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Differential Distribution of Geriatric Depression and Its Determinants in Community and Old-Age Homes of Mysore

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ABSTRACT

Background: Mental disorders in the elderly are always overlooked and underdiagnosed. The most common neuropsychiatric disorders in this age group are dementia and depression. The geriatric depression variation with respect to different environments will help us to understand its epidemiology.

Methods: To estimate and compare the prevalence of geriatric depression and the associated factors in community and old-age homes, a cross-sectional study was carried out in both these settings between august 2017 and april 2018. A sample of 150 was taken in community and old-age homes each. Cluster random sampling and simple random sampling were employed. Geriatric depression scale -15 (GDS-15) was used to assess the depression and mini-mental state examination (MMSE-30) was used to assess cognitive status.

Results: Prevalence of geriatric depression in old-age home was 33.3% and in community was 31.2%, but the difference was not statistically significant (p=0.702). However in a subgroup analysis, prevalence of depression in private old-age home was 21.6% and public old-age home was 46.3% and this difference was statistically significant (p = 0.002). Age, marital status, education, socioeconomic status, economic dependency, source of pension, physical dependency and uncorrected hearing/visual impairment were the important predictors of depression.

Conclusion: Prevalence of geriatric depression does not significantly vary in community and Old-age home, but it varies with respect to type of Old-age home. Better facilities and good environment in old-age homes may help to reduce depression.

Keywords: Depression, elderly, Geriatric, GDS, Old-age homes

INTRODUCTION

The world's population is ageing rapidly. Between 2015 and 2050, the proportion of the world's older adults is estimated to almost double from about 12% to 22%.We are now in the era where the concept of healthy ageing is gaining momentum. To ensure adults live not only longer but healthier lives, both physical and mental health should be maintained. Mental disorders in the elderly people are always overlooked and under-diagnosed. Over 20% of adults aged 60 and over suffer from a mental or neurological disorder. These disorders in the elderly population account for 17.4% of Years Lived with Disability (YLDs). The most common neuropsychiatric disorders in this age group are dementia and depression.[1] The World Health Organization estimated that the overall prevalence rate of depressive disorders among the elderly generally varies between 10 and 20%, depending on the cultural situations. The median prevalence rate of depressive disorders in the world for the elderly population was determined to be 10.3% (in-

terquartile range [IQR], 4.7%-16.0%). The median prevalence rate of depression among the elderly Indian population was determined to be 21.9% (IQR, 11.6%–31.1%). Although India is the second-most populated country in the world, in terms of elderly population of 60 years and above, elderly depression is not yet perceived as a public health problem in India.[2] In India urbanization and rapidly changing lifestyle has led to adoption of nuclear family norms. The decline in joint families has taken its highest toll on the elderly population who are used to closely knitted family structures. These have contributed for the rise in old age homes. Neglect, physical and psychological dependency makes the elderly population more vulnerable for depression. Many studies have been carried out in old-age homes and community separately to estimate depression prevalence in elderly. This study compares the depression prevalence in different environments and will help us to throw light on the possible determinants. The screening done will identify many undiagnosed patients and help can be offered to them. It will help us to understand the depth of the problem so that measures can be taken to tackle it at the primary level.

OBJECTIVES

The study was conducted to estimate and compare prevalence of geriatric depression in community and old-age homes of Mysore and also to determine the predictors associated with depression in each setting.

MATERIALS AND METHODS

This study was carried from august 2017 to April 2018. Data was collected by direct interview using predesigned semi structured questionnaire from the residents aged more than 60 years in the community and old-age homes.

Sample Size: With prevalence of depression at 27.7% in Old-age homes and 15.6% in community,[3] 5% level of significance and 10% absolute error, Sample size was calculated to be 127, which was rounded of to 150 in each setting accounting for 10% non-response rate.

Sampling Method: Community sample were selected by cluster random sampling while Old-age homes samples were selected by simple random sampling

Based on Census 2011 data, the population details of all 65 wards in an urban area was collected.

Step 1: A list with expected population of above 60 years in each ward was prepared.

Step 2: Each ward served as the primary sampling unit or the cluster. A cluster of 30 was selected and 5 individual from each cluster were selected to reach a sample of 150

Step 3: The clusters (wards) were selected by probability proportionate to size

Step 4: Inside each selected ward the sampling frame was taken from city corporation voters list and above 60 years list was separated.

Step 5: 5 Subjects were selected by simple random sampling from the list

Step 6: There were 10 old age homes in the city, 3 were public funded and 7 private funded. 2 public funded and 2 private funded homes were selected randomly and the sample of 150 was allocated with probability proportionate to size. The name list from each old-age homes was taken as the sampling frame from which the participants were selected by simple random sampling.

Inclusion Criteria: Persons above 60 years of age who were willing to participate in the study and resident of that community or old-age home for more than 6 months were included in the study.

Exclusion Criteria: Participants with MMSE score <=20 and participants suffering from terminal illness, diagnosed psychiatric illness and those who were ill at the time of study were excluded.

Study Tools: A predesigned semi structured questionnaire was used for the data collection from the study population after obtaining informed consent.

Geriatric depression scale (GDS): GDS is a reliable and valid measure of geriatric depression with 30 questions. It has a sensitivity of 84% and specificity of 95% in identifying the depressed.[4] There is also a short version with 15 item.[5] The participants were asked to respond to 15 questions by answering 'yes' or 'no' in reference to how they felt on the day on which the questionnaire was administered. A score of > 5 was suggestive of depression. In our study we used the short version, which also produced sensitivity and specificity rates of 92.7% and 65.2% respectively with the use of cut off point 5.[6] The scale was translated into local language kannada and was validated before use.

Mini-mental state examination (MMSE): It is a 30 item questionnaire used to measure the cognitive impairment suggestive of dementia. A score less than or equal to 20 implies increased odds of dementia.[7,8] MMSE has a satisfactory reliability and construct validity.[9] Since the GDS is not a valid tool to assess depression in demented elderly,[4] those who were found to score less than 20 in MMSE were excluded from the study.

Definition of variables:

Socioeconomic status was Classified based on BJ Prasad scale[10]

Economical dependency:

Independent: The participant does not take any monetary help from anyone for his expenses in a month

Partially dependent: The participant has a source of income every month but also takes some monetary benefits

Completely dependent: The participant does not have any source of income and is completely dependent on others

Source of Pension:

Government: The social security pension scheme by the government which provides Rs.500 every month

Non-Government: Includes the pension from the Job which they have retired from / pension of spouse

Physical Dependency

Dependent **–** participant is not able to do their day to day living activities like bathing, grooming, eating and using the toilet by themselves.

Independent – participant is able to do the day to day activities without help.

Uncorrected impairment - Presence of either hearing or visual or both impairment

Ethical Approval: The study was approved by institutional ethical committee of the college and informed consent was obtained from each of the participant after explaining them the purpose of study.

Statistical methods: Data was entered into Microsoft excel (Windows 7; Version 2007) and analyses done using the Statistical Package for Social Sciences (SPSS) for windows software (trial version 22.0; SPSS Inc, Chicago). Descriptive statistics such as mean and standard deviation (SD) for continuous variables and frequencies and percentages were calculated for categorical variables. Comparison between groups was done using Chi-square test of independence and Fishers test (as appropriate) for categorical variables. For quantitative variable t test and corresponding non-parametric tests were used. Bar charts were used for visual representation of the analysed data. Level of significance was set at 0.05.

RESULTS

Among the 300 people sampled only 282 were eligible, and were included in the final analysis of the study. Prevalence of geriatric depression in old-age home was 33.3% and in community was 31.2%, but the difference was not statistically significant (p=0.702) (figure 1). The majority of subjects in the Community (60.3%) were in the age group 60-70 years, followed by the age group 71-80 years (28.4%) and 11.3% in above 80 years age group, in Old-age homes the majority were in the age group of 71-80 years (39%) followed by the age group of 60-70 years (33%). The mean and standard deviation of the age were 69.7 (7.2) in community and 74.7 (8.5) in old-age homes which was statistically significant (P<0.001). As for the sex distribution the proportion of females was slightly higher in both the Community and Old-age homes (52.5% and 58.2% respectively). In both the setting majority belonged to Hindu religion (79.4% and 71.6%), in Old-age homes none of the participants belonged to Muslim religion, the prevailing joint family culture in this religion could be the reason for this.

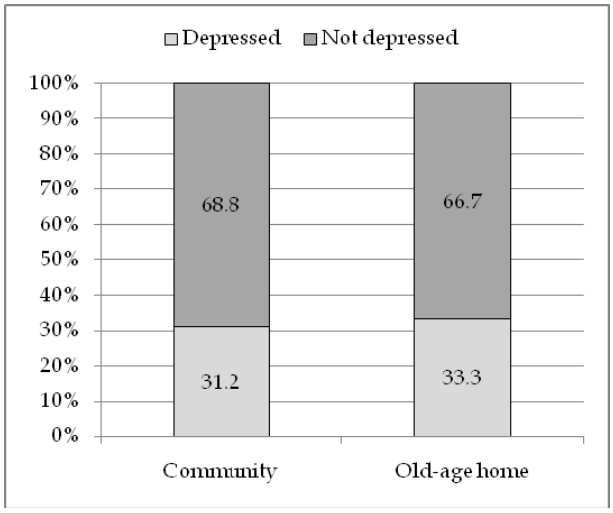

Figure 1: Prevalence of depression in Community and Old-age homes (p value 0.702)

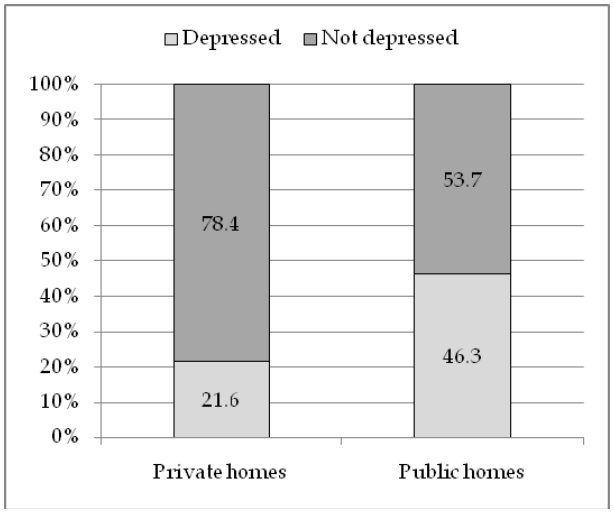

Figure 2: Prevalence of depression in Private and Public funded Old-age homes (p value 0.002)

Table 1: Distribution of GDS and MMSE scores in community and old-age homes

	GDS scores				MMSE scores			
	Mean	Median	sd	P value	Mean	Median	sd	P value
Community	4.18	3	3.2	0.905*	25	25	1.9	0.233#
Old-age homes	4.33	3	3.5		24.8	25	1.45	

*Mann Whitney U test to test difference in distribution of medians #t test to test difference in means; sd=standard deviation

Table 2: Demographic Factors associated with depression in community and old-age homes

Characteristics	Community (n=141) (%)			Old-age Homes (n=141) (%)			Total (n=282)(%)		
	Depressed	ND*	P value	Depressed	ND*	P value	Depressed	ND*	P value
Age (mean(sd))	72.6 (8.8)	68.4 (5.9)	0.005	72.2 (8.8)	76 (8.1)	0.01	72.2 (8.0)	72.4 (8.7)	0.821
Sex									
Male	14(20.9)	53(79.1)	0.012	21(35.6)	38(64.4)	0.629	35(27.8)	91(72.2)	0.147
Female	30(40.5)	44(59.5)		26(31.7)	56(68.3)		56(35.9)	100(64.1)	
Marital Status									
Married	15(22.1)	53(77.9)	0.03	7(26)	20(74)	<0.001	22(23.2)	73(76.8)	<0.001
Unmarried	0	2(100)		5(21)	19(79)		5(19.2)	21(80.8)	
Widow	26(38.8)	41(61.2)		23(30.3)	53(69.7)		49(34.3)	94(65.7)	
Separated	3(75)	1(25)		12(85.7)	2(14.3%)		15(83.3)	3(16.7)	
Type of family									
Nuclear family	15(27.3)	40(72.7)	0.42	-	-	-	15(27.3)	40(72.7)	0.42
Non-nuclear family	29(33.7)	57(66.3)		-	-		29(33.7)	57(66.3)	
Living arrangement									
With spouse	15(22.1)	53(77.9)	0.024	4(21.1)	15(68.9)	0.222	19(21.8)	68(78.2)	0.012
Without spouse	29(39.7)	44(60.3)		43(35.2)	79(64.8)		72(36.9)	123(63.1)	
Children									
Atleast 1 male child	33(27.3)	88(72.7)	0.064	18(42.9)	24(57.1)	0.287	51(31.3)	112(68.7)	0.644
Female child only	6(60)	4(40)		9(31)	20(69)		16(38.5)	24(61.5)	
No children	4(44.4)	5(55.6)		20(28.6)	50(71.4)		24(30.4)	55(69.6)	
Education									
Illiterate	27(50.9)	26(49.1)	0.001	12(63.2)	7(36.8)	0.002	39(54.2)	33(45.8)	<0.001
Primary/middle	10(20.8)	38(79.2)		20(37)	34(63)		30(29.4)	72(70.6)	
High school/diploma	6(20)	24(80)		13(28.9)	32(71.1)		19(25.3)	56(74.7)	
Graduate & Above	1(10)	9(90)		2(8.7)	21(91.3)		3(9.1)	30(90.9)	

*ND=Not depressed

Table 3: Financial and disability factors associated with depression in community and old-age homes

Characteristics	Community (n=141) (%)			Old-age homes (n=141) (%)			Total participants (n=282) (%)		
	Depressed	ND*	P value	Depressed	ND*	P value	Depressed	ND*	P value
Socioeconomic status									
I	5(12.8)	34(87.2)	0.002	6(14)	37(86)	0.003	11(13.4)	71(86.6)	<0.001
II	9(25.7)	26(74.3)		3(25)	9(75)		12(25.5)	35(74.5)	
III	13(34.2)	25(65.8)		3(33.3)	6(66.7)		16(34)	31(66)	
IV	13(59.1)	9(40.9)		6(31.6)	13(68.4)		19(46.3)	22(53.7)	
V	3(43)	4(57)		29(50)	29(50)		33(51)	32(49.2)	
Economical dependency									
Independent	14(25)	42(75)	0.433	9(17)	44(83)	0.006	23(21.1)	86(78.9)	0.006
Partially#	21(35)	39(65)		7(46.7)	8(53.3)		28(37.3)	47(62.7)	
Completely$	9(36)	16(64)		31(42.5)	42(57.5)		40(40.8)	58(59.2)	
Old-Age Pension									
Present	27(31.8)	58(68.2)	0.86	13(25.5)	38(74.5)	0.137	40(29.4)	96(70.6)	0.322
Absent	17(30.4)	39(69.6)		34(37.8)	56(62.2)		51(34.9)	95(65.1)	
Source of Pension									
Government	23(42.6)	31(57.4)	0.006	5(31.2)	11(68.8)	0.792	28(40)	42(60)	0.018
Work	3(10.7)	25(89.3)		6(24)	19(76)		9(17)	44(83)	
Spouse	1(25)	3(75)		2(20)	8(80%)		3(21.4)	11(78.6)	
Physical dependency									
Dependent	15(75)	5(25)	<0.001	12(38.7)	19(61.3)	0.472	27(53)	24(47)	0.001
Independent	29(24)	92(76)		35(31.8)	75(68.2)		64(27.7)	167(72.3)	
Uncorrected impairment									
Present	26(50)	26(50)	<0.001	22(46.8)	25(53.2)	0.016	48(48.5)	51(51.5)	<0.001
Absent	18(20.2)	71(79.8)		25(26.6)	69(73.4)		43(23.5)	140(76.5)	

*ND=Not depressed; #Partially dependent; $Completely dependent

Table 4: Predictors of Geriatric depression in Binary Logistic regression

Characteristics	Depression OR (95% CI)*
Marital status	
Married	1
Unmarried	0.9 (0.33-2.52)
Widow/Separated	2.5 (1.44-4.35)
Living arrangement	
With spouse	1
Without spouse	2.09 (1.16-3.76)
Education	
Graduate/professional	1
High school/diploma	3.39 (0.9-12.39
Primary/middle	4.17 (1.18-14.7)
Illiterate	11.82 (3.3-42.25)
Socioeconomic status	
I (Upper)	1
II/III (Middle)	2.74 (1.26-5.93)
IV/V (Lower)	6.212.96-13.03)
Economical dependency	
Independent	1
Partially dependent	2.23 (1.15-4.29)
Completely dependent	2.58 (1.39-4.75)
Source of Pension	
Non- government (Work/Spouse)	1
Government assistance	3.05 (1.39-6.71)
Physical dependency	
Independent	1
Dependent	2.93 (1.57-5.46)
Uncorrected impairment	
Absent	1
Present	3.06 (1.81-5.16)

*Odds Ratio (95%Confidence Interval)

DISCUSSION

In our study the prevalence of geriatric depression in old-age homes was 33.3% and in community was 31.2% (Figure 1). Though the prevalence was greater in old-age homes it was not statistically significant (P = 0.702). The mean GDS and MMSE scores also did not vary significantly with the setting (Table 1). This is similar to study by Singh et al in Khammam, Andhra pradesh with slightly higher prevalence of mood disorders in the old-age home (25%) than in the people living in community (21.7%) and the difference was not significant.[11] Other studies showed more prevalence of depression in old-age homes compared to community, Gupta et al in Lucknow showed depression to be 15.6 % in community and 27.7 % in old-age homes,[3] Praveen Kumar et al also showed depression was more among institutional elderly (75%) persons, compared with those from the community (57.1%),[12] Zalavadiya et al in Rajkot, Gujarat also showed that depression was more among the elderly of OAHs(46.6%) as compared to community (32.2%), In all these studies difference was statistically significant.[13] In a study by Amonkar et al in Maharashtra also showed the GDS mean score was significantly more (P < 0.001) in old-age homes (5.76) than in community (3.96).[14] In contrast to all the other studies, the prevalence of depression in our study is almost equal in both the setting, the rapidly changing lifestyle with smaller family sizes and lesser human interactions could have resulted in this change. Though the mean age in old-age home is significantly more than the community the prevalence of depression is not different which implies the age composition in both the setting is not affecting the depression.

The community prevalence of depression estimated in our study was found to be similar to that estimated by Barua et al which showed median prevalence rate of depression to be 21.9% (IQR - 11.6%–31.1%), Sundru MB et al (31.7%) and Sanjay TV et al with 36%.[15,16,17] Community-based studies involving 70 to 7,150 elderly subjects reported prevalence rate varying from 8.9% to 62.16%.[18] The prevalence of depression in Old-age home was estimated to be 33.3% in our study which was similar to study by Tiwari et al in Old-age homes of Lucknow (37.7%).[19] The prevalence in OAHs is also widely varied as per studies by, Zalavadiya et al (46.6%), Amonkar et al (60%) and Narkhede V et al (63.8%).[13,14,19] The reason may be because of the cultural and geographical difference between the population groups. Even in our study a subgroup analysis for prevalence of depression between the two groups of old-age homes (i.e) private and public revealed an interesting finding of 21.6% and 46.3% respectively, which was a statistically significant difference (Figure 2). The prevalence in private funded homes were even lesser than the prevalence in community, this can be due to variety of reasons like different cohorts of people (economically and education wise) seek admissions in both these homes, voluntary nature of participants in joining old-age homes and the difference in quality of facilities and care in the homes. A study by Shailaja B et al have concluded that the prevalence of psychiatric morbidity was less in old-age home population owing to better availability of care, less number of social stressors etc.[21] Further research is needed to analyse about the possibility whether better old-age homes can indeed help to reduce depression among elderly than the community and to analyse whether Indian population is ready for that change.

The demographic factor age was a significant predictor of depression in both the settings similar to findings from many other studies.[11,15,16,18,20] In the community the mean age among depressed was more (72.6) while in old age homes mean age among not-depressed was more (76). This shows that as age increases in a community setting the depression is more in older age, this is probably due to neglect from the family because increasing

age demands more care from caregivers, whereas in old-age home the mean age among non-depressed group is more, the reason for less mean age among depressed in old-age home maybe because of the maladjustments to the environment. Gender was not significant predictors of depression in old age home, which was similar to many other studies.[11,12,14,17] However gender is a predictor in the community in our study.

Other significant predictors were marital status with widowed/separated having 2.5 times more odds of depression, education with 11 times and 4 times more odds of depression among illiterates and primary/middle school education respectively, socioeconomic status with middle and lower class having 3 and 4.7 times more odds of depression, Partial and complete economical dependency had 2.2 and 2.6 times odds of depression (Table 1, 2 and 3). These four factors had been established as predictors in various studies by Barua et al, Gupta et al, Sundru et al, Sanjay TV et al, grover et al, Ravindra NR et al, Sengupta P et al, Swarnalatha et al, Buvneshkumar M et al.[3,15-18,22-25] The presence of old age pension was not a predictor, as most of the population was covered by government pension scheme of Rs. 500 every month. Source of pension was analysed separately and it was a significant predictor in community with 3 times more depression in people receiving government support. So this implies a need for policy change of increasing financial support under pension scheme for elderly. The importance of financial security in elderly is evident from the above significant predictors (socio-economic status, financial dependency and source of pension).

The other factors like children, type of family were not significant predictors in this study (Table 1) similar to results from Sanjay TV et al,[17] However type of family was a significant predictor in various other studies.[16,17,23-25] Living arrangement was a predictor only in the community similar results were found in other studies.[3,22,24] The elderly who had atleast one male child were more depressed in the Old-age homes (42.9%) whereas in community the elderly with only female children were more depressed (60%) though the difference was not significant, this reflects the attitude and social security the parents feel with a male child. Other predictors like physical dependency and uncorrected hearing/visual impairment were significant predictors with 3 times more odds of depression. This was similar to findings from many other studies.[13,17, 23-25] However physical dependency was a significant predictor only in the community the reason probably is due to the regular care and geriatric friendly setups in old-age homes which makes them feel less dependent and hence morally uplifted.

LIMITATIONS:

As the study was field based and resources were limited we could not address the pseudo dementia in the participants. The GDS is not a diagnostic tool so the prevalence mentioned in the study should be interpreted with caution. The baseline depression status of the people before seeking admission into old-age home is not ascertained, so that might have contributed to difference in prevalence of depression with respect to type of homes. GDS is a self-administered tool, whereas in this study it was filled with the help from participants so it might have contributed for some information bias.

CONCLUSION

The Prevalence of geriatric depression does not significantly vary in Community and Old-age homes, they are almost equal. There is a significant difference in depression within two types of Old-age homes. Better facilities and good environment in old-age homes may help to reduce depression for which further research has to be done. Since the depression varies with the setting of Old-age homes it is essential to set up standards in these homes that can ensure their well-being. Age, marital status, education, socioeconomic status, economic dependency, source of pension, Physical dependency and uncorrected hearing/visual impairment were the important predictors of depression. So with the greying Indian population it is essential to identify and prioritize the needs of elderly. It is high time to explore the possibilities of designing better homes to improve the mental well-being of the elderly instead of totally labeling the idea of old-age homes as stressful environment.

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