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The communication Between Diabetes and Alzheimer's Disease: a study on diabetic patients referring to health centers in three cities of Khuzestan province?

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ABSTRACT

Introduction: Epidemiological studies suggest convincing evidence for a meaningful relationship between type 2 diabetes and dementia. It also shows that type 2 diabetes is a major cause of Alzheimer's disease. Given the Iranian population's profile of about 31 million middle-aged people, in the next two decades, older people will form a large population. On the other hand, the increase in Alzheimer's in the elderly is due to the prevalence of this disorder and the adverse effects and adverse effects in the next two decades. And so far, quantitative research has been conducted to investigate the risk of Alzheimer's disease in diabetic patients in Khuzestan province. Therefore, this study titled "The communication Between Diabetes and Alzheimer's Disease: study on diabetic patients referring to health centers in three cities of Khuzestan province" was done.

Materials and Methods: This retrospective cross-sectional descriptive study was conducted on diabetic patients hospitalized in Shoushtar, Behbahan, and Abadan, between 2015 to 2017. The files of these patients who were diagnosed with diabetes and referred to medical centers in the mentioned cities that were extracted from medical records of city hospitals and entered the study. Data were then entered into SPSS software version 20. Data were analyzed using descriptive statistics, analytical tests and the significance level of P < 0.05. \square

Results: In this study, the mean age of patients was 57.00 ± 46.23 years. A statistically significant relationship was found between diabetes and those with Alzheimer's disease (p = 0.006). However, there was no significant relationship between diabetes and those with a history of cardiovascular disease (p = 0.09). There was no significant relationship between education and those with Alzheimer's disease (0.06). But a statistically significant relationship was found between jobs with those with Alzheimer's disease (0.003).

Conclusion: In this study, there was a significant relationship between diabetes and those with Alzheimer's disease. Therefore, this study showed the risk of Alzheimer's disease in diabetic patients in the three mentioned cities. More epidemiological and clinical research is needed to investigate the relationship between these two diseases in a wider and larger volume.

Keywords: Diabetes, Diabetic Patients, Risk Factor, Alzheimer's Disease.

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Introduction:

Diabetes is a major cause of morbidity and mortality in the industrialized and developing world. This disease is a chronic, metabolic disease characterized by increased levels of glucose in the blood and carbohydrate metabolism, protein, and lipids (1-7). In 2014, the global prevalence of diabetes among adults older than 18 years of age was estimated at 9%. The prevalence of this disease in Iran is more than 14% or more in the population of women, according to statistics released by the health ministry's health department in a population over the age of 30. People with diabetes who have a BMI greater than a "normal" level are at risk of secondary complications of diabetes, one of which is the complication of cancer (8-18).

The disease with its complications is not reversible in many cases. In general, these complications can cause many illnesses. Most studies have shown that patients with diabetes who are less self-healing have more complications (19-24).

Complications of diabetes are very common among patients with this condition and we are going to examine a few cases. Among diabetic patients, depression is one of the most common psychiatric disorders (25,26). Depression and occupational stress daily can cause some disorders in people's mental and physical health. Job stress is a physical and emotional response that can lead to illness and injury (27-30). Diabetes prevalent among many diseases, one of which is thalassemia (31). Thalassemia is one of the most common abnormalities in the blood, which leads to a sharp decrease in the quality of life in people with this condition (32,34).

Another complication of diabetes is the development of Alzheimer's disease. Alzheimer's disease is a chronic progressive and debilitating brain disorder that with profound effects on memory, intelligence and self-care. Alzheimer's causes include progressive deficiency in brain glucose, energy metabolism, cellular skeletal system, myelin retention, and neural flexion (35,36). Epidemiologic studies suggest convincing evidence for a meaningful relationship between

type 2 diabetes and dementia. And it also shows that type 2 diabetes is a major cause of Alzheimer's disease (37-39). However, these findings are no different and in a long-term survey, researchers found that although borderline diabetes significantly increased the risk of diabetes, dementia or Alzheimer's, the effects of the risk are not independent and dependent (40). This means that insulin resistance, the ability to respond to stimulation of insulin, varies in different organs (41).

Given the Iranian population's profile of about 31 million middle-aged people, in the next two decades, older people will form a large population. On the other hand, the increase in Alzheimer's in the elderly is due to the prevalence of this disorder and the adverse effects and adverse effects in the next two decades (42,43). And so far, quantitative research has been conducted to investigate the risk of Alzheimer's disease in diabetic patients in Khuzestan province. Therefore, this study titled "The communication Between Diabetes and Alzheimer's Disease: study on diabetic patients referring to health centers in three cities of Khuzestan province" was done.

Materials and Methods: Information required for this study is a retrospective cross-sectional analytical descriptive study which used to review patient files during the years 2015 to 2017 in the medical records section the hospitals of the Shoushtar, Behbahan, and Abadan city was extracted. The inclusion criteria included all diabetic patients in each age group and sex that they were diagnosed with the disease, from cases that had a medical diagnosis other than the disease, and cases that were incompletely filled were not used and were excluded. The cross-section and sex studied.

The study included a survey of 1855 diabetic patients admitted to the hospitals in the abovementioned city. The patients who were diagnosed with diabetes and referred to treatment centers in the city from 2015 to 2017 were included in the study.

In order to study the records and collect data, a written Letter of Introduction from the Deputy of Education and Research of the Medical Sciences Universities of the mentioned city was taken.

Then, the records of patients referring to health centers in the archives department were used. The required information was collected through a researcher checklist from the records. All examined in this study included demographic, clinical laboratories, such as gender, age, marital status, ethnicity, occupation, socioeconomic status, education level, having or not having a history of diabetes, Cardiovascular disease and Alzheimer's disease and family history of diabetes. Data were then entered into SPSS version 20 software. Data were analyzed by descriptive statistics including enumerated tables, mean, standard deviation and variance, and analytical tests including Chi-square and Chi-square Pearson, T-test and at the significant level of P < 0.05.

Results: The study included 1855 individuals with diabetes mellitus with an average age of

57.00± 46.23 years. In terms of the job, the highest percentage of jobless was 37%. In this study, 42.6% of graduates had the highest academic qualifications.

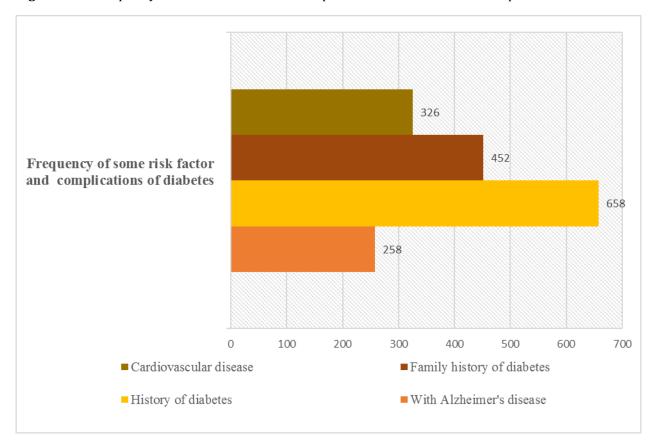
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In this study, 13.9% of those with diabetes also had Alzheimer's disease. Also, 35.4% of people with a history of diabetes, 24.3% of family history of diabetes, and 17.5% had cardiovascular disease. There was a significant relationship between diabetes and those with Alzheimer's disease (p = 0.006). However, there was no significant relationship between diabetes and those with a history of cardiovascular disease (p = 0.09). Figure 1

There was no significant relationship between education and those with Alzheimer's disease (0.06). But a statistically significant relationship was found between jobs with those with Alzheimer's disease (0.003).

Figure 1: The frequency of some risk factors and complications of diabetes in diabetic patients



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Discussion: Diabetes is a major cause of morbidity and mortality in the industrialized and developing world. This disease is a chronic, metabolic disease characterized by increased levels of glucose in the blood and carbohydrate metabolism, protein, and lipids Epidemiological studies suggest convincing evidence for a meaningful relationship between type 2 diabetes and dementia. It also shows that type 2 diabetes is a major cause of Alzheimer's disease. Given the Iranian population's profile of about 31 million middle-aged people, in the next two decades, older people will form a large population. On the other hand, the increase in Alzheimer's in the elderly is due to the prevalence of this disorder and the adverse effects and adverse effects in the next two decades. And so far, quantitative research has been conducted to investigate the risk of Alzheimer's disease in diabetic patients in Khuzestan province. Therefore, this study titled "The communication Between Diabetes and Alzheimer's Disease: study on diabetic patients referring to health centers in three cities of Khuzestan province" was done.

In one study, the prevalence of Alzheimer's disease was calculated. Of those over 65, 10.3% had Alzheimer's disease. 18.7 percent of people aged 75-84 and 2.47 percent of those over 85 years old (44). Age is the largest risk factor for Alzheimer's disease and the prevalence of this disease increases with age. Many epigenetic changes occur with natural aging. These changes are seen in Alzheimer's disease. The main cause of this disease is the destruction of neuronal cells in the brain, leading to the emergence of aging plaques that ultimately lead to the death of neurons (45).

In this study, 17.5% of diabetic patients had cardiovascular disease. In another study, the prevalence of heart problems in diabetic patients was 39.7% and was not consistent with the study, which can be due to different nutrition, low aerobic exercise, and so on (3). Diabetes has always been a risk factor for cardiovascular disease. For example, a study was conducted to investigate four major cardiovascular risk factors (hypertension, diabetes, cigarette, and dyslipidemia), and over 2,000 patients were

examined, most of them having at least one of four risk factors (46). Other study results also found that 6.84% of women and 6.80% of men had at least one of the four major cardiovascular risk factors (hypertension, diabetes, cigarette, and dyslipidemia) (47).

In this study, 13.9% of those with diabetes also had Alzheimer's disease. There was also a significant relationship between diabetes and those with Alzheimer's disease. The results of the study by Madmoli et al. (4) showed that there was no significant relationship between Alzheimer's disease and diabetes. But there was a significant relationship between insulin consumption and Alzheimer's disease, which was not consistent with this study. The reason for this inconsistency can be due to differences in lifestyle in the two studies, dietary differences, and so on.

A study of some studies has shown that chronic consumption of high-fat diets and diabetes is one of the factors that reduces cognitive function and a type of dementia. In a study using magnetic resonance imaging, diabetic patients showed decreased levels of the hippocampus and decreased cognitive speed compared with older adults (48).

The results of the study showed that the animals undergoing type 2 diabetes-induced memory deficiency in comparison with non-diabetic SAMP8 mice. The authors also showed that these animals contained beta-amyloid proteins in the brain and hyperphosphorylated Tau proteins in the hippocampus, indicating similar changes to Alzheimer's disease (49). \square

In one study, over 80% of Alzheimer's cases had Type II diabetes or IFG (Impaired Fasting Glucose) (50). This study also reveals the link between diabetes and Alzheimer's.

Conclusion: In this study, there was a significant relationship between diabetes and those with Alzheimer's disease. Therefore, this study showed the risk of Alzheimer's disease in diabetic patients in the three mentioned cities. More epidemiological and clinical research is needed to investigate the relationship between these two diseases in a wider and larger volume.

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