9.68	1.43	0.077
Anxiety	9.75 ± 8.21	9.77 ± 8.23	9.71 ± 8.23	0.06	0.477
Depression	9.23 ± 8.57	9.31 ± 8.43	9.04 ± 8.96	0.24	0.406

SD: Standard deviation

Table 4. Correlation coefficients of religiosity subscales and mental health

Subscale	Stress	Anxiety	Depression
Belief dimension	-0.113	-0.061	-0.111
Emotional dimension	-0.123	-0.061	-0.120
Consequential dimension	-0.190	-0.114	-0.163
Ritual dimension	-0.199	-0.085	-0.104

Discussion

The results of this study showed that the degree of religiosity among students of Kurdistan University of Medical Sciences was 79.79%. This is consistent with Khazaei et al. study in which the rate of religiosity reported among medical students in Kermanshah, Iran (79.10%).[25]

Table 5. Multivariate regression results to assess association between religious dimension and mental health dimensions

Subscales of religiosity	F	P
Belief dimension	0.124	0.946
Emotional dimension	0.287	0.835
Consequential dimension	1.298	0.275
Ritual dimension	2.872	0.037

One reason for this similarity can be due to the social and cultural homogeneity of two provinces.

Table 6. Results of single-variable variance analysis of variance ritual dimension with mental health dimensions

Subscales of mental health	F	P
Stress	4.773	0.030
Anxiety	0.579	0.447
Depression	0.185	0.667

In this study, comparison of mean scores of religiosity in different sex groups did not show a statistically significant differences. However, the average score of religious values in girls was higher than that of boys in Khazaei et al. study.[25] In addition, the study of religiosity subscales in sex groups was shown in our study that, the mean scores of beliefs and consequential dimensions were significantly higher in girl students compared to boy students and the mean scores of religious dimension were significantly higher in boy students than girl students.

The findings of the current study showed that the severity of depression and stress was at normal level among the students of Kurdistan University of Medical Sciences, and the severity of anxiety was mild; and the comparison of mean score of health components in sex groups in all subscales did not show a significant statistical difference. This finding is consistent with Kashfi et al.[26] results but inconsistent with Khazaei et al.[25] findings. In the recent study, anxiety was associated with gender and anxiety, and was higher in girls than in boys.

We also found an inverse but weak relationship between all subscales of religiosity with mental health subscales. This means that higher degree of religiosity may can improve the mental health of students. Stronger inverse relationship between mental health components with religiosity subscales has been reported in various studies.[25,27,28] In this study, only the relationship between religious

dimension and stress was statistically significant. In study by Salehi and Mosalman,[27] the relationship between religious attitude with stress and depression was significant, while there was no significant relationship with anxiety component. In a study by Amrai et al., they showed a significant relationship between religious attitude with anxiety and depression.[28] A significant relationship was found between the component of anxiety and religious values in the study of Khazaei et al.[25] and the component of anxiety with the belief dimension in the study of Vasegh and Mohammadi.[29] Bahrami Ehsan study showed a significant relationship between religious orientation and anxiety.[30] In the Taheri-Kharameh et al.[31] study, there was a significant relationship between general religiosity and depression, and Musarezaie et al.[32] found a significant relationship between religious dimension or commitment and prayer privilege priority with depression. The results of these studies are consistent with what has been mentioned in the Qur'an as the most important source of guidance and education for the human community. The Holy Qur'an is full of verses (verses 48 and 82 of Surah al-A'am, and verse 28 of Raad), which deals with the relationship between various aspects of religiosity with the components of health.

Conclusion

The findings of this study showed that the majority of medical students had a moderate level of religiosity and good mental health. In addition, increasing the dimensions of religiosity is associated with the reduction of mental health components, especially in this regard, the ritual dimension in decreasing stress and ultimately improving mental health plays a more effective role. Therefore, the design of non-syllabus interventions involving all religious dimensions is recommended for improving students' mental health.

Conflict of Interests

Authors have no conflict of interests.

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The men as victims of domestic violence, and the role of demographic variables: A cross-sectional study

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Original Article

Abstract

BACKGROUND: This study aimed to examine the prevalence of spouse abuse against men and the demographic variables affecting it in Savojbolagh County, Iran.

METHODS: This was a cross-sectional study on all married men living in Savojbolagh County. The study population consisted of men employed in rural and urban healthcare centers as well as governmental and private companies in this province; 292 participants completed the demographic form and Man Abuse Questionnaire. This questionnaire assesses the different forms of abuse such as emotional, physical, sexual, neglect, and verbal abuse. The results were analyzed using descriptive statistics and correlation method in SPSS Software.

RESULTS: The majority of victims had experienced minor abuse (11.6%) including emotional abuse (15.8%), verbal abuse (13.7%), active aggression and sexual abuse (10.3%), and passive aggression and domination (9.2%). Moreover, 6.2% of the participants had experienced medium rate of abuse including passive aggression (8.6%), active aggression and sexual abuse (7.2%), domination (5.5%), verbal abuse (3.8%), and emotional abuse (3.1%). The remaining 1% had experienced severe abuse the most common forms of which were verbal abuse and domination (1.4%) and emotional abuse (1.0%). The highest frequency of spouse abuse occurred in the first 5 years of marriage among laborers. Moreover, there is a reverse relationship between increasing age of men, marriage duration, and education level and man abuse. However, man abuse had a positive relationship with low income.

CONCLUSION: The most prevalent form of violence by women against men in Iran included emotional abuse, verbal abuse, behavioral aggression, and sexual abuse with a severity rate of low to medium. Higher age of men, higher education level, longer marriage duration, sufficient income, and suitable age gap were factors that prevented women's violence against men.

KEYWORDS: Spousal Abuse, Partner Abuse, Wife Abuse, Domestic Violence

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Introduction

Domestic violence as a social health problem is defined as violence of family members against each other.[1] This violence is a combination of verbal, emotional, and aggressive behaviors as well as physical violence[2] including child abuse, elder abuse, and intimate partner violence (IPV).[3] Domestic violence comprises verbal, emotional, physical, and sexual abuse against a spouse. Among these forms of domestic violence, verbal violence is one major method broadly used by women because they can insult their husband, ruining his personality in the presence of their children[4] and imposing their dominance and authority over their husband.[5]

Conducted studies have implied increasing

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domestic violence in different societies.[6] Numerous studies on spouse abuse prevalence have defined it as abuse of women by men. Some studies in the USA showed that 1 in 4 women have experienced physical and sexual abuse by their husband.[7] Moreover, in the UK, 1 in 5 women are victims of domestic violence.[8] In Eastern Asian countries such as India, the rate of domestic violence has been reported as 14.31% and that of mental, physical, and sexual abuse has been reported as 10.8%.[9] In Western Asian countries such as Iran, the rate of domestic violence has been reported between 35 and 85%.[10,11]

Another form of spouse abuse is the abuse of men entailing emotional, physical, and sexual abuse, besides neglect of spouse needs. This form of abuse occurs in almost all societies, is less reported due to shame.[12,13] Therefore, it is hardly possible to present an accurate report in this case. The few studies about women's violence against men indicate an increasing number of men as victims of domestic violence with a change in communities, values, and norms.[14] For examples, about 600.000 men have been victims of violence during 2012 in Britain.[15] Furthermore, a study in Zambia (Demographic and Health Survey, 2013-2014) showed that 9% of women living in this country beat their husbands and 19% of violence occurs when the husband is drunk. In addition, 20% of women use violence as a self-defense strategy against abusive men.[16] Another study conducted in the USA showed that 7.6% of men suffer from domestic violence.[17] According to limited studies in Iran on this subject, only one study found physical violence (26.5%), emotional abuse (59%), sexual abuse (19.1%), and biting (13.5%) among men.[18]

Studies also indicate that various factors such as marital conflicts,[19,20] unmet emotional needs,[21] young age of couples, unemployment, low education level, substance abuse, psychological problems, having a child, and spouse's violence affect the abuse of men.[3,22] Moreover, the abuse of men is more common among the working class with lower economic status.[23] Considering the negative outcomes of domestic violence (violence against men) such as physical harms, psychological problems,[24,25] reduced self-esteem among victims,[26,27] divorce, and offense,[28] and the lack of adequate information on this topic, this study aimed at surveying the abuse of men and the demographic factors affecting it.

Materials and Methods

This was a descriptive and cross-sectional study. The study participants were married men supported by healthcare centers and governmental or private companies in Alborz Province, Iran. The study inclusion criteria consisted of being married, having grade-b literacy, at least 3 years' of marital life, and willingness to participate in the study. The questionnaires were distributed among 400 men; 292 men completed the questionnaires while the rest were incomplete, and thus, excluded. Data were analyzed using descriptive statistics in SPSS software (version 22, IBM Corporation, Armonk, NY, USA).

Two questionnaires were used in this research. The first questionnaire was a demographic questionnaire that measured items such as age, gender, education, occupation, and marital life duration. The second questionnaire used in this study was Ghahari's Man Abuse Questionnaire, which contains 50 questions scored based on a 4-point Likert scale (always: 3; mostly: 2; sometimes: 1: never: 0). The questionnaire assesses 5 dimensions of man abuse including active aggression and sexual abuse, emotional abuse, verbal abuse and neglect, passive aggression, and domination. These 5 factors could explain 67.05% of total variance. The severity of abuse could be assessed by the frequency of abuse in a day. The Cronbach's

alpha of this questionnaire was obtained at 0.98 indicating the high internal consistency of the questions.

Results

The statistical population of the study comprised married men who had referred to rural and urban healthcare centers in addition to employees working in public or private companies in Savojbolagh County, Alborz Province, Iran. Of the 400 study participants, 292 answered the questionnaires completely. The participants were in the age range of 20-59 years with an average age of 35 ± 8.13. Moreover, 24% of respondents had pre-diploma education, 50% had a diploma and associate degree, and 26% had a BSc. In addition, 89% of the participants were living in the city and 11% in villages. In terms of occupational status, 4% were unemployed, 4% retired, 56% laborers, 25% employees, and 10% self-employed. In terms of marital status, 32%, 34%, 16%, 18% of the participants had married 5 years ago, 5-10 years ago, 10-15 years ago, and more than 15 years ago, respectively. Moreover, 91% of them had previously been in a marriage, and 95% had their first marital experience. In addition, 23% had married a relative and half of them had married individuals of a similar culture and ethnicity. In terms of residential status, 47% had a private house, 44% were tenants, and 9% were living in their parents' home. In terms of income, 58%, 37%, and 5%, respectively, had an income of lower than 1 million toman (Iran's currency), 1-2 million toman, and above 2 million toman. Only 5% of the participant had psychiatric problems and less than 3% reported sexual problems. Among the participants, 22% were smokers, 7% consumed alcohol, and 10% were substance abusers. The highest prevalence rates obtained were related to the age group of 30-39 years (48.28%), marital durations of 5-10 years (33.5%), and laborers (60.95%).

As indicated in table 1, all skewness and kurtosis values for spouse abuse and its subscales were obtained between -2 and 2, indicating the normality and symmetric distribution of variables.

Table 2 shows that the majority of victims had experienced minor abuse (11.6%) including emotional abuse (15.8%), verbal abuse (13.7%), active aggression and sexual abuse (10.3%), and passive aggression and domination (9.2%). Moreover, 6.2% of the participants had experienced moderate abuse including passive aggression (8.6%), active aggression and sexual abuse (7.2%), domination (5.5%), verbal abuse (3.8%), and emotional abuse (3.1%). The remaining 1% of the subjects had experienced severe abuse among which the most common abuses included verbal abuse and domination (1.4%) and emotional abuse (1.0%).

Table 1. Descriptive indicators of spouse abuse and its subscales in the subjects

Variable / Indicator	Active aggression and sexual abuse	Emotional and social abuse	Verbal abuse and neglect	Passive aggression	domination	Total percent of spouse abuse
Mean	5.59	6.35	3.42	1.80	1.76	18.94
Standard deviation (SD)	9.05	7.25	5.05	3.09	2.49	25.15
Skewness	1.65	1.21	1.52	1.80	1.52	1.39
Standard error of skewness	0.14	0.14	0.14	0.14	0.14	0.14
Kurtosis	1.63	0.65	1.42	2.67	1.71	0.76
Kurtosis (SD)	0.28	0.28	0.28	0.28	0.28	0.28
Minimum	0	0	0	0	0	0
Maximum	41.00	32.00	24.00	17.00	11.00	119.00

Table 2. Prevalence of spouse abuse and its subscales in the studied subjects

Score	Active aggression and sexual abuse		Emotional and social abuse		Verbal abuse and neglect		Passive aggression		Domination		Total spouse abuse	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Missing	239	81.8	234	80.1	237	81.2	238	81.5	245	83.9	239	81.8
Mild	30	10.3	46	15.8	40	13.7	27	9.2	27	9.2	34	11.6
Average	21	7.2	9	3.1	11	3.8	25	8.6	16	5.5	18	6.2
Severe	2	0.7	3	1.0	4	1.4	2	0.7	4	1.4	1	0.3

To examine the relationship between man abuse and some demographic variables, Pearson and Spearman's correlation coefficients were calculated. The results are reported in table 3.

Based on the relation between age, marriage duration, and spouse abuse, man abuse is reduced with increase in age and marriage years. The highest rate of man abuse with mild intensity was observed in the age group of 20-29 years (72.41%). The most common abuses in the age group of 20-29 years were verbal abuse and neglect (43.63%) as well as active aggression and sexual abuse (37.73%) with mild intensity (Table 4).

According to results presented in table 4, the highest frequency of spouse abuse occurred in the first 5 years of marriage, but the frequency reduced 10 years after marriage. Moreover, results showed that verbal abuse and neglect (36.36%), sexual abuse (33.96%), emotional and social abuse (32.75%), and passive aggression (29.62%) were the most common spouse abuse aspects during the first 5 years of marriage (Table 5).

In case of the relationship between occupation and spousal abuse, emotional abuse was more prevalent in workers (70.68%), neglect and verbal abuse (67.27%), verbal aggression and sexual violence (50.94%), and passive aggression (44.44%), respectively; mild intensity of all types of spouse abuse was also reported (Table 6).

In case of relationship between education and spousal abuse in men,, the results showed that 52.83% men with a diploma were victims of mild degree violence by their wives with most common violence types including emotional abuse (62.06%), verbal abuse and neglect (61.81%), female dominations (55.42%), and active aggression and sexual abuse (41.5%). In other words, there is a reverse relationship between increasing age of men and marriage duration, and man abuse; however, this relationship is positive in the case of income. Although the relationship between age and marriage duration is not strong, it is significant. There was no significant relationship between man abuse and the number of children (Table 7).

Discussion

This study was conducted to examine spousal abuse of men by women and the demographic variables affecting it in Savojbolagh County, Iran. The results obtained indicated that the majority of men were victims of emotional violence by their spouses. The most common types of abuses experienced by men were emotional abuse (15.8%), verbal abuse (13.7%), active aggression and sexual abuse (10.3%), and passive aggression and domination (9.2%).

Table 3. Correlation coefficients between spouse abuse and the studied demographic variables

Spouse abuse	Pearson correlation				Spearman correlation	
	Age	Marriage durations	Age difference between couples	Number of children	Education	Income
	-0.244**	-0.188**	-0.074	-0.091	-0.078	0.132*

* P < 0.05; ** P < 0.01

Table 4. Prevalence of spouse abuse and its subscales based on respondents' age

Scale	Severity	20-29			30-39			40-49			50-59		
		Frequency	Percent in scale with regard to age	Percent in scale regardless of age	Frequency	Percent in scale with regard to age	Percent in scale regardless of age	Frequency	Percent in scale with regard to age	Percent in scale regardless of age	Frequency	Percent in scale with regard to age	Percent in scale regardless of age
Active aggression and sexual abuse	Mild	20	64.51	37.73	7	38.88	13.20	3	75.00	5.66	0	0	0
	Average	11	35.48	20.75	10	55.55	18.86	0	0	0	0	0	0
	Severe	0	0	0	1	5.55	1.88	1	25.00	1.88	0	0	0
Emotional and social abuse	Mild	20	83.33	34.48	21	75.00	36.20	5	83.33	8.62	0	0	0
	Average	4	16.66	6.89	5	17.85	8.62	0	0	0	0	0	0
	Severe	0	0	0	2	7.14	3.44	1	16.66	1.72	0	0	0
Verbal abuse and neglect	Mild	24	88.88	43.63	11	47.82	20.00	5	100.00	9.09	0	0	0
	Average	3	11.11	5.45	8	34.78	14.54	0	0	0	0	0	0
	Severe	0	0	0	4	17.39	7.27	0	0	0	0	0	0
Passive aggression	Mild	16	57.14	29.62	8	38.09	14.81	3	60.00	5.55	0	0	0
	Average	12	42.85	22.22	11	52.38	20.37	2	40.00	3.70	0	0	0
	Severe	0	0	0	2	9.52	3.70	0	0	0	0	0	0
domination	Mild	11	55.00	23.40	12	60.00	25.53	2	40.00	4.25	2	100	4.25
	Average	7	35.00	14.89	7	35.00	14.89	2	40.00	4.25	0	0	0
	Severe	2	10.00	4.25	1	5.00	2.12	1	20.00	2.12	0	0	0
Total spouse abuse	Mild	21	72.41	39.62	10	50.00	18.86	3	75.00	5.66	0	0	0
	average	8	27.58	15.09	9	45.00	16.98	1	25.00	1.88	0	0	0
	severe	0	0	0	1	5.00	1.88	0	0	0	0	0	

Table 5. Prevalence of spouse abuse and its subscales based on marriage duration in the participants

Scale	Severity	< 5			5-10			10-15			> 15		
		Frequency	Percent in scale with regard to marriage duration	Percent in scale regardless of marriage duration	Frequency	Percent in scale with regard to marriage duration	Percent in scale regardless of marriage duration	Frequency	Percent in scale with regard to marriage duration	Percent in scale regardless of marriage duration	Frequency	Percent in scale with regard to marriage duration	Percent in scale regardless of marriage duration
Active aggression and sexual abuse	Mild	18	66.66	33.96	7	36.84	13.20	3	60.0	5.66	2	100.00	3.77
	Average	8	29.62	15.09	12	63.15	22.64	1	20.0	1.88	0	0	0
	Severe	1	3.70	1.88	0	0	0	1	20.0	1.88	0	0	0
Emotional and social abuse	Mild	19	86.36	32.75	18	78.26	31.03	5	62.5	8.62	4	80.00	6.89
	Average	2	9.09	3.44	4	17.39	6.89	2	25.0	3.44	1	20.00	1.72
	Severe	1	4.54	1.72	1	4.34	1.72	1	12.5	1.72	0	0	0
Verbal abuse and neglect	Mild	20	83.33	36.36	14	66.66	25.45	3	50.0	5.45	3	75.00	5.45
	Average	4	16.66	7.27	7	33.33	12.72	0	0	0	0	0	0
	Severe	0	0	0	0	0	0	3	50.0	5.45	1	25.00	1.81
Passive aggression	Mild	16	64.00	29.62	5	26.31	9.25	4	80.0	7.40	2	40.00	3.70
	Average	9	36.00	16.66	14	73.68	25.92	0	0	0	2	40.00	3.70
	Severe	0	0	0	0	0	0	1	20.0	1.85	1	20.00	1.85
Domination	Mild	9	60.00	19.14	11	61.11	23.40	3	37.5	6.38	4	66.66	8.51
	Average	5	33.33	10.63	5	27.77	10.63	4	50.0	8.51	2	33.33	4.25
	Severe	1	6.66	2.12	2	11.11	4.25	1	12.5	2.12	0	0	0
Total spouse abuse	Mild	19	76.00	35.84	11	55.00	20.75	2	40.0	3.77	2	66.66	3.77
	Average	6	24.00	11.32	9	45.00	16.98	2	40.0	3.77	1	33.33	1.88
	Severe	0	0	0	0	0	0	1	20.0	1.88	0	0	0

Table 6. Prevalence of spouse abuse and its subscales based on the job title of the participants

Scale	Severity	Unemployed			Laborer			Employee			Retired			Self-employed		
		Frequency	Percent in scale with regard to the variable	Percent in scale regardless of the variable	Frequency	Percent in scale with regard to the variable	Percent in scale regardless of the variable	Frequency	Percent in scale with regard to the variable	Percent in scale regardless of the variable	Frequency	Percent in scale with regard to the variable	Percent in scale regardless of the variable	Frequency	Percent in scale with regard to the variable	Percent in scale regardless of the variable
Active aggression and sexual abuse	Mild	0	0	0	27	57.44	50.94	1	33.33	1.88	0	0	0	2	66.66	3.77
	Average	0	0	0	19	40.42	35.84	2	66.66	3.77	0	0	0	0	0	0
	Severe	0	0	0	1	2.12	1.88	0	0	0	0	0	0	1	33.33	1.88
Emotional and social abuse	Mild	1	50	1.72	41	85.41	70.68	4	80.00	6.89	0	0	0	0	0	0
	Average	1	50	1.72	5	10.41	8.62	1	20.00	1.72	0	0	0	2	66.66	3.44
	Severe	0	0	0	2	4.16	3.44	0	0	0	0	0	0	1	33.33	1.72
Verbal abuse and neglect	Mild	0	0	0	37	80.43	67.27	1	25.00	1.81	0	0	0	2	5.00	3.63
	Average	0	0	0	8	17.39	14.54	3	75.00	5.45	0	0	0	0	0	0
	Severe	1	100	1.81	1	2.17	1.81	0	0	0	0	0	0	2	50.00	3.63
Passive aggression	Mild	0	0	0	24	50.00	44.44	1	33.33	1.85	0	0	0	2	100.00	3.70
	Average	0	0	0	23	47.91	42.59	2	66.66	3.70	0	0	0	0	0	0
	Severe	1	100	1.85	1	2.08	1.85	0	0	0	0	0	0	0	0	0
Domination	Mild	0	0	0	21	58.33	44.68	2	100	4.25	1	100	1.12	3	50.00	6.38
	Average	2	100	4.25	12	33.33	25.53	0	0	0	0	0	0	3	33.33	4.25
	Severe	0	0	0	3	8.33	6.38	0	0	0	0	0	0	1	16.66	2.12
Total spouse abuse	Mild	0	0	0	31	68.88	58.49	3	75.00	5.66	0	0	0	0	0	0
	Average	1	100	1.88	13	28.88	24.52	1	25.00	1.88	0	0	0	3	100	5.66
	Severe	0	0	0	1	2.22	1.88	0	0	0	0	0	0	0	0	0

Table 7. Prevalence of Spouse abuse and its subscales based on the education of the participants

Scale	Severity	Elementary			Secondary			Diploma and associate degree			Bachelor's degree and higher		
		Frequency	Percent in scale with regard to education	Percent in scale regardless of education	Frequency	Percent in scale with regard to education	Percent in scale regardless of education	Frequency	Percent in scale with regard to education	Percent in scale regardless of education	Frequency	Percent in scale with regard to education	Percent in scale regardless of education
Active aggression and sexual abuse	Mild	2	100	3.77	4	57.14	7.54	22	53.65	41.50	2	66.66	3.77
	Average	0	0	0	2	28.57	3.77	18	43.90	33.96	1	33.33	1.88
	Severe	0	0	0	1	14.28	1.88	1	2.43	1.88	0	0	0
Emotional and social abuse	Mild	4	100	6.89	3	37.50	5.17	36	83.72	62.06	3	100.00	5.17
	Average	0	0	0	4	50.00	6.89	5	11.62	8.62	0	0	0
	Severe	0	0	0	1	12.50	1.72	2	4.65	3.44	0	0	0
Verbal abuse and neglect	Mild	2	100	3.63	3	37.50	5.45	34	79.06	61.81	1	50.00	1.81
	Average	0	0	0	1	12.50	1.81	9	20.93	16.36	1	50.00	1.81
	Severe	0	0	0	4	50.00	7.27	0	0	0	0	0	0
Passive aggression	Mild	1	100	1.85	4	44.44	7.40	21	48.83	38.88	1	100.00	1.85
	Average	0	0	0	3	33.33	5.55	22	51.16	40.74	0	0	0
	Severe	0	0	0	2	22.22	3.70	0	0	0	0	0	0
Domination	Mild	1	50	2.12	4	44.44	8.51	20	62.5	55.42	2	50.00	4.25
	Average	1	50	2.12	3	33.33	6.38	11	34.37	23.40	1	25.00	2.12
	Severe	0	0	0	2	22.22	4.25	1	3.12	2.12	1	25.00	2.12
Total spouse abuse	Mild	1	100	1.88	2	28.57	3.77	28	66.66	52.83	3	100.00	5.66
	Average	0	0	0	4	57.14	7.54	14	33.33	26.41	0	0	0
	Severe	0	0	0	1	14.28	1.88	0	.	0	0	0	0

The results of this study were in line with the results of a study on men as victims of violence conducted by Abbaszadeh et al.[29] In this research, emotional, physical, sexual, and financial spouse abuse were the most prevalent forms of spouse abuse in couples.[29] Furthermore, these results were in agreement with findings obtained by Atef Vahid et al.[22] and Mohamadkhani et al.[18] They showed that the most prevalent forms of domestic violence are emotional abuse, neglect, verbal aggression, and sexual abuse.

Other findings of this research indicated that 6.2% of men had experienced sever abuse and the most common abuses included passive aggression (8.6%), active aggression and sexual abuse (7.2%), domination (5.5%), verbal abuse (3.8%), and emotional abuse (3.1%). This finding was in agreement with the results of studies by Jungnitz et al.[30] and Sarkar et al.[13]

Jungnitz et al. conducted a study in Germany to examine spouse abuse among men. They reported behaviors such as pushing (18%), slapping (9%), hitting or scratching (7%), kicking painfully, Pushing, or grabbing (5%), throwing objects (5%), and injuries caused by abuse (5%) women's violence against men.[30] In addition, Dobash and Sobash examined women's violence against their husbands and concluded that damage to property (4.2%), threat of knocking (5.3%), throwing objects (26.3%), pushing (10.5%), slapping (20.0%), scratching (16.8%), punching (31.6%), kicking (17.9%), using objects as weapons (16.8%), and choking (1.1%) were the most prevalent forms of man abuse among women.[31] Sarkar et al. conducted a study on 1650 men of 15-49 years of age in several countries and found economic violence (32.8%) as the most common spous abuse followed by emotional violence (22.2%), physical violence (25.2%), and sexual violence (17.7%).[13]

Other findings of this study showed that male laborers who had a diploma, and marriage duration of less than 5 years, had experienced several marriages or forced marriage, had 7 children or more, and lived with their parents were more exposed to domestic violence, in particular, emotional violence. In contrast, men who were employees, had low education level, more than 15 years of married life, owned a house, and had an age gap of less than 11 years with their wife were less exposed to spouse violence.

These findings were in line with the findings of Fogarty et al.,[32] Iliyasu et al.,[33] and Kheirkhahzadeh.[34]

Moreover, Namadi[17] conducted a study on 120 men who were victims of domestic violence; 33%, 31.7%, and 9.2% of them were 35-44, 25-34, and 45-54 years old, respectively. About 32%, 38%, and 19.2% of victims had elementary, high school, and university degrees, respectively; moreover, 10.8% were illiterate. In terms of occupational status, 65% were employed and 5.8% were unemployed. In addition, about 43% and 39% of the participants had low and average social and economic situations, respectively. Only a minority of subjects (18.3%) had a high social status. About 95.8%, 40.8%, 80.8%, and 11.7% experienced verbal abuse, various physical abuses (burning with oil and hot water, throwing objects, etc.), emotional abuse, and economic violence, respectively. Men who are victims of violence do not tend to disclose this violence or receive help; they deny women's violence because of their pride. They think that they will be called weak men if they reveal this secret; hence, they do not pursue their rights; so that we do not have any accurate report about men as victims of spousal abuse.

A limitation of this study was the lack of cooperation of some of the men in completing the questionnaires. In addition, this study was only performed on men, and thus, we have no data on the role of men in spousal abuse. Future studies should determine whether the wives of these men are also victims of violence.

Conclusion

The most common forms of domestic violence committed by women against men in Iran included emotional abuse, verbal abuse, behavioral aggression, and sexual abuse with severity rate of low to medium. Higher age of men, higher education level, longer marriage duration, sufficient income, and suitable age gap were factors that prevented women's violence against men.

Conflict of Interests

Authors have no conflict of interests.

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Comparison of the quality of life, psychological well-being, and emotional self-regulation among nurse with non-nurse women in Imam Khomeini hospital, Kuhdasht City, Iran

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Original Article

Abstract

BACKGROUND: In the hospital, nurses are exposed to high levels of psychological stress. The purpose of this study was to compare the quality of life, psychological well-being, and emotional self-regulation of nurse and non-nurse women in Imam Khomeini hospital in Kuhdasht City, Iran.

METHODS: This was a descriptive prospective causal-comparative research. The statistical population of this study was all the women staff of Imam Khomeini hospital in Kuhdasht in 2018. A sample population of 100 nurse women was selected using convenience sampling method, and 100 non-nurse women were selected via random sampling method. The instruments used in this research were 36-Item Short Form Health Survey (SF-36) Quality of Life, Reef Psychological Well-Being, and MARS emotional self-regulation questionnaires. Data were analyzed using multivariate analysis of variance (MANOVA) ($P < 0.050$).

RESULTS: The MANOVA test showed a significant difference between quality of life, psychological well-being, and emotional self-control between nurse and non-nurse women ($P < 0.050$). This meant that nurse women in the studied variables were lower than their non-nurse counterparts.

CONCLUSION: According to the results of this research, it is suggested that in nursing mental health promotion programs, education should be considered in order to improve the quality of life, psychological well-being, and emotional self-regulation of nurses.

KEYWORDS: Quality of Life, Psychological Well-Being, Emotional Self-Regulation, Nurses

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Introduction

Among the levels of stress in the hospital, members of the medical team, especially the nurses, are those who are exposed to high levels of psychological stress.[1] Hegney et al. believe that among all the healthcare professions, nurses are more exposed to burnout, fatigue, and loss of satisfaction and quality of life due to physical and mental stresses caused by care of patients.[2]

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Quality of life is a complex and multidimensional concept of physical, mental, cultural, and social aspects.[3] Quality of life is related to the health and satisfaction of individual in all aspects of life.[4] It is described as the product of the interaction between the personality of individuals and continuity of events in life.[5] Various factors affect the quality of life such as age, culture, gender, education, class status, disease, and social environment, and also general behavioral, occupational, and adaptive resources.[6-8] Job stress and job burnout have a significant negative impact on

the quality of life.[9]

One of the important indicators in quality of life is psychological well-being, which is related to individual's assessment of his/her life. Psychological well-being is defined as people's perception of life in the domain of emotional behaviors, mental functions, and mental health dimensions.[10,11] Psychological well-being is a multi-component concept that includes self-acceptance, positive relationships with others, autonomy, domination of the environment, purposeful life, and individual development.[12] In the meantime, nursing job characteristics are such that they can affect the psychological well-being of nurses; so that inappropriate job conditions can predict and explain their emotional distress, and decrease their psychological well-being.[13]

In this case, Kavosi et al. reported the psychological well-being of nurses at the lower level in hospital specialty departments.[14] Turner and McCarthy concluded that most psychiatric nurses had a lower level of happiness, optimism, lower hopes, and overall psychological well-being than others.[15] Smith and Yang showed that resilience and psychological well-being of nurses in China was lower than other hospital staff.[16] In other study, Zadhasan et al. found that happiness and psychological well-being in nurses were predictive of job satisfaction.[17] However, emotional self-regulation is one of the most important psychological skills that may affect various aspects of individual life, interpersonal interactions, and mental and physical health of nurses.[18-21]

Considering the central role of nursing profession in improving quality of patient cares and, consequently, the lack of research that compared the variables in nurse and non-nurse women, this study compared the quality of life, psychological well-being, and self-regulation of nurse and non-nurse women.

Materials and Methods

This was a descriptive prospective causal-comparative research. The statistical population was all nurse and non-nurse women staff of Imam Khomeini hospital in Kuhdasht City, Lorestan Province, Iran, in 2018. A sample population of 100 nurse women was selected using convenience sampling method, and 100 non-nurse women were selected via random sampling method.

36-Item Short Form Health Survey (SF-36) Quality of Life questionnaire was used to collect the data. The questionnaire consists of 36 questions with multi-choice responses, and measures one's view of his health. The SF-36 scale has eight dimensions of physical function, physical role, physical pain, general health, vitality, social function, emotional role, and mental health. The alpha coefficients for these dimensions in Persian version of questionnaire were 0.90, 0.85, 0.71, 0.65, 0.77, 0.84, 0.77, and 0.72, respectively, in this study, indicating a good internal consistency. The alpha coefficient in this study was equal to 0.78.

Another tool used in this research was Reef Psychological Well-Being Inventory. This scale was designed by Reef in the 1980. The original form had 120 questions, but in later studies, shorter forms had 84, 54, and 18 questions, respectively. In this research, 84-question forms of it was used. The psychological well-being scale has six subscales of acceptance, environmental domination, autonomy, positive relationships with others, purposefulness, and personal growth. Mikaeili Mani and Madadi Emamzadeh translated it to Persian with a total reliability coefficient of 0.83, as well as 0.71 for acceptance, 0.77 for positive relationships with others, 0.78 for autonomy, 0.77 for environmental domination, 0.70 for purposefulness, and 0.78 for personal growth subscale.[22] In the present study, the total reliability coefficient was 0.78.

The MARS Emotional Self-Regulation questionnaire was another used tool. This questionnaire contains 44 questions that include cognitive change, behavioral change,

emotional change, negative mood decrease, and positive mood increase subcomponents. The reliability of Persian version of this questionnaire was 0.75 using half-way, and 0.80 using Cronbach's alpha. Moreover, the validity of each of the subcomponents was from 0.63 to 0.70, which indicated the high validity of this scale in Iranian culture.[23] In this study, the Cronbach's alpha coefficient was 0.73.

At the end, after collecting the completed questionnaires, one-way analysis of variance (ANOVA) and multivariate analysis of variance (MANOVA) was used to analyze the data at the significant level of $P < 0.050$.

Results

Among the nurse women, 80 were undergraduate with age range of 25-40 years and 20 had associate degree with age range of 30-48 years.

The subscales of quality of life, psychological well-being, and the emotional adjustment in non-nurse and nurse group can be seen in table 1.

In applying parametric statistical methods, the assumptions of the test were first approved; so that the desired test could be used; therefore, the assumptions of the MANOVA test, such as independence of observations, normal distribution of variables, and homogeneity of variances in the two groups, were examined and confirmed.

With MANOVA, there was a significant difference between at least one of the components of quality of life, psychological well-being, and emotional self-regulation of nurse and non-nurse women in Imam Khomeini hospital in Kohdasht city (Table 2).

The results showed a significant difference in the components of general health, vitality, social function, emotional role, mental health, acceptance, autonomy, purposefulness, emotional change, negative mood decrease, and positive mood increase between nurse and non-nurse women (Table 3).

Table 1. The scores of subscales of quality of life, psychological well-being, and the emotional adjustment in study groups

Variable	Nurse	Non-nurse
Physical function	8.20 ± 1.74	8.25 ± 1.29
Physical role	8.01 ± 1.94	8.80 ± 1.36
Physical pain	7.80 ± 1.56	7.80 ± 2.04
General health	7.80 ± 1.56	9.60 ± 2.04
Vitality	7.10 ± 2.67	9.60 ± 2.80
Social performance	8.01 ± 1.98	11.80 ± 2.04
Emotional Role	7.60 ± 2.56	9.35 ± 2.33
Mental health	8.70 ± 1.87	10.50 ± 3.04
Acceptance	29.60 ± 1.77	37.80 ± 2.08
Environmental domination	30.40 ± 1.19	33.60 ± 1.16
Self-governing	28.35 ± 1.04	33.03 ± 1.31
Positive relationships	33.40 ± 1.31	34.30 ± 1.30
Purposefulness	32.30 ± 1.03	41.60 ± 2.89
Personal growth	21.90 ± 1.45	31.85 ± 1.60
Cognitive change	21.62 ± 1.97	23.60 ± 1.88
Behavioral change	20.90 ± 1.94	22.60 ± 1.23
Changing the location	23.25 ± 1.72	26.05 ± 1.67
Emotional change	24.00 ± 1.84	23.64 ± 1.83
Negative mood decrease	26.25 ± 1.72	24.05 ± 1.67
Positive mood increase	21.00 ± 1.90	28.64 ± 1.86

The amounts are as mean ± standard deviation (SD).

Table 2. The results of MANOVA test in this study

Test	Value	F-statistic	Hypothesis degree of freedom	Error degree of freedom	P
Pillai's trace	0.63	30.83	20	177	0.001
Wilk's lambda	0.36	30.83	20	177	0.001
Wilk's lambda	1.76	30.83	20	177	0.001
Roy's largest root	1.76	30.83	20	177	0.001

MANOVA: Multivariate analysis of variance

The achieved significant level was smaller for general health, vitality, social function, emotional role, mental health, acceptance, autonomy, purposefulness, emotional change, decrease in negative mood, and positive mood increase compared with the significance level of 0.0025 obtained from Benfrowny correction (the division of the significant level of 0.05 into 20 dependent variables). In addition, the high power of the statistical test in the present study suggested that with a high probability, the null hypothesis was correctly rejected.

Discussion

The results of the analysis of the first hypothesis of the study showed that nurse women had lower levels of physical function and physical pain compared to non-nurse counterparts in all components of quality of life (physical function and physical pain). This finding is consistent with the results of different researches.[7-10]

The results of the analysis of the second hypothesis of the research also showed that psychological well-being in nurse women was lower than their non-nurse counterparts (environmental mastery, positive relationships with others, and personal growth). This finding is similar with the results of different researches.[13-16]

Table 3. The results of one-way analysis of variance (ANOVA) test for multivariate analysis of variance (MANOVA)

Statistical index	Variable change source	Within-group variation (SS)	Degree of freedom	F-statistic	P	Effect size	Test power size
Physical function	Group	2.51	1	0.71	0.410	0.02	0.13
Physical role	Group	7.68	1	1.39	0.240	0.04	0.21
Physical pain	Group	38.64	1	8.06	0.006	0.25	0.86
General health	Group	40.51	1	9.90	0.001	0.27	0.88
Vitality	Group	659.07	1	46.72	0.001	0.56	0.99
Social performance	Group	70.28	1	31.36	0.001	0.46	0.99
Emotional role	Group	159.56	1	37.73	0.001	0.54	0.99
Mental health	Group	99.49	1	39.21	0.001	0.56	0.99
Acceptance	Group	55.68	1	13.01	0.001	0.31	0.95
Dominate on environment	Group	10.35	1	1.58	0.003	0.26	0.96
Self-governing	Group	16.09	1	20.02	0.001	0.41	0.96
Positive relationships	Group	1.01	1	1.03	0.310	0.03	0.16
Purposefulness	Group	40.45	1	19.60	0.001	0.32	0.99
Personal growth	Group	18.57	1	8.98	0.004	0.24	0.94
Cognitive change	Group	0.08	1	0.22	0.630	0.01	0.07
Behavioral change	Group	0.08	1	0.17	0.680	0.01	0.08
Changing the location	Group	0.02	1	0.04	0.840	0.01	0.05
Emotional change	Group	18.62	1	17.49	0.001	0.37	0.98
Negative mood decrease	Group	38.48	1	18.37	0.001	0.31	0.99
Positive mood increase	Group	96.09	1	22.03	0.001	0.42	0.99

In explaining these research findings, it can be said that the nursing profession consists of a series of activities and interpersonal relationships that are often stressful. There are a lot of stressors such as contrasting with colleagues, working in an environment where managers do not support employees, frequent and direct clashes with death, suffering, and injuries. Therefore, the combination of these stressors in the healthcare environment causes nurses to be affected in their psychological and physical dimensions, which results in lowering the desired quality of life. Moreover, in the second explanation of the research, it can be said that occupations in which interpersonal communication and social relations are widespread, and whose employees play the role of care and medical care, naturally, provide the basis for the formation of some problems and discomforts. The total of these conditions reduces psychological variables, including psychological well-being.[24]

The results of the analysis of the third hypothesis of the research showed a significant difference between emotional self-regulation between the nurse and non-nurse women groups, meaning that emotional self-regulation in nurse women was more than non-nurse women on a scale and a lower level. In the field of emotional self-regulation of nurses, research has not been done so far, and each research has done some kind of emotional self-regulation in groups with psychological trauma. The results of the final hypothesis of this research can be compared with the findings of different studies.[19-21,23]

High emotion and emotional capacity allows the person to use the positive mood and the level of tolerance in dealing with others. So that, they can handle the best of their reaction and behavior, and achieve the desired emotion and emotional compatibility that this adjustment will make the other dimensions of adaptability smoother. On the other hand, in stressful situations, people are in difficulty with their knowledge, and they are not able to adjust their emotions; therefore, since nursing jobs are full of stressors, this factor regulates their emotions.[25]

However, the present study was not without limitations that the existence of these limitations requires more caution. This research was conducted only with nurses at Imam Khomeini hospital in Kuhdasht City. This research was conducted only in the field of nurse women. In the implementation of research, a number of subjects were discontinued because of job engagement. In the context of the variable of emotional self-regulation in the personnel of the hospital, the research background was not found. In this research, the only used tool was questionnaire.

Conclusion

In general, in this study, quality of life, psychological well-being, and emotional self-regulation status of nurses was not good. This will result poor service to patients and clients by nurses. Hence, by formulating policies and implementing programs, policy makers can improve quality of life, psychological well-being, and emotional self-regulation of nurses. Their job satisfaction can be increased, which results in providing nanny-friendly services to patients.

Conflict of Interests

Authors have no conflict of interests.

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Chronic urticaria associated with malignancies: A review article

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Review Article

Abstract

BACKGROUND: Chronic urticaria is a cutaneous disorder defined by the presence of hives and flare for over six weeks. Etiology of chronic urticaria is not clear in 80 to 90 percent of patients. Malignancies are possible associations with allergic disorders such as urticaria. The purpose of this article was to review the expression of chronic urticaria with various malignancies.

METHODS: We searched in PubMed, Scopus, and EMBASE databases in English using the keywords chronic urticaria, urticarial, malignancy, and cancer. Inclusion criteria were both full and brief articles, case reports, case series, and original article up to June 2018.

RESULTS: We found 258 articles on the primary search. After screening by two researchers, 23 articles were included. Most studies failed to find a link between hives and malignancy. Four studies showed a relationship between hives and malignancy. Five studies showed no relationship between hives and malignancy, and suggested that urticaria could even have a protective effect. As there were no homogenous results, we could not write a meta-analytic study.

CONCLUSION: The relationship between chronic urticaria and malignancy is not clear. We need a more organized researches to clarify the association between urticaria and malignancies.

KEYWORDS: Urticaria, Neoplasm, Skin, Association

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Introduction

Chronic urticaria is a cutaneous disorder defined by the presence of hives and flare, on most days of the week, for more than six weeks. Angioedema may be associated with chronic urticaria.[1,2] About 20 percent of the general population could experience urticaria in their lifetime, although the acute form is more common.[3] However, the prevalence of urticaria is varied in different regions of the world.[1] Chronic urticaria is more common in adults than children, and affects about 0.1 to 3 percent of people. Women are affected twice as often as men.[1,2]

The etiology of chronic urticaria is not clear in 80 to 90 percent of patients.[4] Some etiologies of chronic urticaria are thyroid disorders, physical urticaria, parasites, infections, Helicobacter pylori, autoimmune diseases, malignancies, etc.[1] Lesions that last longer than 24 hours and/or are painful or burn or residual bruises suggest vasculitis. Chronic urticaria has pruritus that is exaggerated at night. Trigger factors of chronic urticaria are physical factors, drugs, stress, and food. Patients with allergy such as patients with chronic urticaria are more sensitive to psychopathological features including

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loneliness, tension, confusion, stress, agitation, obsession, and depression, and their quality of life is not well.[5]

Spontaneous resolution occurs in most patients with urticaria; the mean duration of the disorder is two to seven years. Urticaria is usually diagnosed using patient history and physical examination. Malignancies are a possible association with allergic disorders such as urticaria, although data on this matter are not uniquivocal.[6] Clinical manifestations such as fever, weight loss, arthralgia, arthritis, cold or heat sensitivity, abdominal pain, and bone pain needs further investigation for systemic disorders such as malignancies. Moreover, significant increase of erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) suggests a serious etiology including malignancies. Therefore, malignancy screening is suggested in specific patients. Avoiding triggers is baseline therapy in chronic urticaria, if any trigger is identified.[7] This study aimed to make a review on the association of chronic urticaria with malignancies.

Materials and Methods

There is controversy about the relationship between allergy and malignant diseases. It is therefore necessary to write a meta-analytic review article; but as we did not find homogeneous articles in the initial search, we decided to write a systematic review article instead.

The data were searched in PubMed, Scopus, and EMBASE databases in English. Our search keywords included chronic urticaria, urticaria, malignancy, and cancer. Inclusion criteria were full and brief articles, all ages, genders, case reports, case series, and original articles. Exclusion criteria were abstract article, and articles that did not investigate urticaria and malignancy together. We did not have time limits to start our search and we continued up to June 2018.

Initially, two researchers searched individually, then we selected articles that looked at the relationship or association between urticaria and malignancy.

Results

After evaluation of all data, we found 258 articles on the primary search. After screening by two researchers, 23 articles were entered the study including 8 original articles, 1 case series, 1 review article, and 13 case reports (Table 1). Most of these studies were done in the United States (10 out of 23). Most studies failed to find a link between hives and malignancy. Four studies had shown a relationship between hives and malignancy, and five studies declared no relationship between hives and malignancy, and suggested that urticaria could even have a protective effect. The type of malignancy was different in the most of the studies, but carcinoma and hematologic malignancies were more common in patients with urticaria.

Discussion

The relation between chronic urticaria and malignancy has not yet been clarified. Few epidemiologic studies are available about this association. Four articles showed the association between chronic urticaria and malignancy.[8-11] Most of the found studies were case reports with low evidence-based medicine value. Between the epidemiological studies, Chen et al.[8] study is one the largest studies with 12720 patients with chronic urticaria treated with antihistamines for the duration of 6 months to 2 years. They showed that chronic urticaria was associated with increased risk of malignancy, especially hematologic malignancies (35 cases of non-Hodgkin lymphoma and 22 cases of leukemia). They stated that diagnosis of urticaria in the first year of the disease is a risk factor for malignancy.[8] In 1988, McWhorter[9] found that patients with history of allergy were associated with increased subsequent malignancies, especially in those with hives.

Table 1. The distribution of different finding in patients with cancers and chronic urticaria

Author	Cancer kind	Cancer frequency	Country	Patients count	Association
Chen et al.[8]	Different	704	Taiwan	12720	+
McWhorter[9]	Different	341	United States	6913	+
Karakelides et al.[10]	Different	166	United States	1639	+
Greiner et al.[11]	Lung small cell carcinoma	1	Germany	1	+
Wang and Diepgen[12]	Different		Germany	Cancers & chronic urticaria	Reverse
Vena et al.[13]	Different		United States	13665	Reverse
Linabery et al.[14]	Review		United States	Leukemia	Reverse
Severson et al.[15]	AML		United States	98	Reverse
Wen et al.[16]	ALL children	1842	United States	1842	Reverse
De et al.[17]	Lung large cell carcinoma	1	United Kingdom	1	+/-
Lindelof et al.[18]	Different	36	Sweden	1155	-
Krishnan and Ownby[19]	Mastocytoma	1	United States	1	+/-
Eriksson et al.[20]	Different	119	Sweden	6224	+/-
Eriksson et al.[21]	Different	2	Sweden	6593	+/-
Merrill et al.[22]	Different		United States	Atopic patients	+/-
Campanelli et al.[23]	Colon adenocarcinoma	1	Switzerland	1	+/-
Manganoni et al.[24]	Thyroid carcinoma	4	Italy	4	+/-
Baroni et al.[25]	Prostate carcinoma	1	Italy	1	+/-
Hu et al.[26]	Lung adenocarcinoma	1	China	1	+/-
Murota et al.[27]	B cell	1	Japan	1	+/-
Shamsadini et al.[28]	Cerebellar astrocytoma	1	Iran	1	+/-
Zhang et al.[29]	IgA Myeloma	1	Japan	1	+/-
Clore et al.[30]	Hairy cell leukemia	1	United States	1	+/-

ALL: Acute lymphoblastic leukemia; AML: Acute myelogenous leukemia
+: Chronic urticaria associated with cancer
Reverse: Chronic urticaria prevent the cancer
+/-: Not protection, not association

Five studies showed that chronic urticaria could be protective against cancer.[12-16] Of course, one of them is a review article.[14] They showed inverse relationship between atopy and leukemia Acute lymphoblastic leukemia (ALL). In 2005, Wang and Diepgen showed that atopic disorders are associated with a reduced risk for malignancies (pancreatic cancer, childhood leukemia and brain tumors).[12] Allergies, especially related to atopy, due to hyperactive immune system may be associated with a lower risk of pancreatic malignancy.

A few studies showed no relation between chronic urticaria and malignancy such as Lindelof et al. study.[18] These articles supported that allergic disorders (type I allergy) such as asthma, allergic rhinitis (AR), eczema, and urticarial were not related to the individual's risk of cancer.[18,20]

Most articles (n = 20) showed controversial results between chronic urticaria and malignancy. They declared that atopy did not have protective effect against cancer, nor induced cancer;[21,22] however, association or relation between atopic disorders and malignancy is controversial.

The type of malignancy was different in the most of studies. Carcinoma and hematologic malignancies such as leukemia were most common, and lymphoma was less common.

Between case reports, lung carcinomas were the most common; De et al.[17] suggested

a plain chest X-ray be taken in a patient with chronic urticaria, although the pulmonary tumor is uncommon with hives. Lung carcinomas were only observed in adult patients with chronic urticaria. Mastocytosis may be associated with chronic urticaria, which we should consider in the differential diagnosis of chronic urticaria.[19]

In 80 to 90 percent of patients with chronic urticaria, there is no identified etiology. Most researchers suggested complete blood count (CBC) with differential, CRP or ESR, liver function tests (LFT), and thyroid-stimulating hormone (TSH) level; although these tests are normal in most cases without systemic disease manifestations. Skin biopsy is needed for the diagnosis of urticarial vasculitis, and patients suspected of mastocytosis.[1,4]

Reviewing existing articles, lymphatic-hematopoietic cancers (leukemia, lymphoma, and myeloma) were the most common. There were a few articles that showed lymph-reticular diseases and related malignancies (more common), and carcinoma (less common) are increasingly associated with chronic urticarial.[12] An article reported internal diseases were prevalent in 1.6% of patients with chronic urticaria.[23] O'Donnell and Havyer reported a case of breast cancer in a woman with chronic urticaria. They concluded that patients with resistant chronic urticaria without a known cause should be screened for malignancies.[31] In a recent study, the risk of cancer was potentially raised in patients with chronic urticaria. The study suggests that at least a mammography/prostate antigen test assessment, and in cases of chronic urticaria, an ultrasonography of the thyroid gland is recommended.[32]

Conclusion

Because there were no homogenous articles in our search, the relationship between chronic urticaria and malignancy is not clear. We need more organized researches for clarifying the association between chronic urticaria and malignancies.

Conflict of Interests

Authors have no conflict of interests.

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Right ventricular myocardial infarction: The electrocardiography (ECG) pattern

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Images in Clinical Medicine

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A 57-year-old man presented to the emergency department with retrosternal chest heaviness at rest for 4 hours, accompanied with weakness, sweating, and nausea. Patient's vital signs were stable.

In the electrocardiogram (ECG), upsloping ST-segment elevation in leads II, III, and aVF, and reciprocal downsloping ST-depression in leads I and aVL (Figure 1).

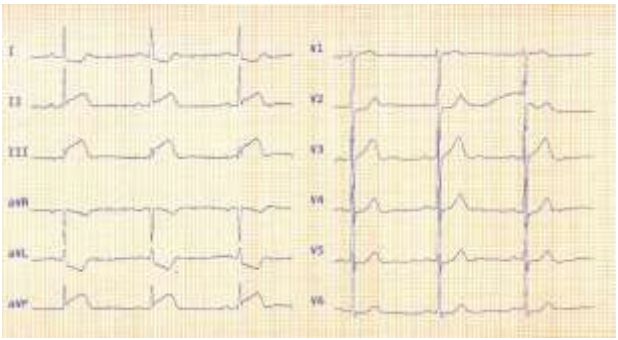

Figure 1. Upsloping ST-segment elevation in leads II, III, and aVF, and reciprocal downsloping ST-depression in leads I and aVL [inferior myocardial infarction (MI)]

Since the 30 to 50 percent of cases with inferior myocardial infarction (MI) associated with right ventricular MI (RVMI), right-sided leads V4R, V5R, and V6R obtained that showed upsloping ST-segment elevation in leads V4R, V5R, and V6R (Figure 2). Initial troponin I and T was normal; but 6 hours later, measurement showed an increase to higher than the upper reference limit. Inferior MI associated with RVMI correlates closely with occlusion of proximal right coronary artery (RCA).[1]

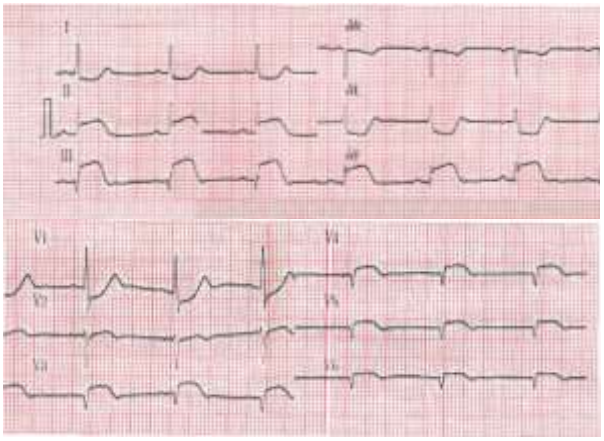

Figure 2. Upsloping ST-segment elevation in leads V4R, V5R, and V6R [right ventricular myocardial infarction (RVMI)]

Due to the ST-segment elevation more than 1 mm in three adjacent limb leads, patient underwent emergency coronary angiography, that 90% stenosis was observed in proximal of RCA. This stenosis treated successfully by primary percutaneous coronary intervention (PCI) with stent placement. Finally, the patient

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was discharged with guideline-directed medical therapy[2] after improving signs and symptoms and correcting ECG changes.

Conflict of Interests

Authors have no conflict of interests.

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The relationship of plasma cortisol level with processing speed and working memory in methamphetamine users

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Letter to Editor

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Introduction

Biological, hormonal, and psychological changes are known as the side effects of chronic use of methamphetamine.[1] Studies show that cortisol levels in drug-dependent individuals are significantly higher than the normal population.[2] Prolonged exposure to increased levels of cortisol can be associated with reduce in cognitive functions.[3] However, in other studies, the relationship between the cortisol level and cognitive functioning has been reported insignificant.[4] In this regard, a number of studies have indicated a lack of significant correlation between the cortisol level and psychiatry syndrome such as depression, which can confirm the inability of the effect of cortisol on reducing cognitive functioning.[1]

Since increased levels of cortisol have been observed in chronic methamphetamine users, and in conditions exposed to stressors, this issue increases the speculation among researchers about the possible association of high levels of cortisol and cognitive damages in drug consumers. In the previous study, we investigated the correlation between the cortisol level and executive functions, which showed a significant inverse relationship.[3] Due to the lack of a study on the relationship between the cortisol level and memory performance with the processing speed in methamphetamine users, this study aimed to evaluate two hypotheses, comparing cognitive functions of consumers with nonconsumer individuals, and evaluating the relationship between cortisol levels with working memory and processing speed.

This study was the third part of a multiphase study with clinical trials registry code of TCTR20180616001 conducted between March 15 and June 9, 2015. From the people who referred for inguinal hernia to three public hospitals in Tehran, Iran, 35 male methamphetamine users and 35 non-consuming subjects (n = 70) were selected through respondent-driven sampling (RDS) method. After a structured clinical interview for the fourth version of Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (SCID), plasma serum levels of cortisol were measured at three time intervals, at 0 (after induction of anesthesia), and 12 and 24 hours later. Then, the samples were centrifuged for 12 minutes at a speed of 3,000 rpm and assessed

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using radioimmunoassay (RIA) method.

After 10 days of operation, the Stroop Color and Word Test (SCWT, 2 cards) and subtest digit span from the Wechsler Adult Intelligence Scale were performed in order to evaluate the cognitive functions in three periods with an interval of 48 hours. The average of measurements was used as evaluation criterion. Data were analyzed using analysis of variance (ANOVA) and repeated measures correlation (rmcorr) methods. All stages of the study were conducted after obtaining informed consent. and based on the latest version of the Declaration of Helsinki.

ANOVA analysis showed that in two indices of processing speed, the working memory scores of the methamphetamine consumer group were significantly lower than the control group ($P < 0.050$). In the index of cortisol level in the control group, an increase in the cortisol level (24 hours after operation) in the methamphetamine group was observed ($P < 0.010$).

The results of correlation test with repeated measures showed that there was a significant negative correlation between the cortisol level with processing speed [r_{rm} (70, Cortisol-processing speed) = −0.71; confidence interval of 95% (CI95%): −0.82, −0.60; $P < 0.001$)] and working memory [r_{rm} (70, Cortisol- working memory) = −0.58, CI95%: −0.71, −0.45; $P < 0.001$].

Results showed a weaker performance in the processing speed and working memory among methamphetamine users compared to control group. Moreover, there was a significant inverse relationship between cognitive functions and salivary cortisol. In consist with the results of this study, the results of the study by Pirnia et al.[1] showed that the cortisol index in methamphetamine users was higher than that of non-users group. Besides, in another study by Pirnia et al.,[3] the uplift of cortisol was associated with damage to executive functions. Harris et al.[5] also showed a relationship between high cortisol levels and lower cognitive abilities. Contrary to our results, Korten et al.[4] found that there was no significant relationship between cortisol level and cognitive functioning. The relationship between the duration of methamphetamine use and the uplift of cortisol by considering gender role and hormonal functions can be a good route for future studies.

Conflict of Interests

Authors have no conflict of interests.

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