

Experienced and Perceived Stress in Females With Schizophrenia and Healthy Subjects

Maryam Khodadadi Mogadam,¹ Mehdi Samadzadeh,^{2,*} Bita Shahbazzadegan,^{3,4} and Bita Movaffag²

¹Islamic Azad University, Ardabil, IR Iran

²Ardabil University of Medical Sciences, Ardabil, IR Iran

³School of Medicine, Ardabil University of Medical Sciences, Ardabil, IR Iran

⁴Department of Public Health, School of Health, Shahid Beheshti University of Medical Sciences, Tehran, IR Iran

*Corresponding author: Mehdi Samadzadeh, Ardabil University of Medical Sciences, Ardabil, IR Iran. E-mail: mi.samadzadeh@gmail.com

Received 2015 November 06; Revised 2016 February 28; Accepted 2016 March 07.

Abstract

Background: Schizophrenia is a psychiatric disorder characterized by chronic disturbances of thought and perception.

Objectives: The current study aimed to compare perceived stress in females with schizophrenia and that of healthy people.

Patients and Methods: The study sample included 50 patients with schizophrenia in Tuba rehabilitation center in Ardabil selected by available sampling method. Healthy group participants were selected through cloning by age, gender and marital status of the patient group. The data were collected by the questionnaire of Holmes-Rahe scale and Cohen et al. Data were analyzed by multivariate ANOVA (MANOVA) using SPSS software.

Results: Compared with the normal subjects, patients with schizophrenia had a higher mean score in negative perceived and experienced stresses, but had a lower mean score in positive perceived stress as well as in total perceived stress.

Conclusions: Results showed the levels of perceived stress and negative stress play important role in the creation and maintenance of schizophrenia.

Keywords: Schizophrenia, Stress, Perceived Stress, Experienced Stress, Females

1. Background

Schizophrenia is a clinical syndrome or variable and a deeply interruptive psychopathological disorder, which involves cognition, emotion, perception, and other aspects of behavior. Over the time, the emergence of these symptoms in different patients is not the same. But the disease effect is always severe and prolonged; schizophrenia usually begins before the age of 25, lasts a lifetime and occurs in all social classes (1). Schizophrenia is a severe mental disorder which can be found all over the world with prevalence about 7 per 1000 adult population (2).

The disorder is characterized by the fact that the ability to recognize reality and emotional responses, thinking processes, judgment and ability to communicate are so much affected and person's functioning is severely impaired. Hallucinations, delirium and negative symptoms are among common characteristics of schizophrenia (3).

Stress aggravates those who have mental disorders or are willing to develop. According to Diathesis-stress model, there is the possibility of disease incidence due to biological, psychosocial and social factors as well as the impact of a stressor. Vulnerability may be environmental, biological or a combination of them. There are also

strong evidences for a genetic cause. At present, the exact cause of schizophrenia is unknown, but in terms of diagnostic classification it involves a group of disorders probably with heterogeneous causes. There are two types of deviant family behaviors. In the first type, there is a constant dissociation between the parents and one of them makes himself/herself very close to the child with opposite gender. In another type, the diagonal relationship with one of the parents causes a conflict between the parents and leads to the dominance of one side. This dynamism pressures on interwoven adaptive ability of the patient with schizophrenia. Most researchers and psychologists believe that this disease is a representative of brain disorder that involves its structure or physiology. Psychological and social factors play their roles as detector elements, meaning that socio-psychological factors and unpleasant events in life can turn this potential disease into a de facto one. Genes certainly play a role in the development of this disease. Environmental factors, viral diseases and injuries to the skull and the severe stress of urban life also have a role in the increased rates of schizophrenia. Based on psychological theories, a patient tries to solve his/her mental conflicts, disabilities and failures through denying violence and painful reality of living in a fantasy world. It could

be said that most of the patients with schizophrenia live in two worlds in a moment of life, one in an unreal world and the other in the real world (4). During the years 1950-60, Brown et al. found that unlike patients living alone or in dormitory centers, some patients with schizophrenia become sick again subsequent to treatment and return to their families. Brown findings in British council psychiatric unit led to research on the status of patients, and formed the expressed emotion theory (EE) (5). Expressed emotion is defined as including criticism, hostile behavior and excessive conflict that can determine the parents and other caregivers' behavior towards the patient with schizophrenia. Many studies show that in families where there is a high rate of EE, the relapse rate of schizophrenia is high. The evaluation of EE involves the analysis of what and how it is expressed.

Given that schizophrenia is a chronic disease and each relapse causes more harm to the patient, repeated relapses disable him, decrease the daily activity, and increase financial burden of patients' maintenance (6). Fullam and Dolan investigated the necessity of recognizing facial emotion in patients with schizophrenia. The results showed no significant relationship between the positive or negative degrees and the frequencies of facial emotion for negative emotions (7). Salvatore et al. showed that patients with schizophrenia were not able to identify their feelings and had many difficulties to recognize negative emotions (8).

Lysaker et al. found that patients with schizophrenia and trauma, their feelings and emotions can be recognized (9). The study by Rukmini et al. indicated that the antioxidant activity in patients with schizophrenia measured by superoxide dismutase on the catalase had a reverse ratio with malone dialdehyde (MDA), resulting from the effects of oxidative stress on fat tissue. It could be a sign of impaired antioxidant defense in such patients (10). The conducted researches on stress and their associations with schizophrenia are limited. A research conducted by Dehghani on 81 patients with psychosis disorders, assessed the expressed emotion by relatives of the patients with their personality traits, and found positive and significant relationship between the personality trait of imagination in flexibility characteristic and meddling or obtrusiveness in EE (11). Therefore, given the lack of research in this field on one hand and contradicting researches on the other hand, the basic question arises that "Is there a significant difference between the two groups of females with schizophrenia and those with normal stress"?

2. Objectives

The current study aimed to evaluate the rate of experienced and perceived stresses in females with schizophre-

nia compared with those of healthy subjects to further aid in the treatment process of the patients.

3. Patients and Methods

The study was a causal-comparative research. The statistical population of the research includes all females with schizophrenia in Ardabil in 2011-2012, selected on the basis of diagnostic and statistical manual criteria (DSM-IV-TR) and psychiatric interview. The study sample included 50 patients with schizophrenia in Touba rehabilitation center in Ardabil, Iran, selected using convenience sampling method. The inclusion criteria were: age between 15 to 50 years, at least elementary education, no brain damage and no addiction. To gather demographic information of the patients, a questionnaire was provided and completed by the interviewer author. After receiving informed consent from the subjects and justifying those to participate in the research, the questionnaires were completed at the stage of getting partial insight and psychotic symptoms remission. For this study, two questionnaires were used to collect the data.

3.1. Holmes-Rahe Life Stress Inventory

Holmes-Rahe life stress inventory (1967) with 41 items was used to assess stress levels. These researchers in their wide studies graded the certain events of life on a scale of zero (0) to one hundred (100), and considered a sample of a homogeneous population retrospectively and prospectively, such as changes in health status, family relationships, economic and living conditions, education, religion and social affairs. Life changes were ordered according to the severity, from the major life crisis like death of a spouse to relatively minor events such as going to the park, holiday or receiving car park ticket. These life events include a variety of changes. Holmes and Rahe estimated the test validity as 71% using predictive validity and reliability as 82% using test-retest method. The reliability of this instrument in Iranian sample was reported as 79% using test-retest method, and its validity was announced as 74% using validity method simultaneously with the stress index (12).

3.2. Cohen et al. Perceived Stress Scale

The second tool was the Cohen et al. perceived stress scale (1983) including 14 items, each one answered on the basis of a 5-degree Likert scale (no, low, medium, high and very high). They get the scores of 1, 2, 3 and 2, respectively. The perceived stress scale assesses two subscales:

a) The subscale of negative stress perceived from stress, including the items 1, 2, 3, 11, 4, 12 and 14.

b) The subscale of positive stress perceived from stress, including the items 4, 5, 6, 7, 9, 10, and 13.

The scale reliability coefficient of internal consistency is obtained through Cronbach's alpha coefficient ranging from 0.82 to 0.86 in two groups of students and one group of smokers in the smoking quitting program. Perceived stress scale is significantly correlated with life events, physical depression symptoms, enjoying health benefits of social anxiety and low-life satisfaction. This scale is a perfect tool to assess the experience of overall stress in different age groups (13). The study used descriptive and inferential statistics for data analysis. At descriptive level, descriptive indicators such as the mean and standard deviation were used, and at the inferential level, the multivariate analysis of variance (MANOVA) was applied. Data analysis was carried out using statistical software SPSS version 15.

4. Results

There were 10 (20%), and 13 (26%) patients with schizophrenia in the age groups of 20 to 30 and 50 to 60, respectively, all cloned against the healthy people. The patients with schizophrenia were females cloned against the healthy people; 29 (58%) were single and 21 (42%) married. In the normal subjects, 29 (58%) were from single healthy group and 21 (42%) were married.

As can be observed in Table 1, compared with the normal subjects, patients with schizophrenia had a higher score average in negative perceived and experienced stress, but had a lower score average in positive perceived stress as well as in total perceived stress. Before using parametric tests of multivariate analysis of variance (MANOVA), the Box and Levene test was used to meet the assumptions. The homogeneity condition of variance and covariance matrices was observed. This test was not significant for any of the variables, and thus it is not prohibited to use parametric tests (Table 2).

As can be observed in Table 3, the Lambda Wilks significance level allows the possibility of using multivariate analysis of variance. The results showed that at least in terms of one of the comparative variables, there was a significant difference between perceived and experienced stress variables in patients with schizophrenia and those of the normal group.

As can be observed in Table 4, there was a significant difference ($P \leq 0.01$) between the two groups in terms of the mean stress scores ($F = 299.642$), negative perceived stress ($F = 49.446$), positive perceived stress, ($F = 69.877$) and total perceived stress ($F = 4.571$). The obtained results confirmed some differences between patients and the healthy group in terms of experienced and perceived stress levels.

5. Discussion

If schizophrenia is a brain disease, it is likely that it will be influenced by other body systems diseases (such as myocardial infarction and diabetes) resulting from socio-mental stress. The investigations show that stress is either the outcome or consequence of diseases. Adaptation techniques can be used to predict how to improve diseases (4). History of patients with schizophrenia indicated that some of the patients had a lot of tension, conflicts and numerous frustrations. These conflicts usually start in early childhood. Anxiety is often created in a tension-filled environment. In order to reduce its severity, mechanisms such as romanticization and seclusion are used, which may underlie the symptoms of schizophrenia. Most researchers believe that the origins of schizophrenia can be found in childhood experiences (14). Results of this study showed that compared with normal people, stress in patients with schizophrenia was significantly different. Positive and significant relationship was observed between the negative perceived and experienced negative stress in patients with schizophrenia. The current study results suggest that stress may underlie schizophrenia in individuals. Stress is a complex and essential phenomenon, which sometimes becomes troublesome, and if people cannot be accompany them, they will be threatened. People have a lot of individual differences in the sense of understanding events; therefore, a certain event may cause severe stress to an individual but no stress for someone else (15). In non-pathogenic cases and in healthy individuals the brain cells enjoy high concentrations of enzyme antioxidant and small molecules such as superoxide dismutase, catalase and vitamin E. However, in oxidative stress conditions, there is a balance between the production of free radicals and antioxidant defense system, and the body is not able to keep free radicals below toxic levels (16).

These findings suggest that antioxidant defense imbalance and oxidative stress may be associated with recurrent episodes of schizophrenia disease. The patients with schizophrenia are exposed to oxidative stress nineteen times more than others (6). The findings of the current research were consistent with those of the studies by Dehghani, Fullam and Dolan, Salvator et al., Lysaker and Rukmini et al. (7-11).

Selecting convenience as well as non-random sampling and using self-evaluation tool in this research along with the selection of the affected females were among the limitations of the present study. For future studies in this field, selecting equal numbers of male and female patients with schizophrenia is suggested. The results showed that the rate of negative perceived and experienced stress plays an important part in appearance and continuation of

Table 1. Mean and Standard Deviation of Perceived and Experienced Stress Variables in the Studied Groups

Variable	With Schizophrenia		Normal Subjects	
	MD	SD	MD	SD
Experienced stress	501.42	908.92	159.73	49.44
Negative perceived stress	16.92	2.90	13.40	4.11
Positive perceived stress	9.90	2.70	16.90	3.23
Total perceived stress	30.24	4.01	30.2	5.11

Table 2. The Levene Test Results for the Levels of Perceived and Experienced Stress in Patients with Schizophrenia and the Healthy Subjects

Variable	F	DF1	DF2	Significance Level
Experienced stress	31.497	1	99	000
Negative perceived stress	0.040	1	99	0.865
Positive perceived stress	0.059	1	99	0.800
Total perceived stress	0.003	1	99	0.977

Table 3. The Results of Multivariate Analysis of Variance Significant Test in the Studied Variables

Group	Analysis	Value	F	Df Hypothesis	Df Error	Significance Level
	Lambda Wilks	0.199	89.422	4	96	0.000

Table 4. The Results of Significance Test of Multivariate Analysis of Test on Experienced and Perceived Stress

Course	Comparative Variables	SS	Df	Ms	F	Sig.
Group	Experienced stress	3015990.899	1	3015990.899	299.642	0.000
	Negative perceived stress	499.995	1	499.995	49.446	0000
	Positive perceived stress	1097.900	1	1097.900	69/877	0000
	Total perceived stress	95.501	1	95.501	4.571	0.03
Error	Experienced stress	699242.868	99	699/868		
	Negative perceived stress	903.971	99	9.293		
	Positive perceived stress	1517681	99	15/7		
	Total perceived stress	1714/599	99	17/747		
Total	Experienced stress	14880935	101			
	Negative perceived stress	32030	101			
	Positive perceived stress	20305	101			
	Total perceived stress	79420	101			

schizophrenia.

Acknowledgments

Thus, the authors wish to thank all staff and patients in Touba rehabilitation center in Ardabil that cooperated in this study.

References

1. Sadock BJ, Sadock VA. Kaplan and sadock's synopsis of psychiatry: Behavioral sciences/clinical psychiatry. 10 ed. 20. Philadelphia: Lippincott Williams and Wilkins; 2007.
2. Chan SW. Global perspective of burden of family caregivers for persons with schizophrenia. *Arch Psychiatr Nurs*. 2011;**25**(5):339-49. doi: [10.1016/j.apnu.2011.03.008](https://doi.org/10.1016/j.apnu.2011.03.008). [PubMed: [21978802](https://pubmed.ncbi.nlm.nih.gov/21978802/)].
3. Richard W. Improvement of schizophrenia [Translation by Khoshnudifar M, Azadi H, Mohammadian F, Dezfuli B.]. 1 ed. ; 2009.
4. Bacher J , Minka S , Huli J . Psychopathology [Translation by SeyydMohammadi]. 10. Tehran: Arasbaran; 2010.
5. Brown GW, Monck EM, Carstairs GM, Wing JK. Influence of Family Life on the Course of Schizophrenic Illness. *J Epidemiol Community Health*. 1962;**16**(2):55-68. doi: [10.1136/jech.16.2.55](https://doi.org/10.1136/jech.16.2.55).
6. Sadock BJ, Sadock VA. Comprehensive text book of psychiatry. 7 ed. Philadelphia: Lippincott Williams and Wilkins; 2005.
7. Fullam R, Dolan M. Emotional information processing in violent patients with schizophrenia: association with psychopathy and symptomatology. *Psychiatry Res*. 2006;**141**(1):29-37. doi: [10.1016/j.psychres.2005.07.013](https://doi.org/10.1016/j.psychres.2005.07.013). [PubMed: [16343643](https://pubmed.ncbi.nlm.nih.gov/16343643/)].
8. Salvatore G, Dimaggio G, Lysaker PH. An intersubjective perspective on negative symptoms of schizophrenia: implications of simulation theory. *Cogn Neuropsychiatry*. 2007;**12**(2):144-64. doi: [10.1080/13546800600819921](https://doi.org/10.1080/13546800600819921). [PubMed: [17453896](https://pubmed.ncbi.nlm.nih.gov/17453896/)].
9. Lysaker PH, Dimaggio G, Buck KD, Carcione A, Nicolo G. Metacognition within narratives of schizophrenia: associations with multiple domains of neurocognition. *Schizophr Res*. 2007;**93**(1-3):278-87. doi: [10.1016/j.schres.2007.02.016](https://doi.org/10.1016/j.schres.2007.02.016). [PubMed: [17407806](https://pubmed.ncbi.nlm.nih.gov/17407806/)].
10. Rukmini MS, D'Souza B, D'Souza V. Superoxide dismutase and catalase activities and their correlation with malondialdehyde in schizophrenic patients. *Indian J Clin Biochem*. 2004;**19**(2):114-8. doi: [10.1007/BF02894268](https://doi.org/10.1007/BF02894268). [PubMed: [23105467](https://pubmed.ncbi.nlm.nih.gov/23105467/)].
11. Dehghani S. The relationship between expressed emotion level and personality trait of relative's patients with psychotic disorder. *Psychother Novelties*. 2004;**9**(1):60-5.
12. Holmes TH, Rahe RH. The social readjustment rating scale. *J Psychosom Res*. 1967;**11**(2):213-8.
13. Abolgasemi A, Narimani M. Psychological tests. BageRezwan; 2005.
14. Shamloo S. Mental hygiene. Tehran: Roshd; 2006. pp. 193-5.
15. SalmaniBarug N, Tagvalarijani T, Monjamed Z, Sharifi N, Bohrani N. Strategies of coping with stress. *J Hayat*. 2010;**10**(23):22-5.
16. Do KQ, Trabesinger AH, Kirsten-Kruger M, Lauer CJ, Dydak U, Hell D, et al. Schizophrenia: glutathione deficit in cerebrospinal fluid and prefrontal cortex in vivo. *Eur J Neurosci*. 2000;**12**(10):3721-8. [PubMed: [11029642](https://pubmed.ncbi.nlm.nih.gov/11029642/)].