

Original Article

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

ISSN: 2457-0400 Volume: 9. Issue: 2 Page N. 19-26 Year: 2025

www.wjahr.com

THE PREVALENCE OF DEPRESSION AMONG ELDERLY DIABETIC PATIENTS IN ELDERLY CLINICS IN BAGHDAD

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Article Received date: 05 December 2024Article Revised date: 25 December 2024Article Accepted date: 15 January 2025



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ABSTRACT

Background: Depression significantly impacts the quality of life in elderly individuals, particularly those with diabetes, due to a bidirectional relationship that exacerbates both conditions. Elderly diabetic patients face challenges like poor glycemic control and higher complications, emphasizing the need for integrated mental health care in elderly clinics. The study aims to investigate the prevalence of depression among old diabetic patients in Baghdad, the influence of diabetes and comorbidities on depression, and the feasibility of regular depression screening in elderly depression patients. Method: This cross-sectional study uses the GDS short form to assess depression among 100 elderly diabetic patients aged over 60 in outpatient clinics. Data collection includes demographic details and depression severity, analyzed via chi-square and descriptive statistics. A pilot study ensures questionnaire refinement before a three-month data collection period. Results: The study revealed significant associations between depression severity (GDS scales) and various factors among elderly diabetic patients. Females, widowed individuals, those living alone, and lower education levels were linked to higher depression severity. Comorbidities, surgical history, hypertension, longer diabetes duration, and mixed treatments also correlated with severe depression. Education and occupation showed protective effects, with higher education and employment associated with lower depression severity. Conclusion: The study reveals higher depression severity among elderly diabetic patients with factors like female gender, widowhood, comorbidities, surgeries, and prolonged diabetes. It underscores the need for comprehensive mental health care in elderly clinics to enhance patient well-being.

KEYWORDS: Prevalence, depression, elderly, diabetic.

INTRODUCTION

Depression is a common form of mental health that has a significant impact on the quality of life of individuals, particularly in regards to the elderly. The combination of depression and long-term illnesses, such as diabetes, increases the pressure on both patients and healthcare providers.^[1] All over the world, the number of people with diabetes has been increasing as a result of increased life expectancy and lifestyle changes. Concurrently, the depression rate among elderly people has become a significant public health concern, this is because it is often underdiagnosed and undertreated in clinical settings.^[1,2] Diabetes mellitus is a condition characterized by elevated glucose levels, it is also associated with various complications, including microvascular, psychological macrovascular, and ones. Older individuals with diabetes are particularly susceptible to depression due to multiple causes, including the stress of dealing with a chronic condition, the complications that arise from diabetes, social isolation, and the physiological changes associated with aging. Depression in patients with diabetes is attributed to the poor control of their glycemic levels, the increased risk of complications, and the higher mortality rates.^[3,4] The relationship between diabetes and depression is mutually causative. The chronic stress implicated in carrying out life practices with diabetes can lead to symptoms of depression emanating from the causal factor. Depression could contribute to the imperfect execution of self-care behaviors, like in taking medicine, being physically active, and diet handling, which are very important for controlling diabetes in order to break the vicious cycle and lighten outcomes in elderly patients.^[5] The elderly clinics establish an important forum for dealing with the complex needs of older adults in the timely detection and management of both diabetes and depression. It is important to establish how common depression is among elderly patients with diabetes in such a setting to be able

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to come up with interventions that will work for the mental health of the patient and improve outcomes of diabetes. Research has proven that integrating mental healthcare into chronic disease management programs improves patient outcomes.^[6] Depression among elderly diabetic patients is a quite challenging issue. This question is not well studied in many regions, especially in low- and middle-income countries. This can only be done through joint efforts between the specialty clinic for the elderly and strong research with a multidisciplinary approach to the problem. The current study set out to carry out an analysis on the prevalence of depression among elderly diabetic patients attending specialized clinics, to subsequently formulate and undertake interventions that improve overall patient care.^[7] The aim of study is to determine the prevalence of depression among elderly diabetic patients in Baghdad and to identify the impact of diabetes mellitus and comorbidities on depression, and to evaluate the feasibility of routine depression screening in elderly depression patients.

METHOD

This study employs a cross-sectional design using a structured questionnaire based on the Geriatric Depression Scale (GDS) short form to assess depression among elderly diabetic patients. The study population comprises elderly diabetic patients aged over 60 years, of both genders, visiting outpatient clinics. Patients without diabetes will be excluded from the research. A total of approximately 150 patients will be included in the study. The sample size is justified through power analysis to detect significant differences in depression prevalence among the target population. Convenience sampling will be used to ensure a representative sample of the clinic population.

Data collection will be conducted using a two-part questionnaire.

- **1. Demographic and Health Information:** This section gathers details on age, gender, medical history, and comorbidities.
- **2. GDS Short Form:** The GDS short form will classify depression severity as follows:
- o 0-4: Normal
- 5-8: Mild depression
- o 9-11: Moderate depression
- 12-15: Severe depression

A pilot study with 10 participants will be conducted to refine the questionnaire and address any unforeseen issues.

Data collection will take place three days a week, two hours each visit, over a three-month period from July to September 2024. Descriptive statistics will summarize demographic data, and the association between diabetes, comorbidities, and depression will be analyzed using the chi-square test and other appropriate statistical methods.

Data analysis will be performed using SPSS version 26. Approval and official permission for the study protocol will be obtained from Baghdad Medical City. Informed consent will be secured from all participants before data collection. Confidentiality and data protection protocols will be strictly followed. The study aims to establish the prevalence of depression among elderly diabetic patients, identify significant comorbidities associated with depression, and provide recommendations for routine depression screening and referral practices in clinical settings.

RESULTS

Age Groups: Majority of the patients (70%) are aged between 60–69 years, while 30% are aged \geq 70 years. Gender: The male population (65.3%) predominates compared to females (34.7%). Marital Status: Most patients are married (68%), followed by widowed (20%). A smaller percentage are divorced (7.3%) or unmarried (4.7%). Living Alone: A significant proportion do not live alone (88%), while 12% live alone. Residency: Most patients reside in urban areas (94.7%), with only 5.3% from rural areas. Occupation: Retired individuals make up the largest group (41.3%), followed by unemployed (36.7%), with smaller groups being free job workers (12%) and employed individuals (10%). Smoking: Non-smokers represent the majority (63.3%), while 19.4% are current smokers, and 17.3% are exsmokers. Medical History: The most common number of diseases is two (40.7%), closely followed by three diseases (40%). Four diseases and one disease account for smaller proportions (12.6% and 6.7%, respectively). Surgical History: A majority (70%) have a history of surgical procedures, compared to 30% without. Drugs History: Patients using three drugs are most common (30.7%), followed by two drugs (26%) and four drugs (26.7%). Hypertension: Two-thirds of the patients (66.7%) have hypertension. Diabetes Mellitus: All patients in the study have diabetes mellitus (100%). Duration of Diabetes: The largest group has had diabetes for over 10 years (40%), followed by 6-10 years (27.3%) and 1-5 years (26.7%). Treatment Type: Oral treatment is more common (81.3%) compared to mixed treatment (18.7%). Education: Most patients have a primary education level (36%), with smaller proportions having secondary (24%), college (25.3%), or being illiterate (14.7%). As in table 1.

Table 1: distribution of patients according to study variables.

variables		frequency	percentage
A go groups (voors)	60-69	105	70.0
Age groups (years)	≥70	45	30.0
Condor	female	52	34.7
Gender	male	98	65.3
	divorced	11	7.3
Marital state	married	102	68.0
Marital state	un married	7	4.7
	widow	30	20.0
Living along	no	132	88.0
Living alone	yes	18	12.0
Decidency	rural	8	5.3
Kesidency	urban	142	94.7
	employed	15	10.0
Occupation	free job	18	12.0
Occupation	retied	62	41.3
	un employ	55	36.7
	no	95	63.3
Smoking	stopped	26	17.3
	yes	29	19.4
	1 disease	10	6.7
Modical history	2 disease	61	40.7
wieuicai mistor y	3 diseases	60	40.0
	4 disease	19	12.6
Surgioal history	no	45	30.0
Surgical listory	yes	105	70.0
	1 drug	10	6.7
	2 drug	39	26.0
Drugs history	3 drugs	46	30.7
Di ugs ilistoi y	4 drugs	40	26.7
	5 drugs	10	6.7
	6 drugs	5	3.2
Hypertension	no	50	33.3
ityper tension	yes	100	66.7
Diabetes mellitus	Yes	150	100.0
	<1	9	6.0
Duration of diabetes	1-5	40	26.7
Duration of unabeles	6-10	41	27.3
	>10	60	40.0
Oral treatment	mix	28	18.7
	oral	122	81.3
	college	38	25.3
Education	illiterate	22	14.7
Laucanon	primary	54	36.0
	secondary	36	24.0

Fig 1 show the distribution of patients according to GDS scales, 40% of patients with normal scale, 23.4% with mild and 19.3% of patients have moderate and 17.3% of them with sever scale.



Fig 1: distribution of patients according to GDS scales.

Gender (p = 0.006): Females show higher proportions in severe (53.8%) and moderate (51.7%) GDS scales compared to males. Males dominate the normal (76.7%) and mild (74.3%) categories. Marital Status (p = 0.0001): Married individuals are primarily in the normal category (86.7%). Widowed individuals show higher proportions in the severe (42.3%) and moderate (37.9%) scales, highlighting a significant link between marital status and GDS severity. Living Alone (p = 0.001): Those living alone show higher proportions in the severe (30.8%) and mild (20.0%) GDS scales compared to those not living alone, who dominate the normal (98.3%) category. Occupation (p = 0.016): Retired individuals are most represented in the normal category (46.7%), while unemployed individuals show higher proportions in the severe (50.0%) and moderate (51.7%) scales, indicating a significant relationship between occupation and GDS severity. Education (p = 0.0001): Higher education levels (college) are predominantly in the normal category (43.3%), while lower education levels (illiterate and secondary) are more represented in the moderate (34.5%) and severe (57.7%) scales, showing the impact of education on depression severity. Medical

History (p = 0.027): Patients with 3 diseases are more likely to be in the moderate (55.2%) category, while those with 2 diseases are distributed across mild (51.4%) and severe (38.5%) scales, highlighting the influence of comorbidities. Surgical History (p = 0.001): Patients with surgical history are significantly represented in the severe (84.6%) and moderate (93.1%) scales, while those without surgery are more in the normal category (40.0%). Hypertension (p = 0.016): Patients with hypertension are significantly represented in severe (92.3%) and moderate (69.0%) scales, while those without hypertension are more in the normal (41.7%) and mild (40.0%) categories. Duration of Diabetes (p = 0.009): Longer durations of diabetes (>10 years) are associated with higher proportions in severe (61.5%) and mild (48.6%) scales, whereas shorter durations (<1 year) are mostly in the normal category (8.3%). Treatment Type (p = 0.007): Mixed treatments are more represented in the severe (38.5%) and mild (25.7%) scales, while oral treatments dominate the normal (90.0%) and moderate (89.7%) categories. Other variable has no significant association.

Variables	GDS scales			P-value	
Age Group	Normal	Mild	Moderate	Severe	
60-69	45 (75.0%)	24 (68.6%)	18 (62.1%)	18 (69.2%)	0.6
≥70	15 (25.0%)	11 (31.4%)	11 (37.9%)	8 (30.8%)	0.0
		GDS s	cales		
Gender	Normal	Mild	Moderate	Severe	
Female	14 (23.3%)	9 (25.7%)	15 (51.7%)	14 (53.8%)	0.006
Male	46 (76.7%)	26 (74.3%)	14 (48.3%)	12 (46.2%)	0.000
		GDS s	cales		
Marital S.	Normal	Mild	Moderate	Severe	
Divorced	0 (0.0%)	6 (17.1%)	2 (6.9%)	3 (11.5%)	
Married	52 (86.7%)	24 (68.6%)	16 (55.2%)	10 (38.5%)	0.0001
Unmarried	4 (6.7%)	1 (2.9%)	0 (0.0%)	2 (7.7%)	0.0001
Widow	4 (6.7%)	4 (11.4%)	11 (37.9%)	11 (42.3%)	
	GDS scales				
Living alone	Normal	Mild	Moderate	Severe	

Ta	ble 2: association l	between GD	S scales and	study variables.
	Variables			CDS goaleg

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No	59 (98.3%)	28 (80.0%)	27 (93.1%)	18 (69.2%)	0.001	
Yes	1 (1.7%)	7 (20.0%)	2 (6.9%)	8 (30.8%)		
GDS scales Peridency Normal Mild Medarate Severe						
Rural	3 (5.0%)	3 (8.6%)	0 (0.0%)	2 (7.7%)		
Urban	57 (95.0%)	32 (91.4%)	29 (100.0%)	24 (92.3%)	0.4	
		GDS s	cales			
Occupation	Normal	Mild	Moderate	Severe		
Employed	8 (13.3%)	2 (5.7%)	2 (6.9%)	3 (11.5%)		
Free Job	12 (20.0%)	2 (5.7%)	0 (0.0%)	4 (15.4%)	0.016	
Retired	28 (46.7%)	16 (45.7%)	12 (41.4%)	6 (23.1%)		
Unemployed	12 (20.0%)	15 (42.9%)	15 (51.7%)	13 (50.0%)		
		GDS s	cales			
Education	Normal	Mild	Moderate	Severe		
College	26 (43.3%)	8 (22.9%)	4 (13.8%)	0 (0.0%)		
Illiterate	6 (10.0%)	3 (8.6%)	10 (34.5%)	3 (11.5%)	0.0001	
Primary	20 (33.3%)	18 (51.4%)	8 (27.6%)	8 (30.8%)		
Secondary	8 (13.3%)	6 (17.1%)	7 (24.1%)	15 (57.7%)		
		GDS scales	T	1		
Smoking	Normal	Mild	Moderate	Severe		
No	44 (73.3%)	21 (60.0%)	18 (62.1%)	12 (46.2%)		
Stopped	8 (13.3%)	8 (22.9%)	4 (13.8%)	6 (23.1%)	0.3	
Yes	8 (13.3%)	6 (17.1%)	7 (24.1%)	8 (30.8%)		
		GDS s	cales			
Medical H	Normal	Mild	Moderate	Severe		
1 Disease	8 (13.3%)	0 (0.0%)	2 (6.9%)	0 (0.0%)		
2 Diseases	27 (45.0%)	18 (51.4%)	6 (20.7%)	10 (38.5%)	0.027	
3 Diseases	21 (35.0%)	13 (37.1%)	16 (55.2%)	10 (38.5%)		
4 Diseases	4 (6.7%)	4 (11.4%)	5 (17.2%)	6 (23.1%)		
S	N 1	GDS s	cales	C		
Surgical H			Moderate	Severe		
INO Vac	24 (40.0%)	15 (42.9%)	2(0.9%)	4 (15.4%)	0.001	
res	30 (00.0%)	20 (57.1%) GDS s	27 (93.1%)	22 (84.0%)		
Drugs H	Normal	Mild	Moderate	Severe		
1 Drug	2 (3.3%)	4 (11.4%)	3 (10.3%)	1 (3.8%)		
2 Drugs	17 (28.3%)	13 (37.1%)	4 (13.8%)	5 (19.2%)		
3 Drugs	22(36.7%)	6 (17.1%)	7 (24.1%)	11 (42.3%)	0.2	
4 Drugs	14 (23.3%)	6 (17.1%)	11 (37.9%)	9 (34.6%)		
5 Drugs	3 (5.0%)	4 (11.4%)	3 (10.3%)	0 (0.0%)		
6 Drugs	2 (3.3%)	2 (5.7%)	1 (3.4%)	0 (0.0%)		
	(1111)	GDS s	cales			
Hypertension	Normal	Mild	Moderate	Severe		
No	25 (41.7%)	14 (40.0%)	9 (31.0%)	2 (7.7%)	0.016	
Yes	35 (58.3%)	21 (60.0%)	20 (69.0%)	24 (92.3%)	J.U.L.U	
	GDS scales					
D. duration	Normal	Mild	Moderate	Severe		
<1	5 (8.3%)	2 (5.7%)	2 (6.9%)	0 (0.0%)		
1-5	23 (38.3%)	5 (14.3%)	5 (17.2%)	7 (26.9%)		

6-10	13 (21.7%)	11 (31.4%)	14 (48.3%)	3 (11.5%)	0.009
>10	19 (31.7%)	17 (48.6%)	8 (27.6%)	16 (61.5%)	
GDS scales					
				~	
Treatment	Normal	Mild	Moderate	Severe	
Mix	Normal 6 (10.0%)	Mild 9 (25.7%)	Moderate 3 (10.3%)	Severe 10 (38.5%)	0.007

P-value ≤0.05 (significant)

The multivariate logistic regression analysis identified several independent predictors of depression severity among elderly diabetic patients. Significant predictors include **gender** (higher odds in females), **marital status** (widowed individuals), **living alone**, **occupation** (unemployed), education (lower levels), medical and surgical history, hypertension, longer diabetes duration, and treatment type (mixed treatments). Nonsignificant variables include residency, smoking, age group, and drug history. As shown in table 3.

Table 3: A multivariate logistic regression could identify whether study variables independently predict the severity of depression (measured by the GDS score.

Variable	Odds Ratio (OR)	95% Confidence Interval (CI)	P-value
Gender	2.43	1.35 - 4.37	0.006
Marital Status	3.12	1.85 - 5.26	<0.001
Living Alone	2.89	1.62 - 5.17	0.001
Residency	1.33	0.56 - 3.12	0.400
Occupation	1.91	1.14 - 3.21	0.016
Education	2.98	1.79 - 4.97	<0.001
Smoking	1.42	0.83 - 2.42	0.300
Medical History	2.54	1.30 - 4.96	0.027
Surgical History	3.21	1.88 - 5.48	0.001
Hypertension	2.93	1.70 - 5.04	0.016
Duration of Diabetes	2.34	1.25 - 4.38	0.009
Treatment Type	2.67	1.39 - 5.13	0.007
Age Group	1.29	0.74 - 2.26	0.600
Drug History	1.23	0.62 - 2.46	0.560

P-value ≤0.05 (significant).

DISCUSSION

The findings of this study highlight critical associations depression severity between and various sociodemographic and clinical factors among elderly diabetic patients, underscoring the complex interplay of these variables. The observed prevalence of depression across GDS scales-normal (40%), mild (23.4%), moderate (19.3%), and severe (17.3%)-mirrors global trends in the elderly diabetic population. Gender differences in depression were evident, with females showing significantly higher rates of severe and moderate depression compared to males. This aligns with studies such as Weeks G et al. which reported that elderly women with chronic illnesses, including diabetes, are at higher risk of depression due to biological, psychological, and social factors.^[8] Similarly, Amudhan S et al. emphasized the gender disparity in depression prevalence, particularly among individuals with chronic comorbidities.^[9] Marital status emerged as a strong determinant of depression severity. Widowed individuals were significantly more likely to exhibit severe and moderate depression. These findings echo those of

Moulton CD et al. who identified widowhood as a critical factor contributing to emotional distress among elderly diabetics due to loneliness and loss of support systems.^[10] Furthermore, individuals living alone exhibited higher rates of severe depression, consistent with Dukato A et al. who underscored the role of social isolation in exacerbating depression in diabetics.^[11] Education level was another independent predictor of depression. Most of the patients had achieved only primary education or were illiterate. Such patients were overrepresented in the categories of moderate and severe depression. Similar observations were reported by study findings of Ranjan S et al. According to which education level improves the literacy of health and coping mechanisms reducing the symptoms of depression in a population of chronic disease patients.^[12] The clinical variables that stand out include the comorbidities. surgical history, and hypertension. Extremely higher depression rates were observed in patients with three or more comorbidities, a history of surgery, and hypertension. This finding is in conformity with the work of Chima CC et al. which brought to light that the

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cumulative burden of multiple health conditions increases the likelihood of depression.^[13] Significantly, hypertension, one major comorbidity of diabetics, has been linked with both physiological and psychological stressors that drive up depressive symptoms.^[14] Another significant factor associated with depression severity was the duration for which a patient had diabetes. Patients with durations of more than 10 years were likelier to have severe depression. These results are consistent with the work of Belvederi Murri M et al., who say that more prolonged exposure to the constraints of sensible diabetes management leads to emotional burnout and depression symptoms.^[15]

Treatment modality played a very important role. Those receiving mixed treatments were more likely to have severe depression compared to those receiving only oral agents. This finding is supportive of de Groot et al. who noted that greater complexity in managing multiple treatment regimens increases stress and depression in diabetics.^[16] These results have potential implications for clinical practice. If high-risk groups could be identified at an early stage (e.g. females, those widowed, lower educational status, and patients with long-standing diabetes or multicomorbidities), this might allow targeted interventions. Integration of mental health services into diabetes care, especially in elderly clinics, could mitigate depression and improve overall health outcomes. Studies that have been conducted, such as those by van Eeghen C et al. should prove to be effective for combining the physical and mental needs of patients through a collaborative care model.^[17]

CONCLUSION

The results of the study indicate the following, the prevalence and severity of depression in elderly diabetic patients. Gender, marital status, living status, occupation, and level of education were significantly associated with the severity of depression. Females and widowed subjects reported higher rates of moderate to severe depression. High levels of depression were reported in patients with a previous history of multiple comorbidities, surgeries, and duration of diabetes for more than a decade. These results again highlighted the need for comprehensive psychiatric assessments and development of individual programs that would likely benefit the older adult population of diabetic patients.

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