



Depression and Dementia in Elderly People

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Abstract

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BACKGROUND: Dementia itself is not a disease, but a constellation of symptoms caused by diseases and disorders that affect the brain. Dementia and depression are mental health problems commonly encountered in neuropsychiatric practice in the elderly.

AIM: The aims study was to evaluate the prevalence of depression in elderly people with dementia and to see the association between them.

METHODS: This is a retrospective cohort study associating dementia with depression among the population from 50 until to more than 85 years old in Shkodra City in Albania. Practically, the figure of 187 patients with dementia was selected using the cluster sampling method. Patients were considered to have depression when one or more ICD codes for depression were recorded as primary or secondary diagnosis. Multilogistic regression odds ratio (OR) was used to identify factors predicting severity of depression.

RESULTS: A total figure of 187 patients with dementia were enrolled into the study for a period of 4 years. Approximately, the minimum age was 50 and maximum 89 years old with average 75 ± 8.1 std. The prevalence of depression among those patients with dementia resulted 44.9% (84/187). Almost 61% of patients had moderate depression and 28% of patients had severe depression. According to studies, male with dementia was the most predominant sex compared to female with percentage 60.4% and 39.6%, respectively. On the other hand, depression was being found more predominant to female patients with dementia, not to forget that female was 2.9 (OR) time in risk to develop depression compared to male 95% CI (1.6–5.4) $p = 0.0005$. We did not find a strong association between the late-life depressions than in depression in middle-aged adults.

CONCLUSION: Depression in older adults is a serious concern, especially in dementia population, which often is underdiagnosed being masked by cognitive impairments. According to the case in question, the findings highlight a high prevalence of depression within the dementia patients. After numerous medical researches, we found a strong association between depression and gender, lifestyle, type, or residence with the dementia patients. As stated, the better knowledges in the interactions between the depression and dementia from the part of medical staff will likely contribute to the timely prevention, identification, and treatment of depression in the elderly and will influence on their quality of life.

Introduction

Neuropsychiatric diseases are a leading cause of disability worldwide, with numbers expected to increase dramatically in the coming decades, mainly due to aging populations [1]. Medically proven the most incapacitating of these illnesses is dementia causing substantial physical and psychological disability, suffering, dependency, and economic costs for patients, caregivers, and society alike [2].

Dementia and depression are mental health problems that are commonly encountered in neuropsychiatric practice in the elderly [3]. Patients with dementia of any type have a high incidence of major depression. Depression is a frequent additional problem among people with dementia, and one that can greatly diminish quality of life for both patient and care partner. Depression is especially common in people with vascular dementia but also affects many with Alzheimer's disease [4], [5]. The occurrence of a

first major depressive episode in an older adult is a risk factor for developing dementia [6].

The majority of people living with dementia worldwide in 2015 was estimated at 47.47 million, reaching 75.63 million in 2030 and 135.46 million in 2050 [2]. On the flip side, approximately half of the patients with late-onset depression have cognitive impairment. The prevalence of depression in dementias has been reported to be between 9 and 68% [3].

Depression and dementia are closely related. However, the relationship is complex and the mechanism linking remains unknown; depression can coexist with dementia or can also be confused with dementia, hence, the importance of a differential diagnosis [7]. Furthermore, it was found that dementia affects performance in everyday life to produce total disability [8]. The aim of this study is to determine the prevalence depression in elderly people with dementia and to assess the association between them and risk factors.

Methods

Study area

Shkodër is the fifth most populous city of the Republic of Albania and the seat of Shkodër County and Shkodër Municipality. It is located in the northern region of country. Shkodër is affected by a seasonal Mediterranean climate with continental influences. As of the 2011 census, the municipal unit of Shkodër had an estimated population of 77,075 of whom 37,630 were men and 39,445 women.

Study design and data collection

This is a cross-sectional study associating dementia with depression among the population from 50 until to more than 85 years old for a period of 4 years. The community center of mental health of Shkodra district serves as a center for the diagnose, treats and management of all cases with mental health problem. As a result, during the 4 years, about 187 patients with dementia aged 50 years and above are selected using the cluster sampling method. All patients were evaluated by the medical staff of the community center for their mental health problems. Patients were considered to have depression when one or more ICD codes for depression were recorded as primary or secondary diagnosis. The inclusion criteria were all patients age 50 years old and above diagnose with dementia. Exclusion criteria were all patients with other mental health problem except dementia and depression and patients <50 years old.

The information regarding all patients remains anonymous in this research. As they were recruited to the population survey related and to the severity of the dementia or depression, the patients or their familiar signed a consent themselves or through their informant. The procedure for analyzed patients and collection of data was approved by the local ethics committees.

Data analysis

The data are presented as mean and percentage. The Kolmogorov–Smirnov test was used to test the data for normal distribution. Multiple regression analysis was used to identify factors predicting severity of depression. The software Statistical Package for the Social Sciences version 20.0 was used for data calculation. $p < 0.05$ was taken as statistically significant.

Results

According to this study, a number of 187 patients with dementia are enrolled for a period

of 4 years. The presence of dementia by the medical staff of the Community Center of Mental Health of Shkodra district was determined by Mini-Mental State Examination. Evidentially, the minimum age resulted as 50 and maximum 89 years old with average 75 ± 8.1 std. The Beck Depression Inventory was used to assess depression among dementia patients. Patients were considered to have depression when one or more ICD codes for depression were recorded as primary or secondary diagnosis. The prevalence of depression among those patients with dementia resulted 44.9% (84/187).

The baseline characteristics of the study population is presented in detail in Table 1. Male with dementia was the most predominant sex compared to female with percentage 60.4% and 39.6%, respectively. In conclusion, depression was being found more predominant to female patients with dementia.

Regarding the age groups, the age over 70 years old presented a high number of patients with dementia and depression also. The age group of 50–59 years old presents a low number of patients 1.6% with dementia and 1.2% with depression. Those who determined the age group of 60–69 years old presented a percentage 4.8% for dementia and 5.9% for depression. Concerning the age group of 70–79 years presented 31.3% of patients in dementia and 38.1% with depression, those over 80 years old presented the highest number with dementia 62.6% and for those with depression in 54.8% of dementia patients (Table 1).

Some of risk factors (such as type of residence, marital status, lifestyle and education level) that influence in dementia and depression are included in this study. Analytically was seen that a high number of patients with dementia 67.4% (126/187) and depression 54.8% (46/84) lived in urban area. Patients with dementia that referred single related to marital status resulted 2.7% and those with depression resulted 10.7%. Those who

Table 1: Baseline characteristics of the study population

Variables	Dementia patients, No. (%)	Depression patients, No. (%)
Gender	187	84
Women	74 (39.6)	45 (53.6)
Man	113 (60.4)	39 (46.4)
Age (years)		
50–59	3 (1.6)	1 (1.2)
60–69	9 (4.8)	5 (5.9)
70–79	58 (31.0)	32 (38.1)
≥80	117 (62.6)	46 (54.8)
Type of residence		
Urban	126 (67.4)	46 (54.8)
Rural	61 (32.6)	38 (45.2)
Marital status		
Single	5 (2.7)	2 (2.4)
Married	108 (57.7)	42 (50)
Divorced	25 (13.4)	17 (20.2)
Widow	49 (26.2)	22 (26.2)
Lifestyle		
Living with family	139 (74.3)	49 (58.3)
Living alone	48 (25.7)	35 (41.7)
Education level		
Illiterate	15 (8.0)	9 (10.7)
Elementary and	39 (20.8)	22 (26.2)
Secondary		
High school	103 (55.1)	39 (46.4)
University	30 (16.1)	14 (16.7)

were married turned out 57.7% and with depression 50%, while divorced with dementia 13.4% and with depression 20.2%, and widow resulted 26.2% for those with dementia and 16.2% within those with depression.

Most of them living with their family 74.3% for those with dementia and 58.3% for those with depression. Education level presents a diversity of case distribution, so, patients in illiterate resulted 8.2% in dementia and 10.7% in depression, those with elementary and secondary level resulted 20.8% in dementia and 26.2% in depression. The high school level referred 55.1% of patients with dementia and 46.4% of patients with depression, and with university academic level referred almost the same percentage 16.1% of patients with dementia and 16.7% of patients with depression.

The severity of dementia and depression in study population are presented in Figure 1. Related to severity of dementia, 17% (32/187) were in mild dementia, 48% (89/187) in moderate dementia, and 35% (66/187) in severe dementia.

In relation to the severity of depression, most of the patients were in moderate depression 61% (51/84), in severe depression were 28% (24/84) of patients, and others 11% (9/84) were in mild depression.

Based on several previous neurological research documents, there are over 100 diseases that may cause dementia. The most common causes of dementia include Alzheimer's disease, vascular dementia, and dementia with Lewy bodies. In this study, 31.5% of patients resulted with Alzheimer disease, vascular dementia 12.8%, and Lewy body dementia (LBD) 10.2%, and also, 45.5% of all patients were classified in unspecified cases (Table 2). Contrastingly, patients with depression appears to have a high prevalence of cases in type of unspecified cases and AD, followed by VD and LBD dementia type.

Table 2: Dementia type and distribution of types within the depression patients

Type of dementia	No. of patients	Percentage (CI 95%)
Alzheimer's disease	59	31.5 (25.7–41.8)
Vascular dementia	24	12.8 (7.9–18.1)
Lewy body dementia	19	10.2 (0.92–14.2)
Unspecified cases	85	45.5 (39.4–55.6)
Prevalence of depression among persons with dementia according to the type of dementia		
Alzheimer's disease	26	30.9 (2.8–34.3)
Vascular dementia	19	22.7 (20.21–29.45)
Lewy Body dementia	7	8.3 (6.91–14. 83)
Unspecified cases	32	38.1 (29.8–44.27)

As regards, the comorbidities of the diseases that this study population presented at the visiting time in Community Center of Mental Health of Shkodra district look like the following. The majority of patients with dementia reported presence of hypertension as a comorbidity 155/187. In terms of heart diseases, 98/187 of patients had cardiac problems. Hyperlipidemia were referred in 92/187 of patients, diabetes in 94/187, cerebrovascular diseases in 25/187 and current smoker in 109/187 of them.

Table 3: Comorbidities diseases among the patients with dementia and depression according to the gender

Variables	Number of cases	Dementia patients (187)		Depression patients (84)	
		Women	Men	Women	Men
Hypertension	155	86	69	25	29
Heart diseases	98	41	57	26	38
Hyperlipidemia	92	43	49	21	32
Diabetes	94	43	51	29	34
Cerebrovascular diseases	25	11	14	7	10
Current smoker	109	18	91	11	56

In Table 3 are scientifically presented comorbidities diseases of patients with dementia and depression according to the gender (women-men). As observed, hypertension was more predominant in females with dementia compared to the males. Oppositely, patients with depression appears a different situation, where the males are more predominant compared to females.

While as to the rest of comorbidities was seen the predominance of males compared to females in both patients with depression and dementia. In addition, the same situation arises for current smoker, males are more predominant versus females.

In terms of patients with dementia appears a higher number of cases in males compared to females, but in patients with depression appears the opposite, so is a predominance of females compared to males. Based on multiple regression analysis used to identify factors predicting severity of depression in this study, is found a strong association for the gender. Females were 2.9 (odds ratio) time in risk to develop depression compared to males 95% CI (1.6–5.4) p = 0. 0005 (Table 4).

According to the marital status, patients that referred being single, widowed, or divorced were grouped in the non-married group and in other group are all married patients. There is an association between marital status and patients in depression. Non married dementia's patients resulted 1.78 times in risk to developed depression compared to the married dementia's patients for CI 95% (1.00–3.22) p = 0.05.

The analysis related to type of residence, shows a strong association among those living in rural areas compared to those living in urban areas. Patients with dementia living in rural areas resulted 2.9 times in risk to developed depression compared to those living in urban areas, for CI 95% p = 0.0011.

Regarding the lifestyle of dementia patients, most of them lived with their family, however, there was a strong association among dementia patients living alone and those who lived with their family. Dementia patients with depression living alone resulted 4.9 times in risk to developed depression compared to those living with their family for CI 95% (2.39–10.2) p < 0.0001. There is no association between the age and education level among the patient with dementia and depression. In two cases, the p value resulted > 0.05 (Table 4).

AQ8 Table 4: Risk of depression associated with dementia

Characteristics	Total number	Depression	No depression	OR (95% CI)	p-value
Gender					
Men	113	39	74	1 reference	
Women	74	45	29	2.94 (1.60–5.40)	0.0005
Age groups					
Less than 70 years old	12	6	6	1 reference	
More than 70 years old	175	78	97	1.24 (1.60–5.40)	0.7
Type of residence					
Urban	126	46	80	1 reference	
Rural	61	38	23	2.9 (1.53–5.5)	0.0011
Marital status					
Married	108	42	66	1 reference	
No married (single, divorced, widow)	79	42	37	1.78 (1.00–3.22)	0.05
Lifestyle					
Living with family	139	49	90	1 reference	
Living alone	48	35	13	4.9 (2.39–10.2)	<0.0001
Education level					
Without or low education level	54	31	23	1.54 (0.62–3.78)	0.3
Moderate level	104	39	65	1.47 (0.64–3.3)	0.36
High level	30	14	16	1 reference	

Discussion

In terms of depressive symptoms, they are more prevalent in the elderly. Moreover, depression is more prevalent among people with dementia. Depressive symptoms have been noted to occur in approximately 20–30% of people with dementia. Sustained and disabling major depressive episodes are more common in those with dementia than in age-matched controls without dementia [6]. This scientific study highlights the prevalence depression in elderly people with dementia and assesses the association between them and risk factors. The prevalence of depression among the elderly with dementia resulted 44.9%. This prevalence turned out to be more or less the same as another study conducted by Ferri *et al.* [9] who reported that depressive symptoms were found in 43.8% of the persons with dementia. Reversing it, this study for the case in question among dementia patients resulted higher compared to the study of Andreasen *et al.* [10] who found the prevalence rate of depression among older adults with dementia living in low- and middle-income countries 12.4%. However, prevalence estimation of depression in dementia population varies greatly across studies, and also, study populations and definition of dementia vary among the studies and the results are not fully comparable [10].

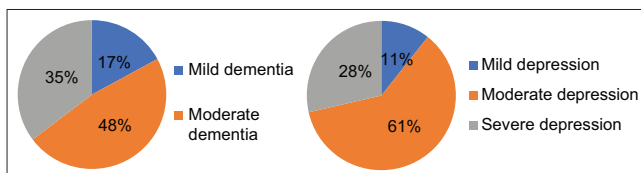


Figure 1: Severity of dementia and depression in the study population

Age is the primary risk factor for developing dementia (strong scientific evidence). Rising life expectancies are increasing the number of people who develop dementia disorders. Approximately 1% of 65 years old and more than 50% of 90 years old have a dementia disorder [11]. Furthermore, Andreasen *et al.* in his study found that the gender-specific risk of depression associated with dementia was higher for males than females [10]. A further study reported that age, severity of depression, race, education,

and vascular risk factors have been noted to make significant contributions to dementia and especially to late-onset depression [12].

In this study, the majority of patients were over 70 years old, most of them with dementia turned out to be males. Concerning patients with depression within patients with dementia, the most predominant gender were female compared to males. There is no association between the age and depression among people with dementia. Furthermore, there is a strong association between risk factors for depression among patients with dementia is consistent with most cohort studies [13], [14], [15], [16], [17], [18], [19]. As a result, there is an association for risk factor such as gender, type of residence, marital status, and lifestyle. For all the cases in question risks factor, the p value resulted < 0.05.

The diagnostic criteria for depression among patients with dementia have varied considerably among studies and many researchers have failed to quantify participants' severity of depression [20]. This study shows a predominance of moderate dementia 48% and in the same time predominance in moderate depression among patients 61%.

Individuals with dementia are likely to become depressed and among the dementing disorders, LBD carries the highest risk for depression [21], [22]. The incidence of depression may be 30% in vascular dementia and in Alzheimer's disease [23]. This study shows in detail the prevalence of type of dementia among patients. The prevalence for AD resulted 31.5%, for VD, prevalence was 12.8%, and for LBD 10.2%. Furthermore, 45.5% of all patients were classified in unspecified cases.

Humans with dementia suffer from a high prevalence of concurrent medical conditions known as comorbidities [24]. Research establishes that the prevalence of comorbid conditions in persons with dementia is high [25]. Studies, for instance, have estimated that 61% of people with Alzheimer's disease have three or more comorbid diagnoses [26]. Many studies reported that as the severity of the dementia

increases, so does the rate of comorbid conditions [23], [27]. The cardiovascular health study found a cumulative prevalence of 26% for depression among individuals with mild cognitive impairment MCI [28]. In the opposite way, investigators of the Italian Longitudinal Study on Aging found depressive symptoms in 63% of the patients with MCI [29]. Majority of patients who display dementia in this study reported the presence of hypertension as a comorbidity. Comorbidities such as heart diseases, hyperlipidemia, diabetes, and cerebrovascular diseases were identified also. Hypertension was more predominant in females who pose dementia and a different situation for patients with depression, in which males are more predominant to females.

Remaining number of comorbidities was seen a predominance in males compared to females, in both patients with depression even to those who display dementia. It is also worth noting that the same situations arise for current smoker, males are more predominant versus females.

Conclusion

Depression in older adults is a serious concern, especially in dementia population, which often is underdiagnosed being masked by cognitive impairments. Prevalence estimates of depression in dementia population vary greatly across studies, and a reliable result is crucial for further interventions. The findings highlight a high prevalence of depression within the dementia patients. There is found a strong association between depression and gender, lifestyle, type, or residence of the patients who present dementia. The prevalence of comorbid conditions in individuals who display dementia is high. While comorbidities are often treatable and some may be reversible, the focus on dementia as a condition in isolation, both in public policy and in medical practice, risks comorbidities remaining undiagnosed, potentially reducing people's quality of life, and leading to early mortality. Knowledge in the interactions between the depression and dementia will likely contribute to the timely prevention, identification, and treatment of depression in the elderly and will influence on their quality of life.

Limitation

Although all of the baseline and nearly all of the subsequent neuropsychological assessments were performed by a specialized medical staff, this study presents a limitation, because, we record a low figure of patients and some findings according to the risk factor for dementia and depression have not resulted significant.

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