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Depression and quality of life among elderly: Comparative cross-sectional study between elderly in community and old age homes in Eastern India

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Abstract:

BACKGROUND: Depression among elderly is an emerging public health concern. Along with other comorbidities, depression affects the quality of life and functional ability of the geriatric population. This study aimed to assess the depression and quality of life among elderly and compare these parameters among the inhabitants of old age home and in the community.

MATERIALS AND METHODS: A cross-sectional study was conducted among the elderly of the community and old-age homes in the urban areas of Raipur, Chhattisgarh between March and July 2016. Hundred elderly (50 in each group) participated in the study. Geriatric Depression Scale 15 (GDS-15) and Older People Quality of Life (OPQoL)-35 scale were used to assess the geriatric depression and quality of life, respectively. Association between depression and demographic variables were analyzed by Chi-square/Fisher's exact test. Pearson's correlation coefficient was calculated between GDS-15 and OPQoL-35 scale.

RESULTS: The prevalence of geriatric depression was 59%. Quality of life was better among the old-age home elderly participants than that of community elderly when compared for score of life over all (11.78 vs. 13.56), health (12.8 vs. 14.0), social relationship (10.48 vs. 13.9), control over life (11.92 vs. 14.08), home and neighborhoods (9.38 vs. 12.36), psychological and emotional wellbeing (10.96 vs. 13.7), financial circumstances (14.5 vs. 16.7), and leisure and activities (13.86 vs. 15.28). Moderate positive correlation was observed between depression and quality of life.

CONCLUSION: The higher prevalence in our study emphasizes the need to delineate the actual burden in the elderly population and provide necessary supportive measures. It needs to be addressed adequately through a coordinated primary care approach and community and social support. Timely and adequate management of depression can improve the quality-of-life outcomes.

Keywords:

Depression, elderly, India, quality of life

Introduction

In India, presently, the elderly population constitutes 8.2% of the national population and is expected to reach 20% by 2050.^[1] The population of the elderly is on a rise. This inevitable growth has brought a new set of geriatric health problems to the forefront. The elderly face a multitude of psychological,

social, and physical health-related problems. There is a growing body of evidence among the elderly of an increase in morbidity, mortality, hospitalization, and loss of functional status due to mental health problems.^[2]

According to the National Mental Health Survey, in India, the prevalence of any mental

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morbidity was 10.6%.^[3] Depression is the most common mental morbidity and accounts for a life time prevalence of 5.25% (5.21–5.29). The prevalence of depression in persons aged more than 60 years is higher with a life time prevalence of 6.93% (6.81–7.05).^[3] Depression has become apparent, albeit slowly as a public health challenge in low- and middle-income countries (LMICs), which are enduring a shortage of mental health services, or an absolute lack of them thereof.^[4] Mental health problems in the elderly, depression in particular, have been a neglected entity. The spectrum of risk factors responsible for elderly depression ranges from associated multiple chronic illnesses (hypertension, cardiovascular diseases, coronary artery diseases, diabetes, and joint problems), chronic pain, and functional impairments. Furthermore, social isolation, decrease in income sources in old age, and social disintegration with rising number of nuclear families has accentuated the problem. According to Global Burden of Disease (GBD), depressive disorder is the single leading cause of disability-adjusted life-year (DALY) across the globe.^[5,6]

In community settings, about 5% of adults aged 65 and older meet research diagnostic criteria for major depression with rates of sub-syndromal depression estimated at 8%–16%. Studies in primary care settings point to a higher prevalence of depressive disorders among the elderly, ranging from 10% to 25%.^[7-9] Depression among the elderly population further complicates not only the existing morbidity conditions but also decreases the quality of life and functional ability.^[10] Manifestation of depressive disorders in geriatric population is different from adult population with more prominent cognitive and somatic symptoms, which makes detection more difficult and interferes with appropriate help seeking.^[11,12]

The majority of depressive disorders remain undiagnosed and untreated because of false beliefs and perceived social stigma. The mental health gap in the elderly, in terms of manpower and infrastructure requirement, is huge to meet the service demands posed by the psychiatrically ill older adults in the country.

The sociocultural shift, which has extended to rural India, is gradually changing the social structure of “joint family with high respect of elderly at home,” which was the prevalent norm for centuries. The concept of “old age home” is still nascent in India, but the number is gradually increasing. There have been few studies that have indicated a higher prevalence of depressive disorders in inmates of old age homes as compared to community or society dwellers.^[13] In this backdrop, this study was conducted to assess the prevalence and determinants of depressive symptoms and quality of life among the elderly and to derive a comparative account of residents from old

age homes and communities. The study aims to bridge gaps and generate evidence for policy formulation in terms of improvement of quality of life and management of depressive disorders in the elderly.

Materials and Methods

Study design and setting

This community-based cross-sectional study was conducted between March and July 2016. Study participants were recruited from two old age homes and urban areas, Pandari and Budhapara of Raipur, the capital of Chhattisgarh state.

Study participants and sampling

Elderly aged greater than 60 years who consented to participate were included in the study. Severely ill, bedridden, audio-visually impaired, or elderly with intellectual and severe cognitive impairment were excluded from the study. The sample size was calculated to be 87 assuming a prevalence rate of elderly depression of 21.9% reported by *Barua et al.* and absolute precision of 10% and non-response rate of 20%.^[14] We included a total of 100 elderly persons in the study. Half of them were recruited from the old age homes and the other half were from the community-dwelling elderly. Participants were selected by systematic random sampling from the registers of old age homes and the records of the elderly maintained in the Anganwadi center list.

Data collection tool and techniques

The Geriatric Depression Scale (GDS-15) was used to screen for depression. We followed cut-off scores recommended by *Alden et al.* in 1989, which has subsequently been used in various studies. A score of 0–5 was considered as normal, 6–10 as mildly depressed, and 11–15 as severely depressed.^[15] The Older People Quality of Life Scale 35 Questionnaire (OPQOL-35 SCALE) contains a total of 35 questions related to life, overall health, home atmosphere, social and psychological aspects, neighborhood, control over life, financial, leisure activities, and environmental domain, and was used for the assessment of the quality of life of participants; the scoring was done as per guidelines of OPQOL-35. The tools that were used in the study were reliable, verified, and validated scales (GDS-15, OPQOL-35) previously used in the Indian context.^[16-19]

Ethical consideration

Ethical approval was taken from the Ethics Committee of Public Health Foundation of India-Bhubaneswar, Odisha (Reference number: IIPHB/IEC/2016/7). Informed consent was obtained from each participant before the commencement of the study. Confidentiality and anonymity were maintained during the data collection process.

Data analysis

Data were collected using a structured questionnaire in vernacular language (i.e., Hindi) after pretesting. Along with OPQoL-35 and GDS-15, health and functionality details were assessed using a semi-structured questionnaire. The filled questionnaires were checked for completeness and consistency and were coded. Data were entered using Microsoft Excel 2013 and analyzed using Statistical Packages for Social Sciences (SPSS) version 20. (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.) Normally distributed data were presented as means and standard deviations at 95% confidence interval (CI). Univariate association between the depression and the independent variables was analyzed using Chi-square test/Fisher’s exact test for proportions, and $P < 0.05$ was considered as significant. Pearson’s correlation coefficient was calculated for correlation between depression and quality of life.

Results

Out of the total 100 respondents, 46 were males. The majority (55%) were in the age group of 60–70 years. Forty-three of the study participants were illiterate, and 36% were literate with no formal education. Only 22% of the study participants were married and living together with their spouse. More than half (62%) of the participants were either divorced or were separated from their spouse. Regarding financial sources, 21% of the participants had no income source, whereas 25% were dependent on old-age pension scheme, and 38% of the participants had a self-income source. About a third (30%) of the participants were involved in some sort of occupation, whereas most of them had retired with no current occupation. Further, 38% had their own house, and 7% were living in rented houses. Nearly one-third (35%) of the participant had self-reported poor health status at the time of the interview [Table 1].

There was no difference in gender and educational status of the elderly participants in the community and old age home. However, a significant difference was observed in the age group, marital status, and income source of the participants. Similarly, the occupation and asset were also significantly different in both the study population [Table 2].

Further, 59% of the elderly were found to have symptoms suggestive of depression by using the GDS-15 (score >5). More of the depressed elderly were illiterate, and education was found to have a significant association with depressive symptoms ($P = 0.034$). Most of the depressed elderly were unmarried or widowed, but the marital status and elderly depression were not found to have a statistically significant association. Income

Table 1: General characteristics of the study participants

Domain	Categories	Male n (%)	Female n (%)	P
Age group	60-70 Years	30 (30.0)	25 (25.0)	0.103
	71-80 Years	8 (8.0)	19 (19.0)	
	>80 Years	8 (8.0)	10 (10.0)	
Education	Illiterate	10 (10.0)	33 (33.0)	<0.001
	Literate with no formal education	20 (20.0)	16 (16.0)	
	Primary school or more	16 (16.0)	5 (5.0)	
Marital status	Married and living together	18 (18.0)	4 (4.0)	<0.001
	Unmarried	3 (3.0)	13 (13.0)	
	Separated	5 (5.0)	1 (1.0)	
	Widow/widower	20 (20.0)	36 (36.0)	
Income source	No income	8 (8.0)	13 (13.0)	0.644
	Old age pension	10 (10.0)	15 (15.0)	
	Other source	8 (8.0)	8 (8.0)	
	Self	20 (20.0)	18 (18.0)	
Occupation	Yes	12 (12.0)	18 (18.0)	0.430
	No	34 (34.0)	36 (36.0)	
Asset/Property	Asset	3 (3.0)	0 (0.0)	0.076
	No property	20 (20.0)	32 (32.0)	
	Own house	21 (21.0)	17 (17.0)	
Health	Rented	2 (2.0)	5 (5.0)	0.514
	Very good	1 (1.0)	0 (0.0)	
	Fair	30 (30.0)	34 (34.0)	
Home/old atmosphere	Poor	15 (15.0)	20 (20.0)	0.369
	Excellent	1 (1.0)	0 (0.0)	
	Very good	1 (1.0)	0 (0.0)	
	Good	6 (6.0)	3 (3.0)	
	Fair	29 (29.0)	39 (39.0)	
	Poor	9 (9.0)	12 (12.0)	

source was found to have a significant association with depression in the elderly, where most of the elderly had a self-income source. Similarly, the presence of any asset or property, health status, and home atmosphere were found to have a significant association with depression in the elderly [Table 3].

The quality of life of the elderly was assessed using the OPQOL-35 scale. The mean score of life overall, health, social relationship, and control over life, home and neighborhood, psychological and emotional well-being, financial circumstances, leisure and activities, and quality of life of community and old age home respondents were 11.78 and 13.56, 12.8 and 14, 10.48 and 13.9, 11.92 and 14.08, 9.38 and 12.36, 10.96 and 13.7, 14.5 and 16.7, 13.86 and 15.28, respectively. The quality of life of the elderly of the community was poorer than the old age homes, having cumulative mean scores of 95.26 and 113.58, respectively. A moderate association was observed between the quality of life and geriatric depression scale score, as evident from the Pearson correlation coefficient of 0.514 [Table 4].

Table 2: Characteristics of the elderly participants

Domain	Categories	Community n (%)	Old Age Home n (%)	P
Gender	Male	26 (26.0)	20 (20.0)	0.228
	Female	24 (24.0)	30 (30.0)	
Age group	60-70 Years	37 (37.0)	18 (18.0)	<0.001
	71-80 Years	7 (7.0)	20 (20.0)	
	>80 Years	6 (6.0)	12 (12.0)	
Education	Illiterate	22 (22.0)	21 (21.0)	0.754
	Literate with no formal education	19 (19.0)	17 (17.0)	
	Primary school or more	9 (9.0)	12 (12.0)	
Marital status	Married and living together	20 (20.0)	1 (1.0)	--
	Unmarried	0 (0.0)	6 (6.0)	
	Separated	6 (6.0)	11 (11.0)	
	Widow/widower	24 (24.0)	32 (32.0)	
Income source	No income	0 (0.0)	21 (21.0)	--
	Old age pension	0 (0.0)	25 (25.0)	
	Other source	13 (13.0)	2 (2.0)	
	Self	37 (37.0)	2 (2.0)	
Occupation	Yes	30 (30.0)	0 (0.0)	--
	No	20 (20.0)	50 (50.0)	
Asset/Property	Asset	3 (3.0)	0 (0.0)	--
	No property	2 (2.0)	50 (50.0)	
	Own house	38 (38.0)	0 (0.0)	
	Rented	7 (7.0)	0 (0.0)	

Table 3: Comparison between depressed and non-depressed elderly

Domain	Categories	Normal n (%)	Depressed n (%)	P
Gender	Male	22 (47.8)	24 (52.2)	0.200
	Female	19 (35.2)	35 (64.8)	
Age group	60-70 Years	4 (4.0)	51 (51.0)	0.122
	71-80 Years	1 (1.0)	26 (26.0)	
	>80 Years	0 (0.0)	18 (18.0)	
Education	Illiterate	3 (3.0)	40 (40.0)	0.034*
	Literate with no formal education	0 (0.0)	36 (36.0)	
	Primary school or more	2 (2.0)	19 (19.0)	
Marital status	Married and living together	2 (2.0)	19 (19.0)	0.081
	Unmarried	0 (0.0)	6 (6.0)	
	Separated	0 (0.0)	16 (16.0)	
	Widow/widower	3 (3.0)	54 (54.0)	
Income source	No income	0 (0.0)	21 (21.0)	0.025*
	Old age pension	1 (1.0)	25 (25.0)	
	Other source	0 (0.0)	15 (15.0)	
	Self	4 (4.0)	34 (34.0)	
Asset/Property	Asset	0 (0.0)	3 (3.0)	0.010*
	No property	1 (1.0)	51 (51.0)	
	Own house	2 (2.0)	36 (36.0)	
	Rented	2 (2.0)	5 (5.0)	
Health	Very good	3 (3.0)	61 (61.0)	0.019*
	Fair	1 (1.0)	34 (34.0)	
	Poor	1 (1.0)	0 (0.0)	
Home atmosphere	Excellent	1 (1.0)	0 (0.0)	0.005*
	Very good	3 (3.0)	65 (65.0)	
	Good	1 (1.0)	8 (8.0)	
	Fair	0 (0.0)	21 (21.0)	
	Poor	0 (0.0)	1 (1.0)	

*Statistically significant at $P < 0.05$

Only 11% of the study participants had no comorbidities. Rest others (89%) were living with one or more comorbidities. Hypertension (57%) was the most common comorbidity, followed by diabetes (21.0%), digestive problems (19.0%), cardiovascular problems (13.0%), and arthritis (11.0%). Elderly living in old age homes had more comorbidities than community elderly. However, hypertension was higher among the elderly living in the community (33.0%) than that of the old age homes (24.0%) [Table 5].

Discussion

In the current study, 59% of the elderly were found to have symptoms suggestive of depression by using the GDS-15. Most of the depressed elderly were illiterate. Educational status, income source, asset, health status, and home atmosphere were significantly associated with elderly depression. The quality of life of the old age homes was found to be better than that of the community elderly as per the OPQOL-35 scale. Hypertension was the most common comorbidity, followed by diabetes and digestive and cardiovascular problems.

Depression in the elderly in India ranges from 6% to 50%.^[20,21] WHO states that the overall prevalence rate of

depressive disorders among the elderly varies between 10% and 20% depending on the cultural situation.^[22,23] In a study conducted by *Nair et al.* in Dharwad, the prevalence was 32.4%, while it was reported to be 39% by *Vishal et al.* in the urban poor locality of Surat.^[24,25] The prevalence of geriatric depression in the recent studies by *Naveen et al.* at Allahabad and *Sahani et al.* at Jammu and Kashmir was 19.7%, and 40.3%, respectively.^[26,27] The high prevalence in our study sample is both perplexing and alarming. Although we cannot conclude on the prevalence of syndromal depression based on scores of GDS-15, it is definitely indicative of a high prevalence of depressive disorders in both community-dwelling and institutional-dwelling elderly. This warrants further evaluation to diagnose depressive disorders and initiation of appropriate treatment. Differential idioms of expression and cultural inappropriateness of the study instruments used in our study might also account for such a high prevalence of depressive symptoms detected.

In our study, the risk factors for depression found were increasing age, elderly living alone without spouse, female sex, disability, nuclear family, illiteracy, and unemployment. The high prevalence of depressive disorders in the female sex, people with low formal education, and those living without spouse has been well documented in various other community-based studies in the geriatric population.^[7,8,28] Rapid urbanization leads to households becoming less extended and more nuclear. Also, the nucleation of the family leads to a decrease in co-residence of elderly with adults and children and thus a decrease in their care and support, which may be an explanation of the association of higher depressive symptoms in elderly residing in nuclear families.

Depression was significantly associated with the elderly who were deprived of financial assistance such as retirement pension, while having a hold on assets was found to be a protective factor against depression. This is primarily because assets provide a sense of financial security and mental well-being. There may be one more factor associated that the majority of elderly in the current study were not receiving any kind of pension and few who were receiving were not getting their pension on regular basis and it was not sufficient compared to their needs and current inflation. A study conducted by *Sengupta et al.* revealed that depression was less pronounced among those who were receiving pension.^[20] Many studies in the past have observed that depression is associated with poor socioeconomic status.^[28]

In our study, the elderly in old age homes were totally dependent on the old age home trusts, and the community elderly were from poor urban poor socio-economic status. Quality of life of the elderly in old age homes was slightly higher than those of the

Table 4: Correlation between quality of life and geriatric depression scale

	Correlations	
	QoL	GDS
QOL		
Pearson Correlation	1	0.514**
Sig. (2-tailed)		0.000
<i>n</i>	100	100
GDS		
Pearson Correlation	0.514**	1
Sig. (2-tailed)	0.000	
<i>n</i>	100	100

**Correlation is significant at the 0.01 level (2-tailed).

Table 5: Morbidity profile of elderly participants#

Description	Community <i>n</i> (%)	Old Age Home <i>n</i> (%)	Total <i>n</i> (%)
Hypertension	33 (33.0)	24 (24.0)	57 (57.0)
Diabetes	9 (9.0)	12 (12.0)	21 (21.0)
Digestive	5 (5.0)	14 (14.0)	19 (19.0)
Cardiovascular	8 (8.0)	5 (5.0)	13 (13.0)
Arthritis	7 (7.0)	4 (4.0)	11 (11.0)
Renal	7 (7.0)	3 (3.0)	10 (10.0)
Disability	1 (1.0)	5 (5.0)	6 (6.0)
Liver	3 (3.0)	1 (1.0)	4 (4.0)
Skin	1 (1.0)	3 (3.0)	4 (4.0)
Asthma	0 (0.0)	2 (2.0)	2 (2.0)
Respiratory Infection	1 (1.0)	0 (0.0)	1 (1.0)
Others	8 (8.0)	10 (10.0)	18 (18.0)
Nil	6 (6.0)	5 (5.0)	11 (11.0)

#The total numbers are more than 100 as there are multiple comorbidities in individuals

community elderly study population. This may be due to the reason that old age homes were providing the basic needs and facilities to the elderly, from which most of the middle and low socioeconomic community elderly were deprived. Other reasons for an improved quality of life may be better accessible medical care for physical illnesses and improved peer interaction with other inmates. A study from Lucknow by *Mohan et al.* in 2015, however, had found a higher prevalence of depression among the geriatric population residing in old age homes as compared to community.^[29] They also reported a higher prevalence of depression among females, single, and financially dependent. We believe that there are regional sociocultural variations for reasons as to why people choose to stay in old age homes, which may be a determinant factor for the prevalence of depressive symptoms in that setup.

In this study, there was a significant association between comorbidities and depression. Comorbidities were found as an important risk factor for depression and vice versa. Quality of life also gets affected by these comorbidities. Physical disability, poor compliance, and increased health care utilization accompanying these comorbidities lead to poor quality of life. The majority of the elderly were suffering from hypertension and diabetes. This observation is supported by the study conducted on rural and urban geriatric populations in India.^[8,25]

Depression is often not detected adequately among the elderly population. Our findings echo the results of other similar studies that there is a significant prevalence of depression in the elderly population which profoundly impacts their morbidity and quality of life. It is important to increase community support and create networks for better geriatric care. This also warrants the need to sensitize primary care physicians for screening, diagnosing, and managing depressive disorders in the elderly. In addition, there is an urgent demand for greater awareness of depression among family members and the community and the need for the availability of better healthcare services for the elderly.

We found a moderate correlation between geriatric depression and quality of life of the elderly. A similar result was reported in a study conducted by *Han et al.* in China.^[30] This suggests that quality of life is also getting compromised with geriatric depression.

All this evidence strengthen the fact depression in the elderly is emerging as an important public health concern due to age-related decline in physical and physiological functioning and changing family structure leading to poor quality of life. The available treatment options are as effective in the elderly population as they are in the

young. However, elderly depression is underdiagnosed and under-treated. In a healthcare resource-limited country like India, it is essential to provide depression care management strategies to improve outcomes in the elderly who are depressed and provide them treatment in primary care setup. Primary care gives a unique opportunity to manage physical comorbidities and depressive disorders simultaneously for a better impact on clinical outcomes.

The strength of the study is that, to our knowledge, this is one of the few studies from Eastern India that gives a comparative picture of geriatric depression in the elderly residing in old age homes and in the community.^[29] Our study has some limitations. For generalizability, the sample size should be representative and adequate. The random sampling has taken care of the representativeness, but the small sample size can be a constraint to the generalizability of the study. Large-scale multicentric trials need to be undertaken to delineate the overall burden, and further study should be conducted on the role of primary care and community support in decreasing the magnitude of the problem. Moreover, the cross-sectional nature of the study limits causality assessment.

Conclusion

Depression among the elderly in old age homes was higher as compared to community elderly because of the loneliness and a feeling of being apart from their near and dear ones. The quality of life was slightly better as compared to community elderly as they availed the basic amenities provided by the old age homes. Social insurance schemes with greater outreach and counseling services with ease of access can be provided at the primary care level through community health workers to bridge this gap. An integrated policy approach with the role of the family as an important mental health resource should guide our future strategies and recommendations. In addition, designing sustainable policies on palliative care and developing elderly-friendly services, living conditions, and the environment can ameliorate the escalating burden.

Declaration of patient consent

The authors certify that they have obtained all appropriate participant consent forms. The elderly participants gave their consent for their sociodemographic and clinical details to be used for academic purposes. Anonymity was maintained throughout the entire process of study.

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Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Census of India Website: Office of the Registrar General & Census Commissioner, India. [Accessed on 12 Dec 2019] Available at: <https://censusindia.gov.in/census.website/>.
2. Nath A, Ingle G. Geriatric health in India: Concerns and solutions. *Indian J Community Med* 2008;33:214-8.
3. National Mental Health Survey of India, 2015-2016 Prevalence, Patterns and Outcomes, Supported by Ministry of Health and Family Welfare, Government of India, and Implemented by National Institute of Mental Health and Neurosciences (NIMHANS) Bengaluru: In Collaboration with Partner Institutions; 2015-2016.
4. Rathod S, Pinninti N, Irfan M, Gorczynski P, Rathod P, Gega L, *et al.* Mental health service provision in low- and middle-income countries. *Heal Serv Insights* 2017;10. doi: 10.1177/1178632917694350.
5. Rehm J, Mathers C, Popova S, Thavorncharoensap M, Teerawattananon Y, Patra J. Global burden of disease and injury and economic cost attributable to alcohol use and alcohol-use disorders. *Lancet* 2009;373:2223-33.
6. Khandelwal S, Regmi SK, Mendis N, Kittirattanapaiboon P. *Conquering Depression* World Health Organization Regional Office for South East Asia New Delhi. 2001.
7. Goswami S, Deshmukh PR, Pawar R, Raut AV, Bhagat M, Mehendale AM. Magnitude of depression and its correlates among elderly population in a rural area of Maharashtra: A cross-sectional study. *J Fam Med Prim Care* 2017;6:803-12.
8. Kamble S V., Dhumale GB, goyal RC, Phalke DB, Ghodke YD. Depression among elderly persons in a primary health centre area in Ahmednagar, Maharashtra. *Indian J Public Health* 2009;53:253-5.
9. Mojtabai R, Olfson M. Major depression in community-dwelling middle-aged and older adults: Prevalence and 2- and 4-year follow-up symptoms. *Psychol Med* 2004;34:623-34.
10. Tiwari SC, Pandey NM. Status and requirements of geriatric mental health services in India: An evidence-based commentary. *Indian J Psychiatry* 2012;54:8-14.
11. Fiske A, Wetherell JL, Gatz M. Depression in older adults. *Ann Rev Clin Psychol* 2009;5:363-89.
12. Sahoo SS, Panda UK, Bhatia V. Elderly depression: A public health dilemma; challenges and opportunities. *Community Fam Med* 2017;3:12-5.
13. Pandey N, Tiwari S, Singh I. Mental health problems among inhabitants of old age homes: A preliminary study. *Indian J Psychiatry* 2012;54:144-8.
14. Barua A, Ghosh M, Kar N, Basilio M. Distribution of depressive disorders in the elderly. *J Neurosci Rural Pract* 2010;1:67-73.
15. Alden D, Austin C, Sturgeon R. A correlation between the geriatric depression scale long and short forms. *J Gerontol* 1989;44:P124-5.
16. Thomas AM, Cherian V, Antony A. Translation, validation and cross-cultural adaptation of the geriatric depression scale (GDS-30) for utilization amongst speakers of Malayalam; the regional language of the South Indian State of Kerala. *J Fam Med Prim Care* 2021;10:1864-7.
17. Ganguli M, Dube S, Johnston JM, Pandav R, Chandra V, Dodge HH. Depressive symptoms, cognitive impairment and functional impairment in a rural elderly population in India: A Hindi version of the geriatric depression scale (GDS-H). *Int J Geriatr Psychiatry* 1999;14:807-20.
18. Sarkar S, Kattimani S, Roy G, Premarajan KC, Sarkar S. Validation of the Tamil version of short form geriatric depression scale-15. *J Neurosci Rural Pract* 2015;6:442-6.
19. Lahiri A, Chakraborty A. Psychometric validation of geriatric depression scale – Short form among bengali-speaking elderly from a rural area of West Bengal: Application of item response theory. *Indian J Public Health* 2020;64:109-15.
20. Sengupta P, Benjamin AI. Prevalence of depression and associated risk factors among the elderly in urban and rural field practice areas of a tertiary care institution in Ludhiana. *Indian J Public Health* 2015;59:3-8.
21. Goyal A, Kajal KS. Prevalence of depression in elderly population in the southern part of Punjab. *J Fam Med Prim Care* 2014;3:359-61.
22. Rangaswamy SM. *World Health Report: Mental Health: New Understanding New Hope*. Geneva, Switzerland: The World Health Organization; 2001.
23. Wig NN. World health day, 2001. *Indian J Psychiatry* 2001;43:1-4.
24. Nair SS, Hiremath S, Nair SS. Depression among geriatrics: Prevalence and associated factors. *Int J Cur Res Rev* 2013;8:110-2.
25. Vishal J, Bansal RK, Swati P, Bimal T. A study of depression among aged in Surat city. *Natl J Community Med* 2010;1:47-9.
26. Sahni B, Bala K, Kumar T, Narangyal A. Prevalence and determinants of geriatric depression in North India: A cross-sectional study. *Fam Med Prim Care* 2020;9:2332-6.
27. Naveen KH, Goel AD, Dwivedi S, Hassan MA. Adding life to years: Role of gender and social and family engagement in geriatric depression in rural areas of Northern India. *Fam Med Prim Care* 2020;9:721-8.
28. 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;19:832.
29. Mohan U, Gupta A, Singh S, Tiwari S, Singh V. Study of depression in geriatric population: Old age home and community in Lucknow India. *Int J Epidemiol* 2015;44(Suppl_1):i97.
30. Han K, Yang S, Jia W, Wang S, Song Y, Cao W, *et al.* Health-related quality of life and its correlation with depression among Chinese centenarians. *Front Public Health* 2020;8:724. doi: 10.3389/fpubh.2020.580757.