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Original Article

Determinants of Depression Among Retired Elderly: Application of the Gelberg-Andersen Behavioral Model

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Abstract

Background: Depression is currently the leading cause of disability globally and the most prevalent mental illness among the elderly. As the population continues to age, the number of elderly individuals experiencing depression is expected to rise significantly. This study aimed to identify psychological factors that predict depression among the elderly using the Gelberg-Andersen Behavioral Model.

Methods: This cross-sectional study was conducted among 538 retired elderly individuals aged 60 to 75 years old in western Iran in 2022. Data were collected through structured questionnaires based on interviews with the participants. The collected data were then analyzed using SPSS version 16.

Results: Overall, 55.8% of the elderly population experienced varying degrees of depression. Factors such as education level (Beta = -0.085), economic status (Beta = -0.170), recent exposure to a stressful event (Beta = 0.104), self-efficacy (Beta = -0.146), barriers to care (Beta = 0.086), and help-seeking behavior (Beta = -0.173) were significantly influenced the occurrence of depression. Variables within the Gelberg-Andersen Behavioral Model explained 36% of the variation in depression levels.

Conclusion: The findings support the applicability of the Gelberg-Andersen model in designing and implementing interventions to prevent depression in the elderly. Preventive programs should prioritize disadvantaged elderly populations. To effectively prevent depression, strategies should focus on reducing barriers to accessing mental health services, enhancing self-efficacy, and promoting mental health help-seeking behaviors.

Keywords: Depression, Aging, Mental health, Help-seeking, Barriers, Self-efficacy

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Introduction

Aging is one of the most critical economic, social, and health challenges worldwide, which is expanding at a rapid pace (1). It is estimated that by 2050, around 15% of the population in many countries will be over the age of 80 (2). In Iran, the age distribution is shifting toward older age groups. It is projected that by 2025, the number of elderly individuals will exceed 10 million, accounting for over 11% of the total population in Iran (3). Mental health is a key concern in old age and should be given high priority. Research indicates that mental disorders make up 6.6% of all disability-adjusted life years (DALYs) in individuals aged 60 and above (5-8). Depression is a clinical condition marked by symptoms such as fatigue, low energy, and a lack of positive emotions. It also involves changes in sleep and appetite, difficulty concentrating, low self-esteem, and in some cases, suicidal ideation (6-8). Depression accounts for one-sixth of total DALYs in the elderly, making it a significant mental health disorder worldwide (5). It is estimated that 20% of the elderly population suffers from depression (9), significantly contributing to the overall burden of disease (10). In individuals over the age of 65 years, depression not only negatively impacts mood and overall quality of life but can also be considered a contributing factor in the development of age-related health problems such as cardiovascular disease and

cognitive disorders (11). Evidence indicates that elderly people with depression tend to have more comorbidities compared to those without depression (12), and it is associated with several adverse outcomes, including reduced quality of life (13).

Certain demographic and social factors, including gender, age, marital status, place of residence, employment status, and education level, are linked to depression in the elderly (14). Furthermore, loneliness, living in suburban or rural areas, lack of physical activity, and low socio-economic status (SES) are strongly associated with higher rates of depression in this population (15).

However, health researchers need to consider theoretical frameworks and behavior change models when predicting factors that impact health issues (16). Theoretical frameworks are useful tools that can help us understand the various factors that influence individual behavior (17). The Gelberg-Andersen behavioral model is a framework that categorizes individual factors into three main areas: predisposing factors, enabling factors, and need factors related to healthcare utilization. This classification of variables and their connection to health outcomes serves as a foundation for establishing research goals (18). In this regard, evidence suggests that certain factors significantly affect mental health help-seeking behavior. For instance, attitude (19) and self-efficacy (20) are predisposing factors with a significant impact. Perceived barriers to accessing mental health services are also important determinants that can either facilitate or hinder help-seeking behavior (21-23). Additionally, psychological distress is a crucial factor in determining the need for help-seeking (24). Identifying the factors that predict depression in the elderly population is crucial for developing effective prevention strategies (25). Accordingly, the present study aimed to identify the factors determining depression among the elderly in western Iran, using the Gelberg-Andersen Behavioral Model as a theoretical framework.

Materials and Methods

Study Population and Sampling

The current study was conducted among 538 elderly individuals aged 60 to 75 years who were beneficiaries of pension funds in Kermanshah, located in western Iran during the winter of 2022. A multi-stage sampling method was employed to select the participants. Initially, three pension funds were randomly selected from a total of 18 using a cluster sampling method. Then, a simple random sampling was used to select eligible individuals from each chosen fund. Data were collected through face-to-face interviews with the elderly. The interviews were conducted by three trained interviewers, all of whom were master's students in Health Education and Promotion. Prior to data collection, the interviewers received specialized training on effective communication with older adults, framing unbiased questions, and minimizing interviewer bias to ensure the reliability and validity of the data. Inclusion criteria for this study included age between 60-75 years old, having at least a primary education level, and providing consent to participate in the study.

Quality Control and Data Collection

Data were collected by interviewing the participants using a written questionnaire. The questionnaire consisted of three parts: demographic information, Gelberg-Andersen model determinants, and the Geriatric Depression Scale (GDS). Prior to the main study, a pilot study was conducted to evaluate the content validity of the questionnaires. The pilot involved 30 elderly individuals similar to the participants in the main study. The purpose of the pilot study was to evaluate the clarity, length, comprehensiveness, and completion time of the questionnaires and to assess the internal consistency of the instruments. In this study, the content validity ratio (CVR) and content validity index (CVI) were assessed to evaluate the content validity of the questionnaires. First, a panel of experts, including specialists in geriatrics, psychology, health education and promotion, and research methodology, was assembled. These experts reviewed each questionnaire item in terms of necessity and relevance. To calculate CVR, they rated each item's essentiality, and the obtained values were compared against Lawshe's standard thresholds to eliminate non-essential items. Additionally, for CVI, the experts rated the relevance of each question on a four-point scale. The proportion of items that received high ratings was then calculated to determine the overall content validity. Finally, based on these indices, inappropriate items were revised or removed, and the final version of the questionnaire, with satisfactory content validity, was prepared for the main study.

Demographics

Background collected data included participants' age (years), gender (female, male), marital status (single, widow, married), education level (primary, secondary, high school, or academic), economic status (bad, medium, good), living arrangements (alone, with spouse and children, with children only, with spouse only), family size (number of individuals in the family), smoking status (yes, no), positive family history of mental disorders (no, yes), and whether the participants had experienced a stressful event in the past year (yes, no).

Predisposing Factors: Attitude and Self-Efficacy

Attitude was evaluated using a 10-item Attitudes Toward Seeking Professional Psychological Help-Short Form (ATSPPH-SF) scale. Total scores range from 0 to 30, with higher scores indicating a more positive attitude toward mental health help-seeking. The original version of the scale indicates a total item correlation coefficient ranging from 0.279 to 0.518 and a Cronbach's alpha coefficient of 0.87 (26). In the present study, the internal consistency was also satisfactory, with a Cronbach's alpha of 0.78. An example of an item includes: *"In the future, I may consider seeking psychological counseling."*

Self-efficacy was also measured using the Self-efficacy in Seeking Mental Health Care (SE-SMHC) scale. Participants rated their confidence in their ability to perform nine specific behaviors related to seeking mental health care (e.g., "I can find a place for mental health treatment"). Responses were recorded on a 10-point Likert scale, ranging from 1 (not sure) to 10 (completely confident). The SE-SMHC has demonstrated excellent internal consistency, with a Cronbach's alpha of 0.93 (27). In this study, reliability was estimated to be 0.89 using Cronbach's alpha.

Enabling Factors: Perceived Barriers to Accessing Mental Health Services

The elderly were asked to answer 12 items, showing their barriers to accessing mental health services. They rated their agreement with statements such as "Mental health services are expensive" on a 5-point scale ranging from "completely disagree" to "completely agree." These questions were based on previous studies about the barriers to accessing mental health services (26). The reliability of the questions was measured using Cronbach's alpha coefficient, which was found to be 0.77.

Need Factors: Psychological Distress

Psychological distress was evaluated using the 6-item Kessler Psychological Distress Scale (K6), which evaluates psychological distress and the likelihood of a mental disorder within the past four weeks. The items measure symptoms such as nervousness, frustration, restlessness, depression, difficulty doing daily tasks, and feelings of worthlessness. Responses were rated on a 5-point Likert scale ranging from "never" to "always". Total scores can range from 0 to 24, with higher scores indicating greater psychological distress (28). In the present study, the reliability coefficient for the K6 was high, with a Cronbach's alpha of 0.83.

Health Behavior: Mental Health Help-Seeking

Mental health help-seeking behavior was evaluated using the 10-item General Help-Seeking Questionnaire (GHSQ). The GHSQ measures individuals' likelihood of seeking assistance from various sources (e.g., their spouse, friend, or doctor). In this research, participants were instructed to think about a time when they experienced anxiety or a problem that they could not resolve by themselves. They were then asked to rate the likelihood of seeking help on a 7-point Likert scale, with 7 indicating "strong disagreement" and 1 indicating "strong agreement" (29). A higher score suggests a greater inclination to seek help from different sources. In our study, the reliability coefficient for the GHSQ was acceptable, with a Cronbach's alpha of 0.71.

Geriatric Depression Scale

Depression was evaluated using the GDS, which has three versions: 30-item, 15-item, and 7-item forms. For this study, the 15-items version with a yes/no response format was used. Out of the 15 items, a "yes" response to 10 items (e.g., "Are you afraid that something bad will happen to you?") indicates the presence of depressive symptoms. Conversely, for the remaining items (e.g., "Are you basically afraid of your life?" and "Are you satisfied with your life?"), a "no" response indicates depressive symptoms (reverse scoring). The scoring system is as follows: a score of 0-4 is considered normal, 5-8 indicates mild depression, 9-11 denotes moderate depression, and 12-15 indicates severe depression. Generally, higher scores suggest a higher likelihood of depression. The Cronbach's alpha coefficient for this scale is reported as 0.83 (30). In our study, the Cronbach's alpha coefficient was acceptable, with a value of 0.79.

Statistical Analysis

Data were analyzed using SPSS version 16. Descriptive statistics were used to summarize and organize the data. The correlation between the determinants of the behavior change framework was measured using Pearson's correlation test. To measure predictors of depression, both crude and adjusted linear regression were used. In the crude model, the variables were entered into the model separately, and variables with a significance level of less than 0.25 were retained for inclusion in the adjusted model.

Results

The mean age of respondents was 66.01 years, with a standard deviation (SD) of 4:09, ranging from 60 to 75 years. Table 1 presents more details about the demographic characteristics of the participants.

The mean depression score of respondents was 5.53 years (95 % CI: 5.23-5.82), ranging from 0 to 15. In terms of depression status, 44.2% of the elderly were classified as normal, 34.4% had mild depression, 13.8% exhibited moderate depression, and 7.6% had severe depression. In general, 55.8% of the elderly experienced different levels of depression.

Table 2 presents the correlation matrix and descriptive statistics for the components of the Gelberg-Andersen behavioral model.

Table 3 displays the predictors of the depression. Initially, a crude analysis was performed, and non-significant variables (living arrangements and a positive family history of mental disorders) were excluded from the model. The results of the adjusted analysis are also presented in Table 3. As seen, education level (Beta = -0.085), economic status (Beta = -0.170), experiencing a stressful event in the past year (Beta = 0.104), self-efficacy (Beta = -0.146), perceived barriers (Beta = 0.086), and help-seeking behavior (Beta = -0.173) had significant effects on depression among the elderly in western Iran.

Discussion

Our research revealed that 55.8% of the elderly population experienced varying levels of depression. This finding aligns with a similar study conducted in Iran. Golboni et al

analyzed 24 articles and found that the overall prevalence of depression among Iranian elderly individuals was 53.7% (95% CI: 43.1-64.4) (31). A recent systematic review conducted in Iran also revealed a higher occurrence of depression among elderly individuals residing in the western provinces of Iran (25). In contrast, studies conducted among elderly individuals in countries outside of Iran have reported a comparatively lower occurrence of depression. For instance, a study conducted on elderly individuals in India from 1997 to 2016 reported a depression prevalence of 34.4% (95% CI: 39.7-29.33) (10). Similarly, a study by Zenebe et al, which reviewed 1263 articles, estimated the average prevalence of depression in older adults to be 31.74% (95% CI: 27.90-35.59) (32). Another study by Bedaso et al found that 26.3% of elderly individuals in Africa were diagnosed with depression (33).

Table 1. Distribution of Demographic Characteristics Among Participants

Variables		Number	Percent
Gender	Female	217	40.3
	Male	321	59.7
Education level	Primary school	153	28.4
	Secondary school	68	12.6
	High school	202	37.6
	Academic	115	21.4
Marital status	Single	12	2.2
	Widowed/Divorced	117	21.8
	Married	409	76
Economic status	Poor	217	40.3
	Moderate	256	47.6
	Good	65	12.1
Living arrangements	Alone	74	13.8
	With wife and children	266	49.4
	With children only	68	12.6
	Wife	130	24.2
Family size	1	74	13.8
	2	167	31
	3	134	24.9
	4	113	21
	5 or more	50	9.3
Smoking	No	416	77.3
	Yes	122	22.7
Family history of mental disorder	No	456	84.8
	Yes	82	15.2
Experiencing a stressful event in past year	No	326	60.6
	Yes	212	39.4

In the present study, it is noteworthy that more than half of the elderly participants experienced some degree of depression. This is particularly significant considering that the global prevalence of depression among the elderly is estimated at 13.3% (95% CI: 8.4-20.3%) (34). One possible reason for the higher prevalence observed in our study is the method of assessment, as we relied solely on self-reported questionnaires rather than clinical diagnostic interviews. Self-reported instruments may overestimate depression prevalence, as participants could misinterpret typical age-related emotional fluctuations as depressive symptoms. Despite these limitations, our findings highlight the urgent need for targeted mental health interventions for the elderly population in Iran. These results underscore the importance of improving access to mental health services and encourage further research using standardized clinical diagnostic tools.

The current study has confirmed that education has a positive impact on reducing depression. This suggests that people with higher education levels are more likely to experience lower levels of depression. However, a study conducted by Mu et al on 10,431 middle-aged and elderly Chinese individuals did not find any significant link between depression and education level in their adjusted analysis (35). In line with our findings, Idaiani and Indrawati reported that depression was more common among elderly individuals without educational qualifications (36). Other studies have also supported the positive impact of education in preventing depression (37,38). Hence, when designing interventions to prevent depression, it is crucial to prioritize individuals with lower levels of education.

According to our research, elderly individuals with a higher economic status had lower levels of depression. This result aligns with findings from other studies. For instance, Pan et al conducted a study on Chinese villagers that demonstrated a significant negative correlation between income and depression (39). Similarly, another study reported that elderly individuals with lower SES had a higher prevalence of depression compared to those with higher SES (36). In addition, the Persian cohort study revealed that socioeconomically disadvantaged adults in

Table 2. Correlation, mean, and standard deviation of gelberg-andersen model components

Gelberg-Andersen Model Components		X1	X2	X3	X4	X5	Mean (SD)
Predisposing factors	X1. Attitude	1					18.42 (5.96)
	X2. Self-Efficacy	0.372**	1				66.91 (17.66)
Need factors	X3. Psychological Distress	-0.252**	-0.265**	1			9.00 (4.26)
Enabling factors	X4. Perceived Barriers	-0.245**	-0.329**	0.207**	1		27.77 (7.64)
Health behavior	X5. Help-Seeking	0.254**	0.237**	-0.185**	-0.204**	1	32.90 (9.42)
Outcome	X6. Depression	-0.299**	-0.349**	0.444**	0.272**	-0.332**	5.53 (3.45)

Note. SD: Standard deviation. **Correlation is significant at the 0.01 level (2-tailed).

Table 3. Predictors of the Depression Among the Elderly

	Model 1 (Crude)				Model 2 (Adjusted)			
	B	**Std. Error**	**Beta**	***P***	**B**	**Std. Error**	**Beta**	***P***
Age	0.090	0.036	0.106	0.014	0.007	0.031	0.008	0.832
Gender	0.806	0.302	0.115	0.008	0.249	0.278	0.035	0.369
Education level	-0.788	0.129	-0.255	<0.001	-0.264	0.117	-0.085	0.024
Marital status	-1.762	0.210	-0.340	<0.001	-0.535	0.295	-0.076	0.070
Economic status	-0.555	0.305	-0.078	0.069	-0.880	0.200	-0.170	<0.001
Living arrangements	-0.107	0.149	-0.031	0.471	-	-	-	-
Family size	0.188	0.125	0.065	0.135	0.216	0.121	0.074	0.075
Smoking	1.019	0.353	0.124	0.004	0.405	0.310	0.049	0.191
Positive family history with mental disorder	0.409	0.415	0.043	0.325	-	-	-	-
Stressful event in past year	0.890	0.303	0.126	0.003	0.735	0.250	0.104	0.003
Attitude	-0.173	0.024	-0.299	<0.001	-0.030	0.023	-0.051	0.192
Self-efficacy	-0.068	0.008	-0.349	<0.001	-0.029	0.008	-0.146	<0.001
Psychological distress	0.360	0.031	0.444	<0.001	0.210	0.031	0.259	<0.001
Barriers	0.123	0.019	0.272	<0.001	0.039	0.017	0.086	0.024
Help-seeking	-0.122	0.015	-0.332	<0.001	-0.063	0.014	-0.173	<0.001

Iran have a higher prevalence of mental health disorders (40). Furthermore, research indicates that depression is linked to increased mortality rates among the elderly (41). It appears that individuals with low SES are more likely to experience stressful situations and be exposed to high-risk environments, which can lead to psychological harm. This finding is important for health planners in Iran. These results suggest that interventions should prioritize socioeconomically disadvantaged individuals.

Experiencing a stressful event within the past year increases the likelihood of depression among the elderly. This aligns with the findings of Kraaij et al (42). Therefore, health planners need to identify elderly individuals who have experienced stressful events and prioritize them in depression prevention programs.

Our findings also indicated that self-efficacy significantly influenced the occurrence of depression. Supporting this, a study conducted by Miller et al on 586 Australians over the age of 65 revealed that self-efficacy was a significant predictor of depressive symptoms (42). Similarly, Roskoschinski et al reported a strong negative correlation between self-efficacy and depression among 135 elderly individuals (43). When developing interventions, it is recommended to utilize theoretical behavior change methods that align with self-efficacy. These methods may include self-monitoring of behavior or planning coping responses (44). Designing and implementing educational programs aimed at enhancing self-efficacy in seeking mental health care may be beneficial in preventing depression.

Another finding of the present study was that psychological distress has a statistically significant relationship with depression levels. In this regard, Manungkalit and Sari's study on 145 elderly people in Indonesia showed that high psychological distress increased depression among the elderly and accounted for 24% of the variance in depression (45). Given the strong connection between psychological distress and depression, it is important to identify elderly individuals experiencing psychological distress.

Our research demonstrated that perceived barriers to accessing mental health services greatly influenced the occurrence of depression. Findings from similar studies confirm this finding (46-50). In our study, we identified several barriers to receiving mental health services, including negative emotions, a perceived lack of need for help, past unpleasant experiences, lack of patience, high costs, overcrowded mental health centers, fear of social stigma, lack of family support, and limited awareness of available mental health services. These findings align with previous studies, which have also reported common barriers such as a preference for self-reliance, concerns about cost-effectiveness, and underestimation of the need for mental health support (51,52). Close attention to strategies that help overcome barriers to accessing mental health services during the design and implementation of mental health programs can provide valuable insights for preventing depression.

Our research has also revealed that mental health help-seeking was associated with a lower likelihood of depression among the elderly. Specifically, those who sought help were less likely to experience depression. The main sources of support identified in our study were family, spouse, and close friends. These findings are consistent with a study by Alhalaseh et al, which also found that family members were the most commonly reported source of help for depression. Additionally, Alhalaseh et al noted that fewer than one-third of participants intended to seek help from official sources (53). In many communities, seeking mental health services from professionals such as

psychiatrists or psychologists is still viewed as stigmatizing, which contributes to low rates of formal help-seeking (54). Educational campaigns targeting the community, particularly the elderly, should be implemented in Iran to reduce the stigma surrounding mental health services. These campaigns can be valuable and should be prioritized by mental health educators.

Study Limitations

Our research provided valuable insights into the factors contributing to depression among elderly individuals in Iran. However, it is important to acknowledge several limitations. Firstly, our sample included only retired elderly individuals from western Iran, which may not be generalizable to other elderly populations. Secondly, the data were collected through a questionnaire, which is susceptible to inaccuracies caused by social desirability bias and recall bias. This introduces a potential margin of error associated with our results. A notable limitation was the length of the questionnaire, which may have led to participant fatigue, potentially affecting the accuracy of responses. Although interviewers facilitated the process, some elderly individuals may have struggled to maintain focus during the lengthy interviews. Furthermore, economic status was assessed through self-report, with participants categorizing their financial situation as poor, moderate, or good. This subjective measure may introduce bias, as perceptions of economic status can vary among individuals. Additionally, it is worth noting that the study was descriptive and did not explore causal relationships.

Conclusion

To effectively prevent depression, it is important to identify the factors that contribute to its development. Understanding these factors can support the design and implementation of mental health promotion programs. Our research in western Iran suggests that the Gelberg-Andersen model provides a useful framework for identifying predictors of depression among the elderly. The findings indicate that psychological distress is the strongest predictor of depression. Additionally, help-seeking behavior and self-efficacy in using mental health services are also associated with depression. Furthermore, perceived barriers to accessing mental health services can predict depression. Therefore, addressing these barriers, improving self-efficacy, and promoting help-seeking behaviors are crucial to preventing depression among the elderly. Lastly, our research suggests that depression prevention interventions should prioritize vulnerable socio-economic groups.

Authors' Contribution

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Competing Interests

The authors declare that they have no competing interests.

Ethical Approval

The research ethics committee of Kermanshah University of Medical Sciences approved the study protocol (IR.KUMS.REC.1401.363). All procedures adhered to the ethical standards of the institution and national research committee, as well as the 1964 Helsinki Declaration and its subsequent amendments. Prior to participating, participants were given comprehensive information about the study, including its procedures, the confidentiality of their information, and its purpose.

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References

1. Jafari H, Ghasemi-Semeskandeh D, Goudarzian AH, Heidari T, Jafari-Koulaee A. Depression in the Iranian elderly: a systematic review and meta-analysis. J Aging Res. 2021;2021:9305624. doi: 10.1155/2021/9305624.
2. Aguilera JM, Covacevich L. Designing foods for an increasingly elderly population: a challenge of the XXI century. Curr Opin Food Sci. 2023;51:101037. doi: 10.1016/j.cofs.2023.101037.
3. Mirzaie M, Darabi S. Population aging in Iran and rising health care costs. Iran J Ageing. 2017;12(2):156-69. doi: 10.21859/sija-1202156. [Persian].
4. Murniati N, Al Aufa B, Kusuma D, Kamso S. A scoping review on biopsychosocial predictors of mental health among older adults. Int J Environ Res Public Health. 2022;19(17):10909. doi: 10.3390/ijerph191710909.
5. Kurniawidjaja M, Susilowati IH, Erwandi D, Kadir A, Hasiholan BP, Al Ghiffari R. Identification of depression among elderly during COVID-19. J Prim Care Community Health. 2022;13:21501319221085380. doi: 10.1177/21501319221085380.
6. Marwaha S, Palmer E, Suppes T, Cons E, Young AH, Upthegrove R. Novel and emerging treatments for major depression. Lancet. 2023;401(10371):141-53. doi: 10.1016/s0140-6736(22)02080-3.
7. Arifin MZ, Rohan HH. Meta-analysis the effects of loneliness on depression in elderly. Indones J Glob Health Res. 2023;5(2):335-44. doi: 10.37287/ijghr.v5i2.1733.
8. de Sousa IL, Silveira R, Takito MY, Pereira AL, Lucianelli-Júnior D, Carmona GS, et al. The impact of the social isolation in elderly Brazilian mental health (anxiety and depression) during the COVID-19 pandemic. Front Psychiatry. 2022;13:888234. doi: 10.3389/fpsyt.2022.888234.
9. Mandolikar RY, Naik P, Akram MS, Nirgude AS. Depression among the elderly: a cross-sectional study in an urban community. Int J Med Sci Public Health. 2017;6(2):318-23. doi: 10.5455/ijmsph.2017.01082016609.
10. Pilania M, Yadav V, Bairwa M, Behera P, Gupta SD, Khurana H,

et al. Prevalence of depression among the elderly (60 years and above) population in India, 1997-2016: a systematic review and meta-analysis. BMC Public Health. 2019;19(1):832. doi: 10.1186/s12889-019-7136-z.
11. Pocklington C. Depression in older adults. Br J Med Pract. 2017;10(1):a1007.
12. Vishwakarma D, Gaidhane A, Bhoi SR. Depression and its associated factors among the elderly population in India: a review. Cureus. 2023;15(6):e41013. doi: 10.7759/cureus.41013.
13. Sokale IO, Conway SH, Douphrate DI. Built environment and its association with depression among older adults: a systematic review. Open Public Health J. 2022;15(1):e187494452202030. doi: 10.2174/18749445-v15-e2202030.
14. Xie Y, Ma M, Wu W, Zhang Y, Zhang Y, Tan X. Factors associated with depressive symptoms among the elderly in China: structural equation model. Int Psychogeriatr. 2021;33(2):157-67. doi: 10.1017/s1041610220001398.
15. Basta M, Micheli K, Simos P, Zaganas I, Panagiotakis S, Koutra K, et al. Frequency and risk factors associated with depression in elderly visiting Primary Health Care (PHC) settings: findings from the Cretan Aging Cohort. J Affect Disord Rep. 2021;4:100109. doi: 10.1016/j.jadr.2021.100109.
16. Cummins KM. Explanations for the cloudy evidence that theory benefits health promotion. Front Psychol. 2022;13:910041. doi: 10.3389/fpsyg.2022.910041.
17. Peterson K, Anderson J, Bourne D, Charns MP, Gorin SS, Hynes DM, et al. Health care coordination theoretical frameworks: a systematic scoping review to increase their understanding and use in practice. J Gen Intern Med. 2019;34(Suppl 1):90-8. doi: 10.1007/s11606-019-04966-z.
18. Gelberg L, Andersen RM, Leake BD. The behavioral model for vulnerable populations: application to medical care use and outcomes for homeless people. Health Serv Res. 2000;34(6):1273-302.
19. Burke CT, Calear AL, Cruwys T, Batterham PJ. Are parents the key? How parental suicide stigma and suicide literacy affect help-seeking attitudes and intentions for their child. J Youth Adolesc. 2023;52(11):2417-29. doi: 10.1007/s10964-023-01841-3.
20. van der Schyff EL, Amon KL, Ridout B, Forsyth R, Campbell AJ. Mental health help-seeking behavior of male video game players: an online survey. Cyberpsychol Behav Soc Netw. 2023;26(9):717-23. doi: 10.1089/cyber.2023.0035.
21. Reynolds KA, Mackenzie CS, Medved M, Dudok S, Koven L. Older adults' mental health information preferences: a call for more balanced information to empower older adults' mental health help-seeking. Ageing Soc. 2023;43(12):2845-74. doi: 10.1017/s0144686x21001896.
22. Umubyeyi A, Mogren I, Ntaganira J, Krantz G. Help-seeking behaviours, barriers to care and self-efficacy for seeking mental health care: a population-based study in Rwanda. Soc Psychiatry Psychiatr Epidemiol. 2016;51(1):81-92. doi: 10.1007/s00127-015-1130-2.
23. Shi W, Shen Z, Wang S, Hall BJ. Barriers to professional mental health help-seeking among Chinese adults: a systematic review. Front Psychiatry. 2020;11:442. doi: 10.3389/fpsyt.2020.00442.
24. Chaudhry MM, Banta JE, McCleary K, Mataya R, Banta JM. Psychological distress, structural barriers, and health services utilization among US adults: National Health Interview Survey, 2011-2017. Int J Ment Health. 2023;52(4):452-72. doi: 10.1080/00207411.2022.2123694.
25. Devita M, De Salvo R, Ravelli A, De Rui M, Coin A, Sergi G, et al. Recognizing depression in the elderly: practical guidance and challenges for clinical management. Neuropsychiatr Dis Treat. 2022;18:2867-80. doi: 10.2147/ndt.S347356.
26. Fischer EH, Farina A. Attitudes toward seeking professional psychologial help: a shortened form and considerations for research. J Coll Stud Dev. 1995;36(4):368-73.
27. Moore CD, Schofield C, van Rooyen DR, Andersson LM. Development and preliminary validation of a scale to measure self-efficacy in seeking mental health care (SE-SMHC). Springerplus. 2015;4:339. doi: 10.1186/s40064-015-1109-1.
28. Kessler R, Andrews G, Colpe L, Hiripi E, Mroczek D, Normand S, et al. K6 and K10 [Database record]. Retrieved from PsycTESTS. doi: 10.1017/S0033291702006074.
29. Wilson CJ, Deane FP, Ciarrochi J, Rickwood D. Measuring help-seeking intentions: properties of the general help seeking questionnaire. Can J Couns. 2005;39(1):15-28.
30. Greenberg SA. The geriatric depression scale (GDS). Best Practices in Nursing Care to Older Adults. 2012;4(1):1-2. Available from: https://sapepper.barshop.uthscsa.edu/wp-content/uploads/sites/177/2021/07/Greenberg-GDS-Packet.pdf.
31. Golboni F, Mahmoodi H, Baghi V, Ghanei Gheshlagh R, Valiee S, Dalvand P, et al. Prevalence of depression among Iranian elderly: a systematic review and meta-analysis of observational studies. J Prev Complement Med. 2022;1(2):70-80. doi: 10.22034/ncm.2022.327342.1014.
32. Zenebe Y, Akele B, W/Selassie M, Necho M. Prevalence and determinants of depression among old age: a systematic review and meta-analysis. Ann Gen Psychiatry. 2021;20(1):55. doi: 10.1186/s12991-021-00375-x.
33. Bedaso A, Mekonnen N, Duko B. Estimate of the prevalence of depression among older people in Africa: a systematic review and meta-analysis. Aging Ment Health. 2022;26(6):1095-105. doi: 10.1080/13607863.2021.1932740.
34. Abdoli N, Salari N, Darvishi N, Jafarpour S, Solaymani M, Mohammadi M, et al. The global prevalence of major depressive disorder (MDD) among the elderly: a systematic review and meta-analysis. Neurosci Biobehav Rev. 2022;132:1067-73. doi: 10.1016/j.neubiorev.2021.10.041.
35. Mu TY, Xu RX, Xu JY, Dong D, Zhou ZN, Dai JN, et al. Association between self-care disability and depressive symptoms among middle-aged and elderly Chinese people. PLoS One. 2022;17(4):e0266950. doi: 10.1371/journal.pone.0266950.
36. Idaiani S, Indrawati L. Functional status in relation to depression among elderly individuals in Indonesia: a cross-sectional analysis of the Indonesian National Health Survey 2018 among elderly individuals. BMC Public Health. 2021;21(1):2332. doi: 10.1186/s12889-021-12260-z.
37. Pei Y, Cong Z, Wu B. Education, adult children's education, and depressive symptoms among older adults in rural China. Soc Sci Med. 2020;253:112966. doi: 10.1016/j.socscimed.2020.112966.
38. Lee J, Park H, Chey J. Education as a protective factor moderating the effect of depression on memory impairment in elderly women. Psychiatry Investig. 2018;15(1):70-7. doi: 10.4306/pi.2018.15.1.70.
39. Pan H, Liu Y, Chen Y. The health effect of perceived built environment on depression of elderly people in rural China: moderation by income. Health Soc Care Community. 2021;29(1):185-93. doi: 10.1111/hsc.13081.
40. Najafi F, Pasdar Y, Karami Matin B, Rezaei S, Kazemi Karyani A, Soltani S, et al. Decomposing socioeconomic inequality in poor mental health among Iranian adult population: results from the PERSIAN cohort study. BMC Psychiatry. 2020;20(1):229. doi: 10.1186/s12888-020-02596-y.
41. Brandão DJ, Fontenelle LF, da Silva SA, Menezes PR, Pastor-Valero M. Depression and excess mortality in the elderly living in low- and middle-income countries: systematic review and meta-analysis. Int J Geriatr Psychiatry. 2019;34(1):22-30. doi: 10.1002/gps.5008.
42. Kraaij V, Arensman E, Spinhoven P. Negative life events and

depression in elderly persons: a meta-analysis. J Gerontol B Psychol Sci Soc Sci. 2002;57(1):P87-94. doi: 10.1093/geronb/57.1.p87.
43. Roskoschinski A, Liang W, Duan Y, Al-Salehi H, Lippke S. Loneliness and depression in older adults with multimorbidity: the role of self-efficacy and social support. Front Psychiatry. 2023;14:1232067. doi: 10.3389/fpsyt.2023.1232067.
44. Kok G, Gottlieb NH, Peters GJ, Mullen PD, Parcel GS, Ruiter RA, et al. A taxonomy of behaviour change methods: an Intervention Mapping approach. Health Psychol Rev. 2016;10(3):297-312. doi: 10.1080/17437199.2015.1077155.
45. Manungkalit M, Sari NP. The influence of anxiety and stress toward depression in institutionalized elderly. J Educ Health Community Psychol. 2020;9(1):65-76. doi: 10.12928/jehcp.v9i1.13917.
46. Zhang L, Li Z. Factor structure and longitudinal measurement invariance of the K6 among a national representative elder sample of China. BMC Public Health. 2022;22(1):1789. doi: 10.1186/s12889-022-14193-7.
47. Tomasi AM, Slewa-Younan S, Narchal R, Rioseco P. Professional mental health help-seeking amongst Afghan and Iraqi refugees in Australia: understanding predictors five years post resettlement. Int J Environ Res Public Health. 2022;19(3):1896. doi: 10.3390/ijerph19031896.
48. Bessaha ML. Factor structure of the Kessler psychological distress scale (K6) among emerging adults. Res Soc Work Pract. 2017;27(5):616-24. doi: 10.1177/1049731515594425.
49. Jamali H, Rahimi Z, Jamali J. Evaluation of demographic factors related to psychological distress in military personnel of Razavi Khorasan province, Iran. J Mar Med. 2023;5(2):76-83. doi: 10.30491/5.2.76.
50. Adams C, Gringart E, Strobel N, Masterman P. Help-seeking for mental health problems among older adults with chronic disease: an application of the theory of planned behaviour. Aust J Psychol. 2021;73(4):426-37. doi: 10.1080/00049530.2021.1952850.
51. Chen J, Xu D, Wu X. Seeking help for mental health problems in Hong Kong: the role of family. Adm Policy Ment Health. 2019;46(2):220-37. doi: 10.1007/s10488-018-0906-6.
52. Han J, Batterham PJ, Calear AL, Ma J. Seeking professional help for suicidal ideation: a comparison between Chinese and Australian university students. Psychiatry Res. 2018;270:807-14. doi: 10.1016/j.psychres.2018.10.080.
53. Alhalaseh L, Alsawalha K, Al-Sabbagh MQ, Al-Khaleefa F. Depression rates and health-seeking behavior in primary care: Andersen model of health- care utilization. Psychol Health Med. 2023;28(6):1503-12. doi: 10.1080/13548506.2022.2093927.
54. Polacsek M, Boardman GH, McCann TV. Help-seeking experiences of older adults with a diagnosis of moderate depression. Int J Ment Health Nurs. 2019;28(1):278-87. doi: 10.1111/inm.12531.