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Comparing mental health of people with type I diabetes mellitus and non-diabetic people

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ABSTRACT

Purpose: Diabetes mellitus is a chronic disease which widely affects individual health and social performance. The purpose of this study was to compare the mental health of patients with type I diabetes and non-diabetic individuals.

Materials and Methods: This was a comparative after-the-fact study conducted in 2011. The participants included 50 patients with type I diabetes who were members of Diabetic Association of Ahvaz city, Iran. Also, 50 non-diabetic relatives of the patients were selected as the control group. Both groups were similar regarding sex and educational status. The 28-item general health questionnaire (GHQ-28) was distributed among both groups. The acquired data were analyzed using analysis of variance (ANOVA) and multivariate variance analysis method (MANOVA).

Results: There was a significant difference regarding mental health between those with type I diabetes and those without diabetes ($P < .001$) except in social dysfunction.

Conclusion: Type I diabetes can affect the mental health of the patients.

Keywords: type I diabetes; mental health; non-diabetic individuals; Ahvaz city; Iran.

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INTRODUCTION

Diabetes mellitus is a common disease of human communities that despite developments in medical sciences, its prevalence has not been decreased and is continually increasing.[1] Type I diabetes is a metabolic disorder which its main trait is lack of insulin production. It is caused by an a autoimmune disorder in beta cells of langerhans islands of pancreas.[2] The most common age for its start is in adolescence.[3] It disturbs the usual activities of the adolescent. It requires concentrated behaviors on the disease on behalf of the adolescent and his/her family and it affects the whole life of the person.[4] In this regard, the role of psychological factors in diabetes has been examined in several researches.[5-7]

Diabetes has many drawbacks, such as repeated injections of insulin, insulin funding, forced diet, frequent infections and possibility of frequent admissions to hospital due to complications. Also, it can force confinements on the reproductive system, marriage and employment for the individual. So it can decrease psychological health of these patients.[8] These patients commonly experience feelings of failure and disappointment because of conflicts with the disease. This experience affects their emotional feeling and sense of well-being directly.[9]

Diabetes is associated with increased risk of psychiatric symptoms and disorders.[10] Research shows that people with diabetes have a higher risk of depression and anxiety. The prevalence of depression is 24% in diabetic patients.[11] Various studies show a correlation between the disease and lower levels of mental health.[5,7] Kakleas

and colleagues reported that there is a high prevalence of psychiatric disorders in people with diabetes type I.[12] Also, in a study on the effects of type I diabetes, Bhadada and colleagues showed that nearly two-thirds of patients' parents have mental health problems.[13]

Development of diabetes complications reduces life expectancy because of the disease imposes a large economic burden on individuals, families and the society at large and it affects all aspects of one's life and his family.[14] Therefore, identifying patients' psychological problems and its effects on other family members is very important. Hence, the purpose of this study was to compare the mental health of patients with type I diabetes mellitus and non-diabetic individuals.

MATERIALS AND METHODS

This comparative-causative study which was conducted in 2011 included 50 type I diabetic participants who were members of the Diabetic Association of Ahvaz city, Iran. Also, 50 non-diabetic relatives of the patients were selected as the control group. The participants were sex matched and also in educational status. Each participant filled a questionnaire to provide data such as sex, age, disease duration and education. Then the 28-item general health questionnaire (GHQ-28) was distributed among these two groups. The inclusion criteria was not having chronic disease.;. The privacy of research information was assured to all the study participants.

The GHQ-28 was introduced by Goldberg in 1972 and later revised by Goldberg and Hillier in 1979 to increase its variance and factor analysis. It has four 7-item scales for measuring the mental health. These four scales are somatic symptoms, anxiety and insomnia, social dysfunction and depression. A lower score on this questionnaire means better mental health. Reliability coefficients of the questionnaire using re-assessment, bisection and Cronbach's alpha are 0.70, 0.93 and 0.90, respectively.[15]

RESULTS

There were 28 men and 22 women in each group. From among them, 19 participants had no high school degree, 22 had diploma (high school degree) and 9 had undergraduate degree. Also, the mean ages of the participants with type I diabetes and non-diabetic participants were 34.40 and 36.24 years old, respectively.

The mean and standard deviation of mental health in participants with type I diabetes were 35.63 and 12.97, respectively. These figures were 25.56 and 9.20 for non-diabetic participants, respectively. Also, the means and standard deviation of mental health subscales including somatic symptoms, anxiety and insomnia, social dysfunction and depression were 10.24 and 4.11, 10.65 and 5.34, 11.27 and 3.40,4.77 and 5.16 in patients with type I diabetes, respectively. In non-diabetic participants, the means of these subscales were 6.72 and 3.72, 7.44 and 4.19, 10.63 and 2.92, 1.63 and 2.72 respectively. **(Table 1)** There was a significant difference between total mental health scores of patients with type I diabetes and non-diabetic individuals ($P < .001$).

Since all multivariate variance analysis (MANOVA) method tests were significant in the $P < .001$, there was a significant difference at least in one subscale of mental health between the two groups. **(Table 2)** For understanding the difference, one-way analysis of variance was done in MANOVA (**Table 3**). There was a significant difference between the two groups in subscales of somatic symptoms ($F = 20.056$, $P < .001$), anxiety

Table 1. The mean and standard deviation of mental health scores and its subscales in the two studied groups.

	Diabetic Group		Non-diabetic Group	
	Mean	SD	Mean	SD
Somatic symptoms	10.24	4.11	6.72	3.72
Anxiety and insomnia	10.65	5.34	7.44	4.19
Social dysfunction	11.27	3.40	10.63	2.92
Depression	4.77	5.16	1.63	2.72
Total mental health status	35.63	12.97	25.56	9.20

Key: SD, Standard Deviation.

Table 2. The results of one-way variance analyze for comparing mental health in the two studied groups.

	Sum of Squares	df	Mean Square	F	*P* Value
Between groups	2536.83	1	2536.83		
Within groups	12406.08	98	126.59	20.039	< .001
Total	14942.91	98			

Key: df, degree of freedom.

Table 3. The results of analysis of variance in MANOVA on the mean the two studied groups' mental health subscales.

Dependent Variable	Sum of Squares	df	Mean Square	F	P Value
Somatic symptoms	308.869	1	308.869	20.056	<.001
Anxiety and insomnia	194.097	1	194.097	9.916	.002
Social dysfunction	10.163	1	10.163	1.007	.318
Depression	245.627	1	245.627	14.414	<.001

Key: df, degree of freedom.

and insomnia (F = 9.916, $P = .002$) and depression (F = 14.414, $P < .001$). But there was no significant difference in the social dysfunction subscale (F = 1.007, $P = .318$).

DISCUSSION

The results showed that there is a significant difference in mental health of people with diabetics type I and non-diabetic people. These results are consistent with Pena and colleagues' study who had also studied quality of life and mental health of the diabetic and non-diabetic subjects.[16] This finding can be explained according to the World Health Organization's definition of mental health, i.e.: a state of well-being that whereby each individual can realize their potential, able to cope with the normal stresses of life, able to engage in as fruitful and productive work and contribute to the community to which it belongs.[17]

Bernstein and colleagues have investigated mental health issues in adolescents and young adults with type I diabetes and its impact on glycemic control. In this research the participants completed three validated mental health disorder screening instruments: Beck's depression inventory, the screen for child anxiety related emotional disorders, and the eating disorder screen for primary care. The results showed that more than a third was screened positive: 11.3% for depression, 21.3% for anxiety, and 20.7% for disordered eating (14.7% had ≥ 2 positive screens).[18]

Diabetic patients commonly experience feelings of failure and disappointment because of conflicts with the disease. Problems resulted by diabetes affect their emotional and social feeling of well-being. Many reports state that feelings of fear, anger and guilt are associated with the disease. Many diabetic patients do not have the motivation to care and control the disease.[9] These factors cause the diabetic patients not to be able to engage in work and constructive activities. So they are not able to develop their potentials in general and according to World Health Organization's view, they have lesser mental health.

There were significant differences between all subscales of mental health in this study between the two groups except in social dysfunction. This is consistent with other studies results which had examined mental health in type I diabetic patients.[19-22] A possible explanation is that diabetic patients who have mental and physical problems due to restrictions in diet and activity need accurate and consistent care because of the risk of serious health complications such as kidney, eye, heart and brain disorders. Most of these patients deal with the limitations of their disease as well. A minority of them have such problems which is more noticeable in adolescence.[23]

Sivertsen and colleagues investigated mental health in adolescents with type I diabetes. Their results showed that adolescents with type I diabetes did not differ from their peers on any of the mental health measures. These findings contradict previous studies, and suggest that type I diabetes is not associated with an increased risk of psychosocial problems.[25] This is not consistent with results of our research. To explain this difference, it should be noted that Sivertsen and colleagues had investigated symptoms of mental health problems including sleep and eating disturbances in adolescents with and without type I diabetes. But our study investigated the mental health symptoms, including somatic symptoms, anxiety and insomnia, social dysfunction and depression.

CONCLUSION

Type I diabetes is a chronic disease that can decrease the mental health status of the diabetic patients compared to non-diabetics. It is recommended that comprehensive and preventive programs be implemented in health centers for mental health promotion in these patients.

CONFLICT OF INTEREST

None Declared.

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