

Depression, Anxiety, and Stress in Community-Dwelling Older Adults from Rural North India: Prevalence, Severity, and Gender Differences

Akshay Kumar^{1*}, Prem Prakash Bharti¹, Kajal Kureel², Pankaj Kumar Jain¹, Shushil Kumar Shukla¹, Rashmi Bhujade¹

Introduction: The number of older adults is increasing globally, accompanied by a growing concern regarding their mental health. Depression, anxiety, and stress can adversely affect the quality of life of older individuals, with the impact potentially greater in rural communities where access to healthcare and mental health services may be limited.

Aim: To describe the socio-demographic profile of older adults and assess the prevalence and severity of depression, anxiety, and stress using the DASS-21.

Methods and materials: A community-based cross-sectional study was carried out between January and June 2024 among 384 community-dwelling older adults aged ≥ 60 years in a rural district of North India. Participants were selected through multistage sampling. Data were analysed using IBM SPSS Statistics version 25.0. Associations between categorical variables were examined using the chi-square test, and statistical significance was set at $p < 0.05$.

Results: Of the 384 participants, 205 (53.4%) were male and 179 (46.6%) were female. Most participants were married (65.9%), while 60.9% belonged to the lower socioeconomic class. The prevalence of depression, anxiety, and stress was 25.5, 34.9, and 26.0%, respectively. Females showed greater severity across all three psychological domains, with statistically significant gender differences ($p < 0.05$). Depression showed a positive correlation with anxiety ($r = 0.68$) and stress ($r = 0.72$), while anxiety was positively correlated with stress ($r = 0.75$); all correlations were statistically significant ($p < 0.001$).

Conclusions: Depressive, anxiety, and stress-related symptoms were prevalent among community-dwelling older adults in the rural North Indian study population, with females experiencing greater severity across the three domains.

Access this article online

Website:

www.cijmr.com

DOI:

10.58999/cijmr.v5i03.465

Keywords:

Older adults, Depression, Anxiety, Stress, DASS-21, Rural health, Geriatric mental health

Introduction

Global scenario

Population ageing is occurring worldwide and represents an important demographic transition. In 2020, around 1 billion people globally were aged 60 years or older, and this number is projected to increase to approximately 1.4 billion by 2030, accounting for nearly one in six people worldwide (1–3). By 2050, the global population aged 60 years and above is expected to reach approximately 2.1 billion. During the same period, the proportion of older adults worldwide is projected to increase from 12% to 22% (4). The population aged 80 years and above is also expected to increase substantially, reaching about 426 million by 2050.

Mental health is an important component of healthy ageing, as psychological disorders can substantially affect the well-being and functioning of older adults. Available evidence indicates that approximately 14% of people aged 60 years and above experience a mental health condition, while mental disorders contribute considerably to disability in this age group. Depression represents one of the most frequently reported mental health conditions globally, with an estimated 322 million people affected. Reported prevalence estimates vary considerably, ranging from 4% to 13% for minor depression and 1% to 4% for major depression (4). Among older adults, the prevalence of depression has been reported to range from 6% to 53% across different populations worldwide. (5)

¹Uttar Pradesh University of Medical Sciences, Saifai, Uttar Pradesh, India

²Dr. Bhimrao Ramji Ambedkar Government Medical College, Kannauj, Uttar Pradesh, India

Correspondence to: Akshay Kumar, Uttar Pradesh University of Medical Sciences, Saifai, Uttar Pradesh, India. E-mail: akshaypundir0402@gmail.com

Submitted: 13/07/2026

Revision: 27/08/2026

Accepted: 27/08/2026

Published: 25/09/2026

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

How to cite this article: Kumar A, Bharti PP, Kureel K, Jain PK, Shukla SK, Bhujade R. Depression, Anxiety, and Stress in Community-Dwelling Older Adults from Rural North India: Prevalence, Severity, and Gender Differences. Central India Journal of Medical Research. 2026; 5(3):65-71.

Indian scenario

India is experiencing a marked demographic shift, with a progressive increase in the proportion of older adults. Despite the growing size of this population, reliable estimates of depression at national and regional levels remain limited. Depression represents an important public health concern in the country because of its association with disability, suicidal behaviour, premature mortality, and impaired functioning. Available projections suggest that the prevalence of depression may increase from 8.6% in 2011 to approximately 19% by 2050 (4,6). The increasing burden is particularly relevant for older adults, among whom depression may be associated with poorer functional ability and greater healthcare needs. In India, individuals aged 60 years and above are considered older adults (4).

Studies undertaken among older adults living in rural areas of India have reported considerable variation in the occurrence of depression, with prevalence estimates ranging from 12.7% to 53.7%. Community-based investigations have also reported point prevalence estimates of depressive disorders between 13% and 25% among older adults (7).

Rationale of the Study

The increasing number of older adults in India is accompanied by an important need to address their mental health needs, particularly in rural communities. Previous community-based studies from different parts of the country have demonstrated a considerable burden of depression among older adults. However, Indian community-based research has more often examined depression as an individual outcome, while fewer studies have evaluated depression, anxiety, and stress together within the same population. In addition, limited evidence is available regarding the distribution and severity of depression, anxiety, and stress among community-dwelling older adults in rural North India.

Against this background, the present study assessed depression, anxiety, and stress concurrently among community-dwelling older adults in a rural district of North India using the Depression Anxiety Stress Scale-21 (DASS-21). The study evaluated the prevalence and severity of these psychological symptoms, examined differences between male and female participants, and assessed the relationships among depression, anxiety, and stress scores. The findings were intended to contribute region-specific evidence on psychological morbidity among rural older adults and to support consideration of comprehensive mental health assessment within primary healthcare services.

The study hypothesized that depression, anxiety, and stress would be commonly observed among community-dwelling older adults in rural North India and that female participants would exhibit greater severity of these psychological symptoms than male participants. Accordingly, the study aimed to describe the socio-demographic characteristics and determine the prevalence and severity of depression, anxiety, and stress among community-dwelling older adults in a rural district of North India using the Depression Anxiety Stress Scale-21 (DASS-21). Specifically, the study sought to describe the socio-demographic characteristics of the participants, determine the prevalence and severity of depression, anxiety, and stress, compare the severity of these psychological conditions between male and female older adults, and assess the correlations among depression, anxiety, and stress scores.

Materials and Methods

Study Design and Setting

A community-based cross-sectional study was conducted between January and June 2024 among community-dwelling older adults residing in a rural district of North India. The study was undertaken in three rural development blocks selected randomly from the district.

The study included community-dwelling adults aged 60 years or older who had been permanent residents of the selected study area for at least one year prior to data collection.

Sample Size

The required sample size was estimated using the standard formula for calculating sample size for a prevalence study:

where Z represents the standard normal deviate at the 95% confidence level (1.96), p denotes the anticipated prevalence (0.50), $q = 1 - p$, and d represents the allowable absolute precision (0.05) (8). As the study simultaneously assessed three psychological domains—depression, anxiety, and stress—and no single prevalence estimate was considered appropriate for all three outcomes, an anticipated prevalence of 50% was used. This conservative assumption yields the largest sample size for the specified confidence level and precision. Since no single prevalence estimate was considered sufficiently appropriate to represent all three outcomes in the intended rural older-adult population, a prevalence of 50% was conservatively assumed. This value provides the maximum sample size at a given confidence level and absolute precision.

and therefore ensures an adequately powered sample in the absence of a single definitive prevalence estimate. In view of the absence of a single definitive prevalence estimate applicable to all three outcomes, the calculated sample size was 384. Accordingly, 384 older adults were enrolled in the study.

Sampling Technique

A multistage sampling approach was used for participant selection. At the first stage, three rural development blocks were chosen from the eight blocks in the district using simple random sampling. At the subsequent stage, eight villages were selected from each of the three chosen blocks, giving a total of 24 villages. A door-to-door household survey was then undertaken in these villages, with 16 eligible older adults recruited from each village to obtain the required sample of 384 participants.

Within each selected village, households were approached sequentially for the survey. Eligible residents aged ≥ 60 years who were present at the time of the visit and provided informed consent were recruited until the village-specific target of 16 participants was reached. When a household had one eligible older adult, that individual was considered for inclusion. In households with more than one eligible older adult, all eligible individuals were included, subject to the requirement of completing the predetermined village-level sample. Households without an eligible older adult were not included, and the survey continued with subsequent households until the required number of participants was obtained.

Eligibility Criteria

Individuals aged ≥ 60 years who had been permanent residents of the study area for at least one year and provided written informed consent were eligible for participation. Individuals were excluded if they were seriously ill or hospitalized during the survey period, had severe cognitive impairment such as dementia, had hearing or speech impairment that precluded reliable communication, had a previously diagnosed psychiatric or neurological disorder, or could not be contacted despite repeated household visits.

Study Instrument

A pretested semi-structured questionnaire was used for data collection. It comprised two sections: the first captured the socio-demographic characteristics of the participants, while the second assessed depression, anxiety, and stress using the Depression Anxiety Stress Scale-21 (DASS-21) developed by Lovibond and Lovibond.⁽⁹⁾

The Hindi-translated version of the DASS-21 was administered to the participants. Its reliability and psychometric properties have previously been evaluated among Hindi-speaking populations (10–12). The DASS-21 contains 21 self-report items distributed equally across three domains—depression, anxiety, and stress—with seven items contributing to each domain. Responses are recorded on a four-point scale from 0 to 3. For each domain, the item scores were summed and the resulting score was multiplied by two before classification according to the recommended DASS-21 severity categories.⁽⁹⁾

Data Collection Procedure

Trained investigators conducted face-to-face interviews with eligible participants using the pretested questionnaire. Written informed consent was obtained before enrolment. Participant information was handled confidentially, and anonymity was maintained throughout the data collection process.

Statistical Analysis

Data were entered into Microsoft Excel 2019 (Microsoft Corporation, Redmond, WA, USA) and subsequently analysed using IBM SPSS Statistics version 25.0 (IBM Corp., Armonk, NY, USA) (13,14). Descriptive statistics were used to summarize the socio-demographic characteristics and calculate the prevalence of depression, anxiety, and stress. The chi-square test was used to examine associations between categorical variables. Pearson's correlation coefficient was calculated to determine the relationships among depression, anxiety, and stress scores. Statistical significance was considered at a p -value < 0.05 .

Ethical Considerations

The study was approved by the Institutional Ethics Committee (Letter No. 2796/Ethics/2023, Ref. Code XVI-PGTSC-IIA/P56). Written informed consent was obtained from all participants before data collection.

Results

The socio-demographic profile of the 384 study participants is presented in Table 1. Males constituted 53.4% (205) of the study population, while females accounted for 46.6% (179). The largest proportion of participants was in the 60 to 65-year age group. Most participants were married and had no formal education, while 60.9% belonged to the lower socioeconomic class.

The distribution of depression severity by gender is presented in Table 2. The severity pattern differed

Table 1: Sociodemographic characteristics of the study participants (N = 384)

S.N.	Variables	Category-	Female	%	Male	%
A.	Gender	-	179	46.6	205	53.4
B.	Age group	60-65	122	49.4	125	50.6
		66-70	29	38.7	46	61.3
		71-75	17	45.9	20	54.1
		>75	11	44.0	14	56.0
C.	Educational Qualification	Illiterate	153	62.2	93	37.8
		Less than primary school	9	33.3	18	66.7
		Primary school	8	25.8	23	74.2
		Middle school	4	18.2	18	81.8
		High school	3	20	12	80
		Intermediate	2	7.7	24	92.3
		Graduate degree and above	0	0.0	17	100
D.	Marital status	Unmarried	0	0	4	100
		Married	96	37.9	157	62.1
		Divorced	4	80	1	20
		Widow/widower	80	65	43	32
E.	Socio-economic status*	-	n		%	
		Upper class	17		4.4	
		Upper middle class	11		2.9	
		Middle class	32		8.3	
		Lower middle class	90		23.4	
		Lower class	234		60.9	

*Socioeconomic status was classified according to the Modified B.G. Prasad socioeconomic classification, updated to 2023(15)

significantly between female and male participants, with a greater proportion of females falling into the moderate, severe, and extremely severe categories ($p < 0.001$).

As shown in Table 3, anxiety severity varied significantly by gender. Females had higher proportions in the moderate, severe, and extremely severe categories compared with males ($p = 0.002$).

Table 4 demonstrates a significant difference in the distribution of stress severity between female and male participants. Females had higher proportions in the

moderate, severe, and extremely severe categories, and the overall association between gender and stress severity was statistically significant ($p = 0.044$).

Table 5 showed the correlation analysis showed significant positive relationships between all three psychological domains ($p < 0.001$). Participants with higher depression scores also tended to have higher anxiety and stress scores, while anxiety scores were similarly associated with stress scores.

Table 2: Severity distribution of depression among older adults according to DASS-21 severity categories (N = 384)

S.N.	Variables	Female	Male	p-value
	Depression	N (%)	N (%)	
01.	Normal (0-9)	119 (66.5%)	167 (81.5%)	p<0.001*
02.	Mild (10-13)	18 (10.1%)	16 (7.8%)	
03.	Moderate (14-20)	27 (15.1%)	18 (8.8%)	
04.	Severe (21-27)	9 (5.0%)	0 (0.0%)	
05.	Extremely Severe (≥28)	6 (3.4%)	4 (2.0%)	

*A p-value <0.05 was considered statistically significant.

Table 3: Severity-wise distribution of anxiety by older adults based on the Depression Anxiety Stress Scale (DASS-21) (N = 384)

S.N.	Variables	Female	Male	p-value
	Anxiety	N (%)	N (%)	
01.	Normal (0–7)	103 (57.5%)	147 (71.7%)	0.002*
02.	Mild (8–9)	12 (6.7%)	21 (10.2%)	
03.	Moderate (10–14)	31 (17.3%)	21 (10.2%)	
04.	Severe (15–19)	13 (7.3%)	8 (3.9%)	
05.	Extremely Severe (≥20)	20 (11.2%)	8 (3.9%)	

*Statistical significance was considered at $p < 0.05$.

Table 4: Distribution of stress severity among older adults according to DASS-21 categories (N = 384)

S.N.	Variables	Female	Male	p-value
	Stress	N (%)	N (%)	
01.	Normal (0–14)	121 (67.6%)	163 (79.5%)	0.044
02.	Mild (15–18)	24 (13.4%)	19 (9.3%)	
03.	Moderate (19–25)	20 (11.2%)	17 (8.3%)	
04.	Severe (26–33)	11 (6.1%)	6 (2.9%)	
05.	Extremely Severe (≥34)	3 (1.7%)	0 (0.0%)	

Discussion

This community-based study found that symptoms of depression, anxiety, and stress were present among older adults living in the rural study setting. Female participants showed greater severity across all three psychological domains compared with males, with the differences reaching statistical significance. The analysis also identified positive correlations between depression, anxiety, and stress scores, suggesting that these symptom domains tended to occur together among the study participants.

An important feature of the present study was the simultaneous assessment of depression, anxiety, and stress in the same community-dwelling older-adult population. This allowed the severity pattern of each domain to be examined alongside gender differences and the relationships between their scores. The findings showed a consistent pattern of greater psychological symptom severity among female participants and significant positive correlations between the three domains. Taken together, these findings indicate that depression, anxiety, and stress should be considered as related aspects of psychological well-being when assessing mental health among older adults in rural communities.

Participants aged 60 to 65 years constituted the largest age group in the present study. A similar predominance of participants in the younger segment of the older-adult

Table 5: Table 5. Correlations among depression, anxiety, and stress scores in older adults (N = 384)

S.N.	Variables	Correlation coefficient (r)	p-value
01.	Depression vs Anxiety	0.68	<0.001*
02.	Depression vs Stress	0.72	<0.001*
03.	Anxiety vs Stress	0.75	<0.001*

*Statistical significance was considered at $p < 0.05$.

population has been reported by Bincy *et al.* and Kumari *et al.* (6,16,17).

Most participants in the present study were married, a pattern also reported in the community-based studies by Thilak SA *et al.*, Behera *et al.*, and Bincy *et al.* (4–6). A similar pattern of low educational attainment among older adults has also been reported by Sahni *et al.* and Bincy *et al.* (6,18), which is consistent with the socio-demographic profile commonly described in rural Indian older-adult populations.

The findings of depressive symptoms in the present study were broadly similar to those reported by Raeisvandi *et al.* and Sinha *et al.*, both in terms of prevalence and severity distribution (19,20). The distribution of anxiety symptoms was also similar to that described in studies by Raeisvandi *et al.*, Grover *et al.*, Lin *et al.*, and Igbokwe *et al.* (20–23).

These studies reported comparable levels of anxiety symptoms among older adults, supporting the findings observed in the present population. The findings are

further supported by reports from Lu *et al.* and Lugova *et al.*, who documented a substantial burden of depression and anxiety among community-dwelling older adults (24,25).

The pattern of stress severity was also broadly similar to that reported by Raeisvandi *et al.* (20). Taken together, the findings from these studies indicate that symptoms of depression, anxiety, and stress are frequently reported among older adults across diverse population and geographical settings.

Gender was significantly associated with the severity distribution of depression, anxiety, and stress, with females showing greater severity across all three domains. A similar pattern has been described in previous research (26). The consistent difference observed by gender suggests that mental health assessment among older adults should remain attentive to the potentially greater psychological burden experienced by women.

The three psychological domains were positively correlated in the present study, and all observed relationships were statistically significant ($p < 0.001$). Similar overlap between depression, anxiety, and stress has been described in previous research and may reflect the complex interaction of psychological, biological, and social factors (27–29).

Among older adults, factors such as chronic illness, functional decline, loneliness, and social isolation may contribute to the coexistence of these psychological symptoms (30,31).

The observed interrelationships therefore support an approach in which mental health assessment considers multiple psychological domains rather than focusing on a single symptom category. Use of a validated instrument such as the DASS-21 can facilitate concurrent assessment of depression, anxiety, and stress and may assist in identifying individuals who require further clinical evaluation.

Limitations

Several limitations should be considered when interpreting the findings. The cross-sectional nature of the study does not permit determination of causal relationships between the variables examined. In addition, because the study was conducted in a single rural district of North India, the findings may not be directly generalizable to urban settings or other geographical regions. Furthermore, although the DASS-21 is a validated screening instrument, it does not provide a clinical diagnosis of depression, anxiety, or stress.

Future Directions

Future research and service development should focus on strengthening mental health care for older adults within existing healthcare systems. Community-based outreach may be useful for improving awareness of mental health problems, addressing stigma, and promoting early help-seeking. Collaboration among physicians, psychologists, social workers, caregivers, and other relevant health professionals may facilitate a more comprehensive approach to the psychological and physical needs of older adults. Support programmes for caregivers, including education, training, respite services, and access to psychological support, may also be beneficial. Promotion of physical activity, social engagement, and meaningful recreational activities should be considered as part of broader healthy-ageing strategies. Routine assessment for common psychological symptoms during healthcare visits, together with accessible referral pathways for individuals requiring further evaluation, may help improve the identification and management of mental health concerns among older adults.

Conclusion

Depression, anxiety, and stress symptoms were prevalent among community-dwelling older adults in the rural North Indian study population, with females showing greater severity across the three domains. Strengthening mental health assessment and support within primary healthcare, alongside appropriate community-based approaches, may help address the psychological needs of older adults in similar settings.

Conflict of Interest

The authors declare no conflict of interest.

Funding

No external funding was received for this study.

References

1. Chauhan P, Kokiwar PR, Shridevi K, Katkuri S. A study on prevalence and correlates of depression among elderly population of rural South India. *Int J Community Med Public Health*. 2016;3(1):236–9. doi:10.18203/2394-6040.IJCMPh20151569
2. United Nations, Department of Economic and Social Affairs, Population Division. *World Population Ageing 2023: Challenges and opportunities of population ageing in the least developed countries*. UN DESA/POP/2023/TR/NO.5; 2023.
3. World Health Organization. *Ageing and health* [Internet]. Geneva: World Health Organization; . Available from: [WHO webpage].
4. Behera P, Pilonia M, Yadav V, Bairwa M, Dabar D, Behera SM, *et*

- al.* Estimation of the prevalence of depression using diagnostic instruments in the elderly population in India, 2000-2019: a systematic review protocol. *BMJ Open*. 2020;10:e034330. doi:10.1136/bmjopen-2019-034330.
5. A. T, K. S, Neloopant S. Prevalence and factors associated with depression among the elderly in rural areas of Kannur, North Kerala, India: a cross sectional study. *Int J Community Med Public Health*. 2016;(May):1986–91. doi:10.18203/2394-6040.ijcmph20162184
6. Bincy K, Logaraj M, Ramraj B. Depression and its associated factors among the older adults in rural, Tamilnadu, India. *Clin Epidemiol Glob Health*. 2021 Apr 1;10:100677. doi:10.1016/J.CEGH.2020.100677
7. Bodhare TN, Kaushal V, Venkatesh K, Anil Kumar A B Associate M. Prevalence and risk factors of depression among elderly population in a rural area. *Perspectives in Medical Research [Internet]*. [cited 2024 Apr 18];(1). Available from: www.pimr.org.in
8. OpenEpi Epidemiologic Statistics [Internet]. [cited 2026 Jun 15]. Available from: <https://www.openepi.com/>
9. Bajre PK. Structural validity of the DASS-21 during pandemic-induced psychological distress. *Discover Mental Health*. 2025 Dec 3;6(1):4. doi:10.1007/s44192-025-00349-5
10. Tripathi V, Pandey A, Pandey R, In PA. Psychometric Properties and Factor Structure Validation of a Hindi Version of Twenty-One Items Depression Anxiety Stress Scale ARTICLE INFO [Internet]. doi:10.56011/mind-mri-133-202411
11. Kumar K, Kumar S, Mehrotra D, Tiwari S, Kumar V, Dwivedi R. Reliability and psychometric validity of Hindi version of Depression, Anxiety and Stress Scale-21 (DASS-21) for Hindi speaking Head Neck Cancer and Oral Potentially Malignant Disorders Patients. *J Cancer Res Ther*. 2019 Apr 1;15(3):653–8. doi:10.4103/JCART.JCRT_281_17 PubMed PMID: 31169235.
12. DASS FAQ [Internet]. [cited 2026 Jul 6]. Available from: https://www2.psy.unsw.edu.au/dass/DASSFAQ.htm?utm_source=chatgpt.com#_3_...How_do_I_get_permission_to_use_
13. IBM SPSS Statistics [Internet]. [cited 2026 Jun 15]. Available from: <https://www.ibm.com/products/spss-statistics>
14. Microsoft Excel | Free Online Spreadsheets Software [Internet]. [cited 2026 Jul 21]. Available from: <https://www.microsoft.com/en-in/microsoft-365/excel>
15. Ghodke M. Updated BG Prasad's Socioeconomic Status Classification for the Year 2023. *Indian J Community Med*. 2023;48(6):934. doi:10.4103/IJCM.IJCM_401_23 PubMed PMID: 38249702.
16. Bincy K, Pradeep MVM, Padmavathy L, Ezhilmuthalvan A, Prashanth S, Logaraj M, *et al.* Prevalence of Depression Among Elderly Population in India - A Systematic Review & Meta-Analysis. *National Journal of Community Medicine*. 2024 Nov 1;15(11):985–92. doi:10.55489/NJCM.151120244461
17. Kumari R, Langer B, Gupta RK, Bahl R, Akhtar N, Nazir H. Prevalence and determinants of cognitive impairment and depression among the elderly population in a rural area of North India. *Indian Journal of Community Medicine*. 2021 Apr 1;46(2):236–40. doi:10.4103/ijcm.IJCM_475_20
18. Sahni B, Bala K, Kumar T, Narangyal A. Prevalence and determinants of geriatric depression in North India: A cross-sectional study. *J Family Med Prim Care*. 2020;9(5):2332. doi:10.4103/JFMPC.JFMPC_357_20 PubMed PMID: 32754497.
19. Sinha P, Hussain T, Boora NK, Rao GN, Varghese M, Gururaj G, *et al.* Prevalence of Common mental disorders in older adults: Results from the National Mental Health Survey of India. *Asian J Psychiatr*. 2021 Jan 1;55:102463. doi:10.1016/J.AJP.2020.102463 PubMed PMID: 33212298.
20. Raeisvandi A, Amerzadeh M, Hajiabadi F, Hosseinkhani Z. Prevalence and the affecting factors on depression, anxiety and stress (DASS) among elders in Qazvin City, in the Northwest of Iran. *BMC Geriatr*. 2023 Dec 1;23(1). doi:10.1186/S12877-023-03908-Z PubMed PMID: 37003975.
21. Igbokwe CC, Ejeh VJ, Agbaje OS, Umoke PIC, Iweama CN, Ozoemena EL. Prevalence of loneliness and association with depressive and anxiety symptoms among retirees in Northcentral Nigeria: a cross-sectional study. *BMC Geriatr*. 2020 Apr 23;20(1). doi:10.1186/S12877-020-01561-4 PubMed PMID: 32326891.
22. Grover S, Malhotra N. Depression in elderly: A review of Indian research. *Journal of Geriatric Mental Health*. 2015;2(1):4. doi:10.4103/2348-9995.161376
23. Lin X, Haralambous B, Pachana NA, Bryant C, Logiudice D, Goh A, *et al.* Screening for depression and anxiety among older Chinese immigrants living in Western countries: The use of the Geriatric Depression Scale (GDS) and the Geriatric Anxiety Inventory (GAI). *Asia Pac Psychiatry*. 2016 Mar 1;8(1):32–43. doi:10.1111/APPY.12191 PubMed PMID: 26010903.
24. Lugova H, Andoy-Galvan JA, Patil SS, Wong YH, Baloch GM, Suleiman A, *et al.* Prevalence and Associated Factors of the Severity of Depression, Anxiety and Stress Among Low-Income Community-Dwelling Adults in Kuala Lumpur, Malaysia. *Community Ment Health J*. 2021 Nov 1;57(8):1489–98. doi:10.1007/S10597-020-00765-7 PubMed PMID: 33417170.
25. Lu L, Shen H, Tan L, Huang Q, Chen Q, Liang M, *et al.* Prevalence and factors associated with anxiety and depression among community-dwelling older adults in Hunan, China: a cross-sectional study. *BMC Psychiatry*. 2023 Dec 1;23(1). doi:10.1186/S12888-023-04583-5 PubMed PMID: 36793025.
26. Sharma B, Arora A, Talwar K, Goyal C. Prevalence & Predictors of Depression in Elderly: A Community Based Study from Rural India. *International Journal of Pharmaceutical and Clinical Research [Internet]*. 2023 [cited 2026 Jun 4];15(12):1913–8. Available from: www.ijpcr.com
27. Henry JD, Crawford JR. The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*. 2005 Jun 1;44(2):227–39. doi:10.1348/014466505X29657 PubMed PMID: 16004657.
28. Bryant C, Jackson H, Ames D. The prevalence of anxiety in older adults: methodological issues and a review of the literature. *J Affect Disord*. 2008 Aug;109(3):233–50. doi:10.1016/J.JAD.2007.11.008 PubMed PMID: 18155775.
29. Denihan A, Kirby M, Bruce I, Cunningham C, Coakley D, Lawlor BA. Three-year prognosis of depression in the community-dwelling elderly. *British Journal of Psychiatry*. 2000;176(MAY):453–7. doi:10.1192/BJP.176.5.453 PubMed PMID: 10912221.
30. Beekman ATF, Copeland JRM, Prince MJ. Review of community prevalence of depression in later life. *British Journal of Psychiatry*. 1999;174(APR.):307–11. doi:10.1192/BJP.174.4.307 PubMed PMID: 10533549.
31. Barua A, Ghosh M, Kar N, Basilio M. Prevalence of depressive disorders in the elderly. *Ann Saudi Med*. 2011 Nov;31(6):620. doi:10.4103/0256-4947.87100 PubMed PMID: 22048509.