

Access this article online
Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_193_18

Prevalence of mental illness and their association with sociodemographic factors in the rural geriatric population in Chittoor, Andhra Pradesh, India: A community-based study

Khadervali Nagoor, Surendra Babu Darivemula, N. Bayapa Reddy, Shakeer Kahn Patan, C. Sravana Deepthi, Chandra Sekhar Chittooru

Abstract:

BACKGROUND: Mental health problems such as cognitive impairment, depression, anxiety, and sleep disorders arising out of senility, neurosis, and living conditions are common in the geriatric population.

OBJECTIVE: The objective of this study was to estimate the prevalence of mental illness and to describe their sociodemographic factors in the rural geriatric population and see their association with other factors.

METHODOLOGY: A community-based cross-sectional study was done on individuals aged more than 60 years. The study instruments were predesigned semi-structured questionnaire, Folstein's Mini-Mental Status Examination Scale for assessing dementia in cognitive functioning and Yesavages Geriatric Depression Scale to estimate the prevalence of depression and to assess the activities of the daily living by Barthel index and the anxiety were assessed based on the perception of the participants while conducting the interview.

RESULTS: A total of 415 individuals participated, out of them 199 (47.9%) were males and 216 (52.1%) were females. Prevalence of mental illness was 217 (52.2%) with one or the other type of mental illness. The prevalence of cognitive impairment was 47.7% and depression according to Geriatric Depression Scale >5 was 27.7%. The remaining 62 (14.9%) had dementia and 30 (7.2%) had anxiety disorder as the mental illness. The socio-demographic factors such as age more than 70 years, female gender, illiterates, living in joint family, middle and lower socio-economic class, financially totally dependent and had poor and unfair relationship with the family members were strongly associated with the mental illness and it was statistically significant with $P < 0.05$.

CONCLUSION: Measures should be taken to support the elders, establish community elderly societies, advisory offices, and services to help the elderly. The sequence of social interventions required for the management of the elderly psychological problems.

Keywords:

Depression, geriatric, mental health, prevalence, rural

Department of Community
Medicine, Apollo Institute
of Medical Sciences
and Research, Chittoor,
Andhra Pradesh, India

Address for correspondence:

Dr. Surendra Babu
Darivemula,
Department of Community
Medicine, Apollo Institute
of Medical Sciences
and Research, Flat
704-NT, Murukambattu,
Chittoor - 517 127,
Andhra Pradesh, India.
E-mail: [surya.doc.2@
gmail.com](mailto:surya.doc.2@gmail.com)

Received: 26-06-2018

Accepted: 13-08-2018

Introduction

Psychiatric morbidity, which increases with age, is more prevalent in the geriatric (43.32%) than in the non-geriatric group (4.66%).^[1] Prevalence of depression^[2,3]

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.

For reprints contact: reprints@medknow.com

the most common problem, ranges between 13% and 22%. Aging declines the cognitive functioning due to senile changes. If the goal of "Health for All" is to be achieved, policymakers and administrators must pay more attention to various issues of this group.

How to cite this article: Nagoor K, Darivemula SB, Reddy NB, Patan SK, Deepthi CS, Chittooru CS. Prevalence of mental illness and their association with sociodemographic factors in the rural geriatric population in Chittoor, Andhra Pradesh, India: A community-based study. *J Edu Health Promot* 2018;7:165.

The proportion of older adults in less developed countries is rising much faster than in developed countries.^[4] The life expectancy of an average Indian has increased from 36.7 in 1951 to over 67.14 in 2012. In addition, the population of older adults (≥ 60 years) in India increased to 102 million in 2011. The proportion of elderly persons in India^[5] rose from 5.3% in 1961 to 7.5% in 2001, and was currently 8.4% in 2011. The geriatric population is not a homogeneous category; it consists of different ages, belonging to different socioeconomic groups, having different health status. The mental disorders that are frequently encountered include dementia and mood disorders. Other disorders include neurotic and personality disorders, drug and alcohol abuse, delirium, and mental psychosis.

Psychosocial medicine teaches us that every disease is conditioned by unfavorable social factors. There is limited data about the epidemiology concerning the settings where elderly persons die due to a variety of social, cultural, and economic factors. We therefore conducted this study to find out social and psychological problems of the elderly.

Methodology

Study design

A community-based cross-sectional study.

Study period

February 2017 to July 2017.

Study participants

People aged more than 60 years.

Objectives

The objectives of this study were to estimate the prevalence of mental illness and to describe sociodemographic factors in the rural geriatric population and see their association with other factors.

Study tools

A pre-designed semi-structured questionnaire was used to collect data pertaining to sociodemographic profile and psychological status among geriatric population after getting informed consent. The other instruments used were Folstein's Mini-Mental Status Examination Scale^[6] was used to assess the dementia for cognitive functioning, in terms of orientation (time and place), attention, memory power, and literary ability. Based on the score (maximum: 30), the participants were graded as normal (≥ 24), mild (20–23), moderate (10–19), and severely impaired (< 10).

Yesavage's Geriatric Depression Scale^[7] – shorter version, a 15-question instrument, was used to assess

whether the individual was having depression. The participants were categorized as depression absent (≤ 5) or present (> 5). Sleep pattern among the participants was categorized as "normal" or "disturbed" (difficulty in falling asleep, reduced duration, and poor quality of sleep). To assess the activities of the daily living, we used Barthel index, and based on the perception of the participant while conducting the interview, the anxiety was assessed.

Sample size and data collection

For sample size calculation, we used the formula $4pq/d$,² where prevalence^[8] (P) of psychiatric morbidity among elderly was 20% and allowable error taken as 20% then calculated minimum sample size was 400. A total of 64 villages were present under the primary health center, Thavanampalli, and our rural health training center was also the part of that mandal. Out of the 64 villages, 20 villages were selected by lottery method. A total of twenty individuals were selected from each of selected village and approached house-to-house visit. Finally, a total of 415 samples were studied. The study was conducted after getting the permission from the institutional ethical committee. Before collecting the data participation information sheet and consent form was obtained.

Data analysis

Data were entered into Microsoft Excel sheet and analyzed by using IBM SPSS Statistics 21.0 version by United States and an appropriate statistical test was applied. The data were expressed in frequency, proportions, and to see the association with other sociodemographic variables, the statistical methods used was simple logistic regression, Chi-square test was applied and shown with $P < 0.05$.

Results

A total of 415 elderly persons participated in the study [Table 1], out of them, 199 (47.9%) were males and 216 (52.1%) were females. Out of them, less than 70 years were 248 (59.8%) and more than 70 years were 167 (40.2%) and the mean age for the study population was 67.2 years with a standard deviation of 7.8 years. According to their educational status, 290 (69.9%) were illiterate, 97 (23.3%) were literate, and 28 (6.8%) were educated up to primary level. With respect to type of the family, majority 294 (70.9%) belonged to the nuclear family and the remaining 121 (29.1%) belonged to the joint family. Almost three-fourth of the participants were married 286 (68.9%), more than one-fourth 118 (28.4%) of the participants were widowed, and very few 11 (2.7%) were divorced. More than half 238 (57.3%) of the participants belonged to the Hindu religion, one-fourth 104 (25.1%) of them were Muslims, and 73 (17.6%)

Table 1: Distribution of participants according to Socio-demographic and economic profile

Socio-demographic factors	Number (%)	
Gender		
Male	199 (47.9)	
Female	216 (52.1)	
Total	415 (100)	
Age group (years), <i>n</i> (%)		
<70	248 (59.8)	
>70	167 (40.2)	
Mean age	67.2	
SD	7.8	
Marital status, <i>n</i> (%)		
Married	286 (68.9)	
Widowed	118 (28.4)	
Divorced	11 (2.7)	
Total	415 (100)	
Religion, <i>n</i> (%)		
Hindu	238 (57.3)	
Muslim	104 (25.1)	
Christian	73 (17.6)	
Total	415 (100)	
Type of the family	<i>n</i> (%)	
Nuclear	294 (70.9)	
Joint	121 (29.1)	
Total	415 (100)	
Education, <i>n</i> (%)		
Illiterate	290 (69.9)	
Literate	97 (23.3)	
Up to primary school	28 (6.8)	
Total	415 (100)	
Socioeconomic class (Modified B G Prasad scale), <i>n</i> (%)		
Upper class	38 (9.1)	
Upper middle class	76 (18.4)	
Middle class	96 (23.1)	
Lower middle class	120 (28.9)	
Lower class	85 (20.5)	
Variable	Male (%)	Female (%)
Relationship with family members, <i>n</i> (%)		
Good	143 (34.5)	122 (29.4)
Unfair	52 (26.0)	37 (18.5)
Poor	36 (16.7)	25 (15.6)
Financially dependent		
Totally	206 (49.7)	
Partially	108 (26.0)	
Independent	101 (24.3)	
Sleep pattern		
Normal sleep	226 (54.5)	
Disturbed sleep	189 (45.5)	
Total	415 (100)	
Addiction pattern	Male (%)	Female (%)
Current Addiction		
Tobacco chewing	149 (53.5)	67 (55.3)
Tobacco smoking	84 (30.2)	54 (44.6)
Ganja/Bhang	38 (13.6)	0
Alcohol	7 (2.5)	0
Total	278 (69.7)	121 (30.3)

Contd...

Table 1: Contd...

Socio-demographic factors	Number (%)	
Past addiction		
Tobacco chewing	15 (3.7)	19 (9.7)
Tobacco smoking	24 (6.5)	10 (5.1)
Ganja/Bhang	8 (3.7)	0
Alcohol	0	0
Total	47 (61.8)	29 (39.2)

SD: Standard deviation

belonged to Christians. According to the Modified B.G. Prasad socio-economical classification, majority of them belong to lower middle class 120 (28.9%) and middle class 96 (23.1%).

With respect to sleep pattern, 226 (55.5%) of the participants were had normal/good sleep and 189 (45.5%) of them had disturbed sleep. As per the relationship with the family members, 143 (34.5%) males and 122 (29.4%) females responded that they had good relationship, while 88 (21.2%) and 62 (14.9%) reported to be having unfair and poor relationship, respectively. Out of those who had unfair and poor relationship, higher number of females reported that they had unfair 52 (26%) and poor 37 (18.5%) relationship. Majority of the elderly 206 (49.6%) and 104 (25.1%) dependent financially either totally and partially on their children respectively. Only 101 (24.3%) people were financially independent. Majority of elderly females 166 (40%) was financially totally dependent on their children compared to elderly males 46 (10.8%). The addiction pattern of the elderly, more than three quarters of the elderly 399 were current addicts for different types of tobacco, out of them chewing was 216 (54.1%), smoking was 138 (34.6%) and ganja or bhang were 38 (9.5%) and only 76 persons were past addicts. Higher proportion of males 278 (69.7%) was current addicts compared to females 121 (30.3%).

The leisure time activities [Table 2] among the study population, the major leisure time activities was gossiping 70 (16.9%), religious activities 66 (15.9%) and play with their grand children walking 65 (15.7%) followed by walking 54 (13.0%), take care of domestic animals 40 (9.6%) and the remaining do nothing 71 (17.1%), listening to radio 33 (8.0%) and very few do reading news papers and books 16 (3.9%). The severity of the disability was assessed by using Barthel Index scoring, majority 363 (87.4%) of the participants were able to do their activities independently, 32 (7.8%) were moderately disabled and 20 (4.8%) were severely disabled. Regarding disability with respect to specific activities, of the 415 elderly persons 48 (11.6%) needed help for climbing the stairs, 47 (11.3%) were occasional accident bladder control and 36 (8.6%) needed help for transfer from bed to chair and back 36 (8.6%) elderly persons needed help for going to the toilet, 31 (7.4%)

for dressing and 19 (4.5%) for bathing. 14 (3.4%) walked with help from other person.

The prevalence of mental illness [Table 3] suffering with one or the other type was 217 (52.2%), of which males were 81 (19.5%) and females were 136 (32.7%) respectively. Out of 217, majority 115 (27.7%) had depression according to Geriatric Depression Scale >5, most of them were females 74 (17.8%) compared to males 41 (9.8%). The remaining 30 (7.2%) had anxiety disorder and 62 (14.9%) had dementia as the mental illness. Out of all the three mental illness majority of the females were affected. According to the cognitive impairment 217 (52.3%) of the participants were had normal, 113 (27.2%) of them had mild impairment (20–23), 52 (12.6%) of them had moderate impairment (10–19) and 33 (7.9%) of them were severely impaired (<10) as per Mini-Mental scale.

To see the association [Table 4], we had grouped different mental illness (depression, anxiety, and dementia). According to the age and gender those who are more than 70 years ($P < 0.002$) and in females ($P < 0.006$) the mental illness was more when compare to males and less than 70 years and it was statistically significant. Those with illiterates and primary school had more mental illness than the literates with the $P < 0.001$ and according to the socioeconomic status those who belong to middle and lower class were had more mental illness than the upper class with the $P < 0.001$ and it was statistically significant. According to the financial dependence, those who are financially totally dependent on family members were had more mental illness than those who are partially and independent leading their life with $P < 0.001$. Those who had unfair and poor relationship with the family members were had more mental illness than those who were had good relationship and it was statistically significant with $P = 0.001$.

Discussion

Out of the 415 elderly persons, 216 (52.0%) were females and 199 (48.0%) were males in a studies done by Tiwari^[2] and Dube^[9] also showed similar age group. In the present chewing tobacco was 216 (54.1%), smoking was 138 (34.6%) and ganja or bhang were 38 (9.5%) and

Table 2: Distribution of Elderly Persons according to Leisure Time Activities and Barthel index grading of activities

Leisure time activities	Male, n (%)	Female, n (%)	Total, n (%)
Gossiping	44 (10.6)	26 (6.3)	70 (16.9)
Religious activities	27 (6.5)	39 (9.4)	66 (15.9)
Play with grand children	39 (9.4)	16 (6.3)	65 (15.7)
Walking	17 (4.1)	47 (8.9)	54 (13.0)
Taking care of domestic animals	14 (3.4)	26 (6.3)	40 (9.6)
Listening to radio	12 (2.9)	21 (5.1)	33 (8.0)
Reading	0	16 (3.9)	16 (3.9)
Do nothing	46 (11.0)	25 (6.0)	71 (17.1)
Total	199 (48.0)	216 (52.0)	415 (100)
Barthel index	Male, n (%)	Female, n (%)	Total, n (%)
Independent (score>18)	184 (44.3)	179 (43.1)	363 (87.4)
Moderately disabled (score 15-18)	22 (5.3)	10 (2.4)	32 (7.8)
Severely disabled (score<15)	10 (2.4)	10 (2.4)	20 (4.8)
Total	216 (52.1)	199 (47.9)	415 (100)

Table 3: Distribution of Mental illness and Cognitive impairment among Elderly Population (n=415)

Mental illness	Male, n (%)	Female, n (%)	Total, n (%)
Depression	41 (9.8)	74 (17.8)	115 (27.7)
Anxiety disorder	16 (3.8)	24 (5.7)	30 (7.2)
Dementia	24 (5.7)	38 (9.1)	62 (14.9)
Free from illness	118 (28.4)	80 (19.2)	198 (47.8)
Total	199 (47.9)	216 (52.1)	415 (100)
Cognitive impairment by using Folstein's Mini Mental Status Examination Scale			
Cognitive impairment	n (%)		
Normal (≥24)	217 (52.3)		
Mild (20-23)	113 (27.2)		
Moderate (10-19)	52 (12.6)		
Severely impaired (<10)	33 (7.9)		
Total	415 (100)		

only 76 persons were past addicts. Higher proportion of males 278 (69.7%) was current addicts compared to females 121 (30.3%). In a study done by Pandvel *et al.*^[10] conducted among 100 elderly people above 60 years in the rural areas of Pune, India, showed that, 38% were addicted to ashers a kind of chewing tobacco. 25% of the males were addicted to alcohol and 34% addicted to smoking bidi. Our study had 47% of dependency in finance because of Low prevalence of economic dependency was the reason for a lesser number of totally neglected subjects (13.75%) than in the studies by Elango^[11] (38.0%) and Kishore^[12] (55.8%). Thus, economic dependency and living arrangements were the main factors deciding the status of the subject in the family. Prevalence of a disturbed sleep pattern of the study subjects (36.0%) differs from the studies of Singh *et al.*^[13] (3.5%), Jain and Aras^[14] (43.9%), and Goswami *et al.*^[15] (58.36%) because of difference in the prevalence of factors responsible for depression. Poor status of the

family might be responsible for the disturbed sleep pattern among those living with family members.

The present study had the prevalence of mental illness among the elderly was 23.6%, Dube^[9] and Premarajan *et al.*^[16] found psychiatric morbidity 22.3% and 17.3%, respectively, comparable to the present study. A higher prevalence was reported in other studies^[16,17] and in Mehta *et al.*^[18] and Shaji *et al.*^[19] in their respective community-based studies on elderly. In a study conducted by Tiwari *et al.*^[8] showed, the overall prevalence of psychiatric morbidity in rural older adults was found to be 23.7% mood (affective) disorders was the commonest (7.6%, 95%), followed by mild cognitive impairment (4.6%), mental and behavioral disorders due to substance use (4.0%) and dementia (2.8%). The present study had the depression of 19.1% which was also shown similar results by Singh *et al.*^[13] and Similar to studies by (45.9%), Jain *et al.*^[20] Nair *et al.*^[14] (21.9%) and Rao *et al.*^[21] (43.0%) high prevalence of depression was observed among the subjects (47.0%) because of different settings and study tool used.

The present study showing that the elderly people are moderately dependent on their children was 7.8% and total dependency was 4.8% for their activities. In a study by Puteh *et al.*^[22] a total of 175 elderly subjects enrolled, prevalence of mild dependency was 14.9%; moderate dependency was 9.1%; severe and total dependency was at 1.1% each which was little bit higher in moderate and low in severe total because of the variation in the sample size and the methodology they adopted to verify. The present study showing most of the leisure time activity was gossiping, religious activities, walking, and playing with children. Similar study done by Badami *et al.*^[23] so reported the leisure time activities like Going out for walk, involving in religious activities, watching TV, caring for grand children and Participating in community organization. Since this study was conducted among the elderly population residing in the rural most villages of Chittoor district, the findings of the study cannot be generalized to the other elders, especially those living in the urban areas. There was significant strong association was shown statistically with different sociodemographic variables such as age, gender, education, literacy, socioeconomic status and dependency financially. Similar studies^[24-27] from different Indian settings were shown the same association with the sociodemographic factors.

Strengths and weakness

Since it was a community-based study we can strongly attribute the results to the general rural south Indian population. We had used two different validated tools to assess the psychiatric illness we can compare the results with the other Indian studies at different settings. The study weakness was some of the people with psychiatric illness were excluded because of their uncooperation.

Table 4: Distribution of the participants with mental illness and their association with sociodemographic factors

Variables	Mental illness			P
	Total	Present	Absent	
Age (years)				
<70	248	106	142	<0.002*
>70	167	111	56	
Total	415	217	198	
Gender				
Male	199	81	118	<0.006*
Female	216	136	80	
Total	415	217	198	
Education				
Illiterates	318	190	128	<0.001*
Literates	97	27	70	
Total	415	217	198	
Type of the family				
Nuclear	294	101	193	<0.005*
Joint	121	71	50	
Total	415	217	198	
Socioeconomic class				
Upper	114	37	77	<0.001*
Middle and lower class	301	180	121	
Total	415	217	198	
Financially dependent				
Totally	206	127	79	<0.01*
Partially and independent	209	90	119	
Total	415	217	198	
Relationship with family members				
Good	265	112	153	0.001*
Unfair and poor	150	102	48	
Total	415	217	198	

*Chi-square test was applied and $P < 0.05$ is significant

Recommendations

Accredited social health activists, village level health workers, and volunteers must be trained to identify the psychological problems of elderly persons and to provide advice and treat accordingly. It is well known that psychiatric morbidities adversely impact the quality of life of the older person and outcome of comorbid medical illnesses. A community yoga and meditation program for the elderly has to be implemented. Vocational rehabilitation to the elderly to live financial independent life by giving less physical work jobs like storytellers, entertainers, instructor's etc. There is a strong case to upgrade the knowledge and skill of primary care doctors to diagnose and treat depression in patients seeking their help. Better awareness among primary care clinicians can result in better detection of cases and their management.

Conclusions

The study revealed a strong relation between sociodemographic factors such as female sex, age (>70 years), illiteracy, lower and middle socioeconomic

status, in terms of relationship with the family members, financial dependency, and the psychiatric morbidity of the individuals. The 12th Plan proposal for National Mental Health Programme^[28] aims at focusing on the functional and service delivery on integration with mental health along with general health, availability of mental health professionals, promotion of community participation in service delivery etc., Measures should be taken to support the elders, establish community elderly societies, advisory offices and services to help the elderly. The sequence of social interventions required for the management of the elderly psychological problems.

Acknowledgment

We sincerely appreciate and our heartfelt thanks to all those who were participants in the study.

Financial support and sponsorship

Nil.

Conflicts of interest.

There are no conflicts of interest.

References

1. Prakash IJ. Aging, disability, and disabled older people in India. *J Aging Soc Policy* 2003; 15:85-108.
2. Tiwari SC. Geriatric psychiatric morbidity in rural Northern India: Implications for the future. *Age Ageing* 1999;28:161-8.
3. Joshi PC, Sengupta SN. Health issues of the elderly. *Seminar* 2000;488:40-3.
4. Rajan SI, Chatterjee CB. *Population Ageing and Health in India*. Mumbai, India: Centre for Enquiry into Health and Allied Themes; 2006.
5. Census of India. Available from: http://www.en.wikipedia.org/wiki/2011_census_of_India. [Last accessed on 2011 May 16].
6. Folstein MF, Folstein SE, McHugh PR. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 1975; 12:189-98.
7. Yesavage JA. Geriatric depression scale. *Psychopharmacol Bull* 1988;24:709-11.
8. Tiwari SC, Srivastava G, Tripathi RK, Pandey NM, Agarwal GG, Pandey S, *et al.* Prevalence of psychiatric morbidity amongst the community dwelling rural older adults in Northern India. *Indian J Med Res* 2013;138:504-14.
9. Dube KC. A study of prevalence and biosocial variables in mental illness in a rural and an urban community in Uttar Pradesh – India. *Acta Psychiatr Scand* 1970;46:327-59.
10. Pandvel HT, Chavan VM, Giri PA. Study of health problems and addiction pattern among elderly population in rural areas of Pune, India Pandve *et al.* *Epidemiology (Sunnyvale)* 2017;7:2.
11. Elango S. A study of health and health related social problems in the geriatric population in a rural area of Tamil Nadu. *Indian J Public Health* 1998;42:7-8.
12. Kishore S, Garg BS. Sociomedical problems of aged population in a rural area of Wardha district. *Indian J Public Health* 1997;41:43-8.
13. Singh VB, Nayak KC, Kataria DK, Verma SK, Jain P, Sidhu D, *et al.* Psychiatric co-morbidities in patients attending geriatric clinic at a tertiary care hospital. *J Indian Acad Geriatr* 2005; 2:65-9.
14. Sreejith S, Nair, Pooja Raghunath, and Sreekanth S. Nair Prevalence of Psychiatric Disorders among the Rural Geriatric Population: A Pilot Study in Karnataka, India, *Cent Asian J Glob*

- Health. 2015; 4 (1): 138.
15. Goswami A, Reddiah VP, Kapoor SK, Singh B, Dey AB, Dwivedi SN, *et al.* Prevalence and determinants of cognitive impairment in rural elderly population in India. *Help Age India Res Dev J* 2006; 12:8-15.
 16. Premarajan KC, Danabalan M, Chandrasekar R, Srinivasa DK. Prevalence of psychiatry morbidity in an urban community of Pondicherry. *Indian J Psychiatry* 1993; 35:99-102.
 17. Nandi PS, Banerjee G, Mukherjee SP, Nandi S, Nandi DN. A study of psychiatric morbidity of the elderly population of a rural community in West Bengal. *Indian J Psychiatry* 1997;39:122-9.
 18. Mehta P, Joseph A, Verghese A. An epidemiologic study of psychiatric disorders in a rural area in Tamilnadu. *Indian J Psychiatry* 1985; 27:153-8.
 19. Shaji S, Verghese A, Promodu K, George B, Shibu VP. Prevalence of priority psychiatric disorders in a rural area in Kerala. *Indian J Psychiatry* 1995;37:91-6.
 20. Jain RK, Aras RY. Depression in geriatric population in urban slums of Mumbai. *Indian J Public Health* 2007; 51:112-3.
 21. Rao AV. National Task Force Study on Problems of the aged seeking psychiatric help. ICMR 1987. Mental health status of the elderly. *ICMR Bull* 1996;26:28-34.
 22. Sharifa EBW. Puteh, Intan MA. Bakar, Boekhtiar Borhanuddin, Khalib Latiff, Rahmah M. Amin and Rosnah Sutan, A prevalence study of the activities of daily living (ADL) dependency among the elderly in four districts in Selangor, Malaysia. *Epidemiol Prev Med* 2015; 1:110.
 23. Badami S, Yenagi GV. Leisure time activities: A boost for elderly health. *Adv Res J Soc Sci* 2015;6:191-7.
 24. Reddy NB, Pallavi M, Reddy NN, Reddy CS, Singh RK, Pirabu RA, *et al.* Psychological morbidity status among the rural geriatric population of Tamil Nadu, India: A Cross-sectional study. *Indian J Psychol Med* 2012;34:227-31.
 25. 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.
 26. Nakulan A, Sumesh TP, Kumar S, Rejani PP, Shaji KS. Prevalence and risk factors for depression among community resident older people in Kerala. *Indian J Psychiatry* 2015; 57:262-6.
 27. Buvneshkumar M, John KR, Logaraj M. A study on prevalence of depression and associated risk factors among elderly in a rural block of Tamil Nadu. *Indian J Public Health* 2018;62:89-94.
 28. Press Information Bureau, National Mental Health Programme. Government of India, Ministry of Health and Family Welfare; 13 December, 2013.