

Prevalence of depression among older people in Iraq

Saad Ahmed Ali Jadoo ¹, Mustafa Ali Mustafa Al-Samarrai ², Adil Hassan Alhusseiny ³, Perihan Torun ⁴, Ahmed Saadi Mohammed⁵, Ismail Ibrahim Latif ⁶

^{1,3,6} College of Medicine, University of Diyala, 32001, Diyala, Iraq

² Faculty of Medicine, Anbar University, Anbar, Iraq

⁴ Department of Public Health, Hamidiye International School of Medicine, University of Health Sciences, Istanbul, Turkey

⁵ Department of Anesthesia Techniques, Bilad Alrafidain University College, 32001, Diyala, Iraq

Abstract

Background: The global prevalence of mental disorders, including depression, has steadily increased.

Objective: To identifying the prevalence rate of depression and the related predictors among old-age people in Iraq.

Patients and Methods: A cross-sectional study was conducted from August to November 2021. A random sampling technique was employed to gather information from the old age patients during their routine visits to outpatient clinic of three public hospitals (Baquba, Ramadi, Samarra), in Iraq. Data collection involved the utilization of a semi-structured questionnaire incorporating the validated Geriatric Depression Scale (GDS-30) administered through face-to-face interviews. Descriptive, bivariate, and multivariate logistic regression analyses were employed to examine the relationships between variables in the study. SPSS version 16 was utilized for data analysis, with statistical significance set at a threshold below 0.05.

Results: Data of 344 old-age respondents (range 60-81 years) with a mean age of 75.15 (\pm 7.52) years have undergone final analysis. More than half were males (50.6%), married (62.2%), ranked themselves as unhealthy (72.4%), physically inactive (70.6%), and financially dependent (71.8%). The overall prevalence of depression was 74.4%. Logistic regression revealed significant associations: elderly females had 3.805 times higher risk ($P < 0.001$, 95% CI: 1.999 to 5.241), unhealthy individuals had 2.379 times ($P < 0.001$, 95% CI 1.657 to 3.415), limited activities of daily living (ADL) had 2.650 times ($P = 0.001$, 95% CI: 1.076 to 3.902), and those lacking family support had 1.799 times ($P = 0.003$, 95% CI: 1.040 to 3.746) than their counterparts.

Conclusion: High depression rates and multiple risk factors necessitate the urgent need for health and political intervention to support patients and promote greater social participation.

Keywords: Depression, Old Age, ADL, Prevalence, Risk Factors, Logistic Regression, Iraq

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Correspondence Address: Saad Ahmed Ali Jadoo

Email: saadalezzi@uodiyala.edu.iq

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Introduction

The rising global incidence of depression, particularly among older adults, has become a significant concern [1]. Symptoms often start subtly, affecting mood and decision-making, sometimes escalating to suicidal thoughts [2]. Depressive disorders worsen existing chronic conditions in the elderly, yet many affected individuals remain unaware of their health condition [3]. Furthermore, most of older individuals tend to highlight physical symptoms rather than mood alterations, causing many medical professionals to associate these signs with the natural aging process [4]. Many affected individuals, especially in low- and middle-income countries, lack access to proper treatment due to inadequate healthcare systems [4, 5].

In countries like Iraq, economic challenges and conflicts have exacerbated mental health issues, especially among the elderly, women, and children [6]. The report of Doctors Without Borders' organization in 2013 [7] revealed that depression among Iraqi elderly is more prevalent and severe than national data suggest, although some studies have explored this theory [8-12]. This study aims to investigate the prevalence rate and predictors of depression among older individuals in Iraq, shedding light on an overlooked aspect of mental health in the region.

Patients and Methods

Study Design and Sampling

This cross-sectional study was conducted between August and November 2021 in three big Iraqi cities (Baquba, Ramadi, and Samarra) located in the east, west, and north. Patients above 60 years routinely visiting

outpatient clinics in general hospitals were randomly sampled for interviews.

Inclusion and Exclusion Criteria

Iraqi patients aged 60 years and above, both genders, conscious, willing to participate and attend primary healthcare centers, were included. Those below 60, with a history of COVID-19, sensory and cognitive impairments, or unwillingness to participate, were excluded.

Sample size

A sample size of 344 participants was calculated using a margin of error of $\pm 5\%$, a confidence level of 95%, and a 65% response distribution [9], as determined by $[n = Z^2 \times P(P-1)/E^2]$.

Data Collection

A semi-structured questionnaire with sociodemographic details and the validated Geriatric Depression Scale (GDS-30) was used. The validated GDS-30, available in both short and long Arabic versions [13,14], assessed depression symptoms in the elderly. It is suitable for assessing depression in both healthy and medically unwell people. Correct responses were scored, with a total score ranging from 0 to 30.

Dependent Variable

The dependent variable was the presence or absence of depression symptoms, categorized into mildly depressed (10-19) and severely depressed (20-30) indicating presence, and (0-9) indicating absence.

Independent variables

In our analysis, various sociodemographic variables underwent categorization. Respondents' ages were divided into two groups: those between 60 to 75 years were coded as "zero," while those more than 75

years were coded as "one." Gender was categorized as "zero" for males and "one" for females. Marital status was binary, with "one" indicating currently married participants and "zero" encompassing currently single individuals, widows, and divorcees. Rural residency was coded as "zero," while urban residency was coded as "one." Education levels were condensed into "low education" (including illiterate through high school) and "high education" (graduate and postgraduate levels). Self-rated health, rated from "very bad" to "very good" on a scale of "1" to "5," was categorized as "unhealthy" (very bad, bad, moderate) or "healthy" (good, very good). Employment status was coded as "one" for those currently employed with a monthly income and "zero" for the unemployed, retired, and housewives. Family monthly income below USD 400 (IQD 600,000) was coded as "zero," while income of USD 400 and above was coded as "one." Finally, family income dependence on "one person" was coded as "zero," and dependence on "two members and above" was coded as "one." These categorizations facilitated our analysis, conducted as of October 1, 2021, amidst an exchange rate of Iraqi Dinar (IQD)1 = United States Dollar (USD) 0.0008.

It was asked the elderly people to indicate whether they were "financially dependents" (Coded one) or financially independent (Coded zero). The patients respond to questions in either "Yes" or "No" in terms of the depression-related risk factors. The list of risk factors included the behavior of tobacco smoking, drinking of alcohol, chronic diseases (Diabetes, Hypertension, Ischaemic heart disease, Arthritis, etc.), and

polypharmacy (using ≥ 5 types of medicines at the same time). More questions were related to daily lifestyles, such as the number of meals per day, adequacy of sleep (at least 6 hours sleep at night), and family support (having at least one of the family members take care of an old age person). The physical dependency for activities of daily living or the activity of daily living (ADL) dependency has been defined when the old age person receives help from another person to do any one of the five basic ADLs: "bathing, dressing, eating, toileting, and transferring from a bed to a chair". The experience of exposure to abuse (physical and verbal abuse) and adverse events (such as the death of near and dear ones, divorce, financial crisis, etc.) happened in the last few years. The patients were asked about their participation in daily home activities (such as cooking, cleaning, washing, etc.) and the regular exercises (at least 30 minutes per day for five days a week).

Statistical Analysis

The data underwent analysis utilizing IBM SPSS version 16. Categorical variables were depicted through frequencies and percentages. Bivariate analyses employed the chi-square test for categorized variables. Multiple logistic regression estimated odds ratios (OR) and confidence intervals (CIs), with variables featuring a p-value < 0.05 selected to investigate predictors of depression among the elderly. Statistical significance was established at less than 0.05.

Results

Descriptive and general characteristics of related factors

In this study, three hundred and forty-four elderly participants were analyzed, with a

mean age of 75.15 (\pm 7.52) years. The majority (67.7%) were 60 to 75 years old, male (50.6%), married (62.2%), residing in urban areas (83.7%), and had low education levels (65.7%). Additionally, most considered themselves unhealthy (72.4%), financially dependent (71.8%), and physically inactive (70.6%), Table (1).

Table (1): Socio-demographic and economic features of participants (n=344)

Characteristics	Categories	N(%)
Age in years	> 75 years	111(32.3)
	60-75 years	233(67.7)
Gender	Female	170(49.4)
	Male	174(50.6)
Marital status	Currently married	214(62.2)
	Currently unmarried (single, widow, divorce)	
	Single	23(6.7)
	Widow	73(21.2)
Resident	Rural	56(16.3)
	Urban	288(83.7)
	Divorce	34(9.9)
Self-ranked health	Unhealthy	249(72.4)
	Healthy	95(27.6)
Education	Illiterate	61(17.7)
	Primary school	56(16.3)
	Middle school	49(14.2)
	High school	60(17.4)
	Graduate	55(16.0)
Occupation after 60 years	Postgraduate-master	35(10.2)
	Postgraduate-Doctorate	28(8.1)
Occupation after 60 years	Employed	109(31.7)
	Unemployed	235(68.3)
Family Income Level	<\$400	218(63.4)
	\$400 and above	126(36.6)
Financial Dependency	Yes	247(71.8)
	No	97(28.2)
Physical activity	Active	101(29.4)
	Inactive	243(70.6)

Prevalence of depression

The study revealed a high prevalence of depression among the old age people, affecting 74.4% of the participants, of this, 42.7% experienced moderate depression, while 31.7% suffered from severe depression Table (2).

Table (2): Prevalence of depression in the respondents (n=344)

GDS -30 scores	N (%)
Normal to Mild (0-9)	88(25.6)
Moderate (10-19)	147(42.7)
Severe (20-30)	109(31.7)

Factors associated with depression in bivariate analysis

Factors associated with depression were identified through bivariate analysis. Cross tabulation indicated that respondents who were aged 75 years old and above, (chi-

square test (χ^2) = 6.445, $p = 0.012$), female ($\chi^2 = 36.633$, $p < 0.001$), unhealthy ($\chi^2 = 32.724$, $p < 0.001$), and low educated ($\chi^2 = 13.636$, $p < 0.001$) were significantly associated with the depression Table (3).

Table (3): Bivariate analysis of sociodemographic predictors in depression (No, Yes) (n=344)

Characteristics	Categories	Total N=344	No N (%)	Yes N (%)	Chi-square	p-value
Age in years	> 75 years	111(32.3)	38(34.2)	73(65.8)	6.445	0.012
	60-75 years	233(67.7)	50(21.5)	183(78.5)		
Gender	Female	170(49.4)	19(11.2)	151(88.8)	36.633	0.000
	Male	174(50.6)	69(39.7)	105(60.3)		
Marital status	Married	214(62.2)	52(24.3)	162(75.7)	0.489	0.525
	Unmarried	130(37.8)	36(27.7)	94(72.3)		
Resident	Rural	56(16.3)	15(26.8)	41(73.2)	0.511	0.686
	Urban	288(83.7)	73(25.3)	215(74.7)		
Self-ranked health	Unhealthy	249(72.4)	43(17.3)	206(82.7)	32.724	0.000
	Healthy	95(27.6)	45(47.4)	50(52.6)		
Education	Low education	226(65.7)	72(31.9)	154(68.1)	13.636	0.000
	High education	118(34.3)	16(13.6)	102(86.4)		
Occupation after 60 years	Employed	109(31.7)	21(19.3)	88(80.7)	3.343	0.084
	Unemployed	235(68.3)	67(28.5)	168(71.5)		
Family Income Level	<\$400	218(63.4)	61(28.0)	157(72.0)	1.801	0.201
	\$400 and above	126(36.6)	27(21.4)	99(78.6)		
Financial Dependency	Yes	247(71.8)	68(27.5)	179(72.5)	1.748	0.217
	No	97(28.2)	20(20.6)	77(79.4)		

Depression-related risk factors

Most of the respondents were tobacco smokers (60.5%), physically dependents (73.3%), having chronic diseases (81.1%), polypharmacy (62.5%), regular exercise (29.1%), adequately sleep (59.0%), having three meals or less per day (63.7%), and getting family support (59.6%).

Further analysis of depression-related risk factors showed that history of tobacco

smoking (chi-square test) ($\chi^2 = 12.149$, $p = 0.001$), physically (ADL) dependent ($\chi^2 = 38.911$, $p < 0.001$), history of chronic diseases ($\chi^2 = 23.545$, $p < 0.001$), polypharmacy ($\chi^2 = 6.515$, $p = 0.011$), and lack of family support ($\chi^2 = 32.269$, $p < 0.001$), were significantly associated with depression Table (4).

Table (4): Bivariate analysis of risk factors for depression (Yes, No) (n=344)

Risk variables	Categories	Total N (%)	Yes N (%)	No N (%)	Chi-square	p-value
Tobacco smoking	Yes	208(60.5)	141(67.8)	67(32.2)	12.149	0.001
	No	136(39.5)	115(84.6)	21(15.4)		
ADL dependent	Yes	252(73.3)	209(82.9)	43(17.1)	38.911	0.000
	No	92(26.7)	47(51.1)	45(48.9)		
Participation in-home activities	Yes	181(52.6)	128(70.7)	53(29.3)	2.747	0.108
	No	163(47.4)	128(78.5)	35(21.5)		
Chronic diseases	Yes	279(81.1)	223(79.9)	56(20.1)	23.545	0.000
	No	65(18.9)	33(50.8)	32(49.2)		
Polypharmacy	Yes	215(62.5)	150(69.8)	65(30.2)	6.515	0.011
	No	129(37.5)	106(82.2)	23(17.8)		
Regular exercise	Yes	100(29.1)	80(80.0)	20(20.0)	2.307	0.137
	No	244(70.9)	176(72.1)	68(27.9)		
Adequate Sleep	Yes	203(59.0)	143(70.4)	60(29.6)	4.111	0.045
	No	141(41.0)	113 (80.1)	28(19.9)		
Abuse	Yes	119(34.6)	90(75.6)	29(24.4)	0.140	0.653
	No	225(65.4)	166(73.8)	59(26.2)		
Number of meals per day	≤3	219(63.7)	157(71.7)	62(28.3)	2.358	0.157
	>3	125(36.3)	99(79.2)	26(20.8)		
The adverse event in the last year	Yes	154(44.8)	119 (77.3)	35(22.7)	1.193	0.320
	No	190(55.2)	137(72.1)	53(27.9)		
Family Support	Yes	205(59.6)	130(63.4)	75(36.6)	32.269	0.000
	No	139(40.4)	126(90.6)	13(9.4)		

Factors associated with depression in multiple logistic regression

Multiple logistic regression model (total model) was statistically significant, $\chi^2(5) = 22.518$, $p < 0.0001$. The model explained 42.9% of the variance (Nagelkerke R square= 0.429) in depression and correctly classified 80.8% of cases. Females (odds ratio (OR)= 3.805, 95% CI: 1.999 to 5.241, $P < 0.001$),

those who ranked themselves unhealthy (OR = 2.379, 95% CI 1.657 to 3.415, $P < 0.001$), the ADL-dependent elderly individuals (OR = 2.650, 95% CI: 1.076 to 3.902, $P = 0.001$), and those lacking family support (OR = 1.799, 95% CI: 1.040 to 3.746, $P = 0.003$) had higher odds of depression than their counterparts ($p < 0.0001$), Table (5).

Table (5): Factors associated with depression in multiple logistic regression

Variables	B	SE.	Wald	Sig.	Exp(B)	95.0% C. I for Exp(B) Lower-Upper
Female	1.336	0.328	22.558	0.000	3.805	1.999-5.241
Male					Reference	
Unhealthy people	1.214	0.384	16.093	0.000	2.379	1.657-3.415
Healthy people					Reference	
ADL dependent	1.199	0.341	14.834	0.001	2.650	1.076-3.902
ADL independent					Reference	
Lack of family support	1.086	0.360	12.762	0.003	1.799	1.040-3.746
Have the family support					Reference	

Discussion

In this study, we tried to study the prevalence and common predictors of depression among the elderly population in Iraq, aiming to understand the intricate factors contributing to the increased impact of depression on their daily lives. Our findings indicated an alarming depression prevalence of 74.4% (moderate and severe), significantly higher than rates reported in various international studies, but close to several earlier Iraqi studies.

For instance, studies in Iraq's Mosul and Baghdad cities reported rates of 65.3% and 72.8% respectively [9,10]. However, Al-Ameri MHI [11] found that 76.9% and 19.2% of old age people resident in nursing homes of Baghdad city have moderate and severe depression, respectively.

Internationally, countries like India (52.4%), North West Ethiopia (45.9%), Nepal (47.3%), rural Nigeria (44.7%), Egypt (44.4%), Vietnam (66.9%), Portugal (61.4%) and Brazil (49.8%), Turkey (18.5%), China (11.6%), Pakistan (16.0%), and South Africa (40%) [15-25] reported lower depression rates among the elderly, emphasizing the gravity of the issue in Iraq.

In our multiple logistic regression analysis, several noteworthy factors emerged. Elderly females exhibited 3.805 times significantly higher risk of depression than their counterpart males [$p < 0.001$, 95% CI [3.462-14.961]].

Similar findings were reported in studies from Ethiopia, Egypt, Turkey, India, Brazil, and Sri Lanka, [16,19,22,26-28]. In addition to differences in organic and hormonal composition [29], societal factors, such as family responsibilities and limited educational opportunities, especially in developing countries [30, 31], often make women more vulnerable to health risk factors, including mental health disorders than men [32]. Unlike to the research undertaken by Hamood and Basim [33], which identified that 8.8% of 707 patients admitted to different branches of Baquba Teaching Hospital were diagnosed with depression, predominantly comprising young females (62%). In contrast, we examined the factors contributing to depression among older patients routinely visiting the outpatient clinics.

Chronic diseases significantly impacted mental health, aligning with global studies

from Ethiopia, Sri Lanka, China, and the report of WHO, [16,28,34,35] which highlighted the link between physical health and the liability to develop depression.

Unhealthy lifestyles, including physical inactivity, tobacco smoking, and excessive alcohol consumption, are also correlated with long-term depression [36], [37] found a relationship between the increased BMI and emerging of depression. Similarly, our results showed that those who perceived themselves as unhealthy were 2.379 times more likely to experience depression.

Additionally, limited activities of daily living (ADL) function correlated strongly with depressive symptoms (OR = 2.650, 95% CI: 1.076 to 3.902, P =0.001). This connection was reinforced by previous studies in Korea, Turkey, and the USA [38,39,40,41] highlighting the negative impact of ADL limitations on mental health. The role of family support emerged as a vital protective factor. [42] emphasized that older adults with strong family networks tend to have better emotional well-being. Lack of family support significantly increased the likelihood of depression, underscoring the importance of social and emotional connections in mental health among the elderly. In our study, elderly people without family support exhibited an odds ratio of 1.799 times to have depression than those who have the support. Consistent results were observed in previous studies conducted in Ethiopia [16], Sri Lanka [28], China [34], and Italy [43].

It's important to acknowledge the study's limitations, including potential recall bias and the cross-sectional design preventing the

establishment of cause-and-effect relationships.

Nevertheless, this research conducted in central public clinics across three governorates provides valuable insights into the pressing issue of depression among Iraq's elderly population. However, there are still important areas in northern and southern Iraq in need of a thorough investigation. The study emphasizes the urgent need for targeted interventions and social support systems to alleviate the burden of depression among the elderly in Iraq [44].

Conclusions

In summary, a substantial number of surveyed elderly individuals exhibited moderate (42.7%) or severe depression (31.7%). Bivariate analysis revealed significant associations between depression and various sociodemographic and risk factors. However, multivariate analysis identified key predictors: female gender, self-perceived poor health, physical dependency, and lack of family support. This underscores the importance of early depression screening for all elderly individuals to provide timely support and intervention. Additionally, strategies including raising awareness through public campaigns to reduce stigma, integrating mental health screenings into primary care, improving access to mental health services, adopting collaborative care models, promoting social connections, addressing underlying health issues, encouraging healthy lifestyles and supporting caregivers might be necessary to combat depression in older adults.

Recommendations

In Iraq, 74.4% of older adults were found to experience depression, necessitating

inclusion in the National Health Care Program via primary care. Engagement in recreational activities is crucial for reducing depression in this demographic. There's a need to enhance community-based programs to bolster the independence of older adults within family structures. Moreover, addressing mental health among older adults should commence from primary healthcare settings, encompassing screening, diagnosis, and treatment. Future endeavors should prioritize large-scale national studies to ascertain mental health issues and associated factors over time.

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Conflict of interest: Nil

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انتشار الاكتئاب بين كبار السن في العراق

سعد احمد علي جدوع^١، مصطفى علي مصطفى السامرائي^٢، عادل حسن الحسيني^٣، بيريهان تورون^٤،
أحمد سعدي محمد^٥، إسماعيل إبراهيم لطيف^٦

الملخص

خلفية الدراسة: زاد انتشار الاضطرابات العقلية، بما في ذلك الاكتئاب، بشكل مطرد.
اهداف الدراسة: تهدف هذه الدراسة إلى تحديد معدل انتشار الاكتئاب والتنبؤات ذات الصلة بين الناس في سن الشيخوخة في العراق

المرضى والطرائق: أجريت دراسة مستعرضة من أغسطس إلى نوفمبر ٢٠٢١. تم استخدام تقنية أخذ العينات العشوائية لجمع المعلومات من المرضى في سن الشيخوخة خلال زياراتهم الروتينية إلى العيادات الخارجية لثلاث مستشفيات عامة (بعقوبة، رمادي، سامراء)، في العراق. تضمن جمع البيانات استخدام استبيان شبه منظم يتضمن مقياس الاكتئاب المتحقق من صحته (GDS-30) والذي تم اجراءه من خلال المقابلات وجهاً لوجه مع المرضى. تم استخدام تحليلات الانحدار اللوجستي الوصفي، ثنائي المتغير، ومتعدد المتغيرات لدراسة العلاقات بين المتغيرات في الدراسة. تم استخدام SPSS الإصدار ١٦ لتحليل البيانات، مع أهمية الإحصائية على عتبة أقل من ٠,٠٥.

النتائج: خضعت بيانات من ٣٤٤ من المجيبين في سن الشيخوخة (المدى ٦٠-٨١ سنة) مع متوسط عمر ٧٥,١٥ (± ٧,٥٢) سنة. أكثر من النصف من الذكور (٥٠,٦٪)، متزوجين (٦٢,٢٪)، في المرتبة بأنهم غير صحيين (٧٢,٤٪)، غير نشط جسدياً (٧٠,٦٪)، ويعتمدون مالياً (٧١,٨٪). وكان انتشار الاكتئاب العام ٧٤,٤٪. كشف الانحدار اللوجستي عن وجود ارتباطات مهمة: كان لدى الإناث المسنات ٣,٨٠٥ مرة مخاطر أعلى (P < 0.001، 95٪ CI: 1.999 إلى ٥,٢٤١)، كان لدى الأفراد غير الصحيين ٢,٣٧٩ مرة (P < 0.001، ٩٥٪ CI 1.657 إلى ٣,٤١٥)، أنشطة محدودة للحياة اليومية اليومية كان 2.650 (ADL) مرة (P 0.001، ٩٥٪ CI: 1.076 إلى ٣,٩٠٢)، وتلك التي تفتقر إلى الدعم الأسري كان ١,٧٩٩ مرة (P 0,003، ٩٥٪ CI: 1.040 إلى ٣,٧٤٦) من نظرائهم.

الاستنتاجات: تتطلب معدلات الاكتئاب المرتفعة وعوامل الخطر المتعددة الحاجة الملحة إلى الصحة والتدخل السياسي لدعم المرضى وتعزيز مشاركة اجتماعية أكبر.

الكلمات المفتاحية: الاكتئاب، الشيخوخة، ADL، انتشار، عوامل الخطر، الانحدار اللوجستي، العراق

البريد الإلكتروني: saadalezzi@uodiyala.edu.iq

تاريخ استلام البحث: ٢٢ شباط ٢٠٢٤

تاريخ قبول البحث: ٢٤ آذار ٢٠٢٣

^{١,٣,٥} كلية الطب - جامعة ديالى - ديالى - العراق

^٢ كلية الطب - جامعة الانبار - الانبار - العراق

^٤ قسم الصحة العامة - كلية الحميدية الدولية للطب - جامعة العلوم الصحية - إسطنبول - تركيا

^٥ قسم تقنيات التخدير - كلية بلاد الرافدين الجامعة - ديالى - العراق