

Depressive Disorder in Patients with Alzheimer's Dementia and Their Caregivers: A Cross-Sectional

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Abstract

Introduction: Depression, dementia and Alzheimer's disease are the most common psychiatric problems in the elderly. Late-onset depression in the elderly with cognitive impairment reveals a close relationship between these two problems. The present study aimed to determine the frequency of major depressive disorder in patients with Alzheimer's dementia.

Methods: This was a cross-sectional study. Fifty patients with depression and Alzheimer's dementia and their caregivers who had referred to Ali-Ebn-Abi-Taleb hospital neurology clinic participated in this survey. They were diagnosed to have Alzheimer's dementia by a neurologist. Then demographic and Beck questionnaires were completed by patients and also by caregivers to assess their mood and depression. After that, the data were gathered and analyzed by SPSS-17. Pearson correlation coefficient, Chi-square and exact-tests were used.

Results: The mean depression score was 21.4 ± 9.5 that 30% had mild, 50% moderate and 20% had severe depression. There was a significant correlation between depression score and age. Gender, occupation, education level, marital status and place of residence did not have any significant relationship with depression ($p > 0.05$). Mean caregiver depression score was 11.7 ± 8.3 . Seventy percent had mild depression, 26% moderate depression, and 4% had severe depression. Between caregiver's depression score and age, sex, occupation, education level was not a significant relationship. Correlation between depression severity in patients and caregivers was not significant ($p = 0.392$).

Conclusions: The prevalence of depression was high in older adults with Alzheimer's dementia. Some levels of depression were also detected in their caregivers but this was not correlated with patient's depression.

Keywords: Alzheimer's dementia, depression, aging

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Introduction

Dementia is progressive destruction of nerves which happens with aging. Complete destruction of mind power is a basic feature of this disease which appears as the impairments in memory, thought and perception. It also leads to changes in other psychological functions such as behavior, character, judgment, and social behavior (Aminoff, Greenberg, & Simon, 2015). Alzheimer's dementia is accompanied progressive decrease in cognitive performance, and brain functions. Dementia increases with age. Its prevalence is double in people who are over 60 years old. In other words, the prevalence of dementia increases from 3% in fewer than 60 years old to 5% in 85 years old (Jorm,

Korten, & Henderson, 1987). The phenomenon of the increasing population of old people is one of the most important economic, social and health challenges of the 21st century (Kashfi, KhaniJeihooni, & Farhadi, 2011; Woods, O'Philbin, Farrell, Spector, & Orrell, 2018). Alzheimer's dementia is associated with a gradual onset and a progressive decline in cognitive functioning. From 40 to 50 percent of patients suffering from personality changes, depression and anxiety, 20 to 30 percent suffering from obsession and suspicion (especially Alzheimer's dementia), and 30 to 40 percent suffering from the delusion of persecution, and paranoid (Razavi-Kia & Ansari, 2007). As

cognitive disorders progress in Alzheimer's dementia, patient's ability for tolerating stress in different situations decreases. For example, a person who has developed dementia experiences his stress period tougher than the person without dementia (Hall, 1987).

Researchers have shown that depressive disorder, cognitive disorders, and dementia are the most important psychiatric disorders among old people. About 10-15% of individuals who have Alzheimer's dementia, show symptoms of psychiatric disorders, especially depression. There are some symptoms of depression in people older than 60 years old, including mood instability, trouble concentrating, cognitive disorder, family conflicts and health problems. Consequently, depression is the most important reasons of inability and retirement, especially in elderly people (Nejati & Ashayeri, 2007). Symptoms of depression in dementia are high and the correlation between depression and cognitive disorders diminish the quality of life and finally increase the rate of death. When an elderly person knows about their cognitive disorder, they became upset, and it might lead to depression. On the other hand, depression is accompanied by decreasing an individual's attention to the surrounding environment, which results in disability in the processing of information (cognitive function) (Saczynski et al., 2010). A major depressive disorder is the most prevalent disorder among psychological disorders during the lifetime, which increase with aging (especially more than 50 years) (Higgins & George, 2013; Kaplan, 2016). Old people are more susceptible to depression and stress, because of lack of confidence, lack of activity and mobility, losing friends and relatives, decrease in financial and physical independence and chronic diseases (including cognitive disorder and Alzheimer's dementia) (Mohamed, Rosenheck, Lyketsos, & Schneider, 2010).

In a study of 220 elderly people, the evidence showed that 21 percent of people in nursing homes due to age conditions, 48 percent of them due to physical impairments and 100 percent due to psychiatric problems had Alzheimer's dementia (Amini, Dowlatshahi, Dadkhah, & Lotfi, 2010). The aim of this study was to evaluate the frequency of the major depressive disorder in patients with Alzheimer's dementia and in their caregivers who had referred to Ali-Ebn-Abi-Taleb hospital neurology clinic.

Materials and Methods

This was a descriptive cross-sectional study performed on patients with Alzheimer's dementia.

Study population

In this research, the study population included all individuals with Alzheimer's dementia according to the diagnosis of a neurologist who went to neurological clinics or was confined to bed in neurological department of Ali -Ebn-Abitaleb hospital in 2014. Fifty patients with Alzheimer's dementia were selected randomly from patients who referred to the neurology clinic of Ali- Ebn- Abitaleb hospital. All patients consented to participate in this study.

Data collection

Demographic features form, Beck depression questionnaire

and interview to individuals with Alzheimer's dementia were obtained from all patients.

Research procedure

Individuals with Alzheimer's dementia who were diagnosed by a neurologist were interviewed and filled demographic characteristic form and Beck depression questionnaire based on DSM-5 criteria. Their caregivers also filled Beck questionnaire.

Data analysis

Data from questionnaires collected, and finally were inserted in SPSS-17 computer software. In order to determine depression in individuals with Alzheimer's dementia and their caregivers, Chi-Square and Fisher Exact-tests were used. Also, the correlation of depression in patients and their caregivers was assessed using Pearson's correlation coefficient.

Inclusion criteria

All individuals with Alzheimer's dementia (according to DSM-5 criteria) who refer to the neurology clinic of Ali -Ebn-Abitaleb hospital in 2014.

Exclusion Criteria:

- Patients who were impossible to contact them, because of the severe stage of the disease
- Patients who had dementia with reasons other than Alzheimer
- The existence of chronic diseases other than dementia, including different types of malignant, neurodegenerative diseases, other chronic diseases, infections and ...
- A history of the depressive disorder before dementia
- Not consenting to participate in the study

Results

Fifty patients with Alzheimer's dementia consented to participate. The age range of participants was 69-84 years (mean \pm SD: 77.1 \pm 2.9). Twenty-five patients (50%) were male and 25 were female (50%). Individuals were divided into 2 age groups of 69-79 and 80-84 years old, from which 39 (78%) were 69-79 years old and 11 people (22%) were from 80-84 years of age. Among them, 30 patients were married (60%) and 20 participants were divorced or were widowed. Among study subjects, 24 (48%) were living in villages and 26 were living in the city (52%). Considering educational level, among patients 21(42%) were illiterate, 18(36%) had primary school education level, 4(8%) had secondary school education level, 4(8%) had high school education level and 3 (6%) were educated in university. Considering job, 12 were self-employed (24%), 13 were worker (26%), 18 were housewife (36%) and others were unemployed or retired. Considering the relative frequency of depression in patients, 15 patients (30%) had minor depression, 25 patients (50%) had moderate depression, and 10 patients (20%) had major depression. Respecting relative frequency of depression among caregivers, 35 (70%) had minor depression, 13 (26%) had moderate depression and 2 of them (4%) had major depression. The mean duration of disease diagnosis in patients with Alzheimer was 2.9 \pm 1 years and the mean duration

of patient care by caregivers was 2.6 ± 0.99 (2 years and 6 months). The mean depression score in patients was 21.4 ± 9.5 .

According to the above results, Major depressive disorder is the most common among the age group of 80-84 (45.5%) and Minor depressive disorder is the most common among the age group of 69-79 (35.9%). The relationship between depression severity and age was tested by Fisher's exact-test and was significant with $p\text{-value} = 0.035$. Thus, there is a significant relationship between depression severity and age. According to the above results, Major depressive disorder among women (20%) and men (20%) is the same. Minor depressive disorder in men (32%) is more than women (28%). The relationship between depression severity and gender was tested by Chi-square test and with $p = 0.948$ was not significant. So depression severity in two genders is the same (Table 1).

According to the above results, the highest percentage of depression can be seen in unemployed or retired participants with a minor (42.8%) and major depression (42.8%) subtypes. Because of the few numbers of samples in each cell, Fisher's Exact Test was performed and in both cases, the relationship between depression severity and the job was not significant with $p\text{-value} > 0.05$. Therefore, there is not any relationship between depression severity and job. According to above results, major depressive disorder in married (20%) and divorced- widowed groups is the same, but minor depressive disorder in married individuals (33.3%) is more than the other group. The relationship between depression severity and marital status tested with Chi-square test and with $p > 0.801$ was not significant. So there is no relationship between depression severity and marital status.

According to the above results, the percentage of minor depression among people who educated in universities is the most (66.7%). A major depressive disorder is the most in people with high school education (50%). These cases can't be described, because of few numbers of samples in each cell. The relationship between depression and education level with $p\text{-value} > 0.05$ was not significant so there is no relationship

between depression and education level. The correlation coefficient of depression score with the duration of diagnosis of Alzheimer's disease in patients with Alzheimer's dementia. The Pearson's correlation coefficient of depression score with the duration of disease diagnosis in patients with Alzheimer's disease was: $r = 0.218$ which indicates a positive correlation coefficient. But this correlation coefficient was not significant with $p = 0.128$. It means that the duration of diagnosis of Alzheimer's disease didn't affect their depression score.

Discussion

In a study carried out by Dr Majid Sadeghi and his colleagues on the elderly over 65 years old in nursing homes of Tehran in 2004, there were 121 participants with cognitive impairments which (Alzheimer's) 51 (42.1%) were male and 70 (57.8%) were female (Sadeghi & Kazemi, 2004). In Kashfi et al. (2011) study, 65% of patients had minor depression, 25.83% had moderate depression and 9.17% had major depression. In the study by Taban et al. (2005) which was done on 124 people older than 60 years and had Alzheimer and lived in a nursing home in 2005, 86.4% of all aged people had Alzheimer, and 57.3% of them had major depression and 29% had minor depression. In our study, considering the frequency of depression among patients, 30% of patients had minor and 20% had major depression, (major depression had the least portion). Issues such as compulsory retirement, missing beloved and loneliness can be followed by feeling blue, sadness or depression. In studies by Kashfi et al. (2011) there was significant relationship between depression severity and gender, occupational and marital status ($p = 0.001$) which does not in accord with our statistical results, but there was no significant relationship between depression severity and educational degree ($p = 0.732$) and there was significant relationship between depression severity and age which is in accord with our statistical results. This study was done on people older than 60 years who were supported by 6 Behzisti centers of Shiraz in 1389 (Persian year), 120 aged individuals

Table 1. Frequency distribution of depressive disorder in patients with Alzheimer's dementia by demographic status

Variables	Minor dep. †	Moderate dep.	Major dep.	Total
Age				
69-79 years old	14 (35.9)	20 (51.3)	5 (12.8)	39 (100)
80-84 years old	1 (9.1)	5 (45.5)	5 (45.5)	11 (100)
Total	15 (30)	25 (50)	10 (20)	50 (100)
Gender				
Male	8 (32)	12 (48)	5 (20)	25 (100)
Female	7 (28)	13 (52)	5 (20)	25 (100)
Total	15 (30)	25 (50)	10 (20)	50 (100)
Job				
Self-employed	3 (25)	6 (50)	3 (25)	12 (100)
Worker	3 (23.1)	9 (69.2)	1 (7.7)	13 (100)
House wife	6 (33.3)	9 (50)	3 (16.7)	18 (100)
Unemployed/Retired	3 (42.8)	1 (14.2)	3 (42.8)	7 (100)
Total	15 (30)	25 (50)	10 (20)	50 (100)
Marital status				
Married	10 (33.3)	14 (46.7)	6 (20)	30 (100)
Divorced or widowed	5 (25)	11 (55)	4 (20)	20 (100)
Total	15 (30)	25 (50)	10 (20)	50 (100)
Educational status				
Illiterate	4 (19)	12 (57.1)	5 (23.8)	21 (100)
Primary school	7 (38.9)	9 (50)	2 (11.1)	18 (100)
Secondary school	0 (0.0)	4 (100)	0 (0.0)	4 (100)
High school	2 (50)	0 (0.0)	2 (50)	4 (100)
University	2 (66.7)	0 (0.0)	1 (33.3)	3 (100)
Total	15 (30)	25 (50)	10 (20)	50 (100)

dep. †, Stands for depression N (%)

with Alzheimer participate in which 100 people were female (83.3%) and 20 people (16.6) were male.

Alipour et al. (2009) conducted a research on 100 elderly people with Alzheimer's disease in Tehran; the majority of participants (61%) were in the range of 60-70 years old, with the average ages of 70 ± 7.28 for men and 69 ± 6.36 for women. In a study done by Taban and his colleagues in Isfahan, there was a significant relationship between depression severity in individuals with Alzheimer and gender, marital status and educational level ($p < 0.05$), there was no significant relationship between age and depression severity, which does not in accord with our results (Taban et al., 2005).

We tried to control the confounding effects of age, gender, educational level and marital status by categorizing. After controlling confounding effects we did not find any significant relationship between depression severity and gender ($p = 0.948$), marital status ($p = 0.801$), job and residence place of patients ($p > 0.05$), which may be due to confined sample size. But there was a significant relationship between depression severity and age with $p = 0.035$. Differences in results of ours and Taban et al. (2005) or Kashfi et al. (2011) study may have occurred due to lack of confounding control in their study. These differences may also have been occurred due to differences in socio-demographic characteristics of participants in two studies.

In the study performed by Nejati and Ashayeri (2007) and his colleagues on aged people older than 60 years old in 2006, 120 individuals participate who 60 people (50%) were male and 60 people (50%) were female. Also, 6.67% of individuals had major depression, 30.67% had moderate depression and 14.33% were healthy. The depression average score in patients was 21.4 ± 9.5 which was close. In the mentioned studies, only Nejati and Ashayeri (2007) study is in accord with our research. But the results of Taban et al. (2005) disagreed with our results. A significant correlation between age and depression severity in patients with Alzheimer's disease in ours and above studies proves the senile process of Alzheimer's dementia and co-occurrence of depression with cognitive decline. In our study, we assessed the relationship between the patient's depression and their caregivers, but it doesn't assess in any of the above studies. We did not find a significant relationship between these variables. This may be due to caregivers separate lifestyle and lack of emotional engagement with patients.

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Ethical Approval

This article is part of a doctoral research project approved by the University of Islamic Azad and has a code of ethics (912003) from Islamic Azad University of Ali-ebn-Abitaleb branch of Yazd.

Conflict of interest

There is no conflict of interest among authors of this article.

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