## **Original Research Article**

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# Prevalence of depression in the elderly population of rural Puducherry: a community based cross sectional study

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#### **ABSTRACT**

Background: Geriatric mental health is an important emerging public health concern. Although India is the second most populated country in the world in terms of elderly population it is yet to perceive geriatric depression as a public health problem. In spite of considerable disability and morbidity there is a dearth of community studies investigating geriatric depression and its associated risk factors from India. Considering this back ground, a community based cross sectional study was conducted in a rural setting of Puducherry to find out the disease burden of geriatric depression and to study the correlates of depression among the elderly in the community.

Methods: A community based cross sectional study was done in a rural field practicing area of Sri Lakshmi Narayana Institute of Medical Science, Puducherry. The study was conducted in 640 elderly and geriatric depression was assessed with The Geriatric depression Scale – Short form.

Results: Of the total elderly, only 42.34% were found to be normal while the remaining 57.66% of the elderly were suffering from some forms of depression. The major associated factors contributing to geriatric depression were found to be female sex, widowhood, illiteracy, living alone, presence of chronic diseases, lesser physical activity and inadequate sleep.

**Conclusions:** A major proportion of the elderly in the study population were found to be suffering from depression. This high prevalence indicates an urgent need, both for great awareness of depression among the community members and to ensure availability and accessibility of appropriate health services to manage it.

**Keywords:** Elderly, Depression, Geriatric depression scale

#### INTRODUCTION

The world's population is ageing rapidly. A robust growth in the number of elderly in the general population in recent years is termed as 'greying of the world.<sup>1</sup> With 7.7% of its population being aged more than 60 years and above, India has acquired the label of "an ageing nation". This population ageing can be seen as a success story for public health policies, but it also brings with it challenges the society should adapt, in order to maximize the health and functional capacity of older people as well

as their social participation and security. There is a need to highlight the medical and socio-economic problems that are being faced by the elderly people in India, and strategies for bringing about an improvement in their quality of life also need to be explored.<sup>2</sup>

The rapid urbanization and modernization of the society has brought in its wake a breakdown in family values and the framework of family support, social isolation, economic insecurity and elderly abuse leading to a host of psychological illnesses.<sup>3</sup> The socio-economic problems of the elderly are aggravated by factors such as

inadequate facilities for health care, rehabilitation, and recreation. Geriatric mental health is emerging as an important public health concern.<sup>4</sup>

Although India is the second most populated country in the world in terms of elderly population, Geriatric depression is yet to be perceived as a public health problem. The future projections of global DALY's in the year 2020 show that mental disorders are projected to increase to 15% of the global disease burden and unipolar major depression could become the second leading cause of disease burden next to Ischemic heart disease. Health care professionals under identify mental health problems and the stigma surrounding mental illness make the elderly reluctant to seek help. Most countries allocate less than 1% of their total health expenditures to mental health budgets.

Depression, along with other mental health disorders, has long been segregated and neglected. The elderly age group comprises a particularly vulnerable group as they medical often have multiple co-existing psychological problems. Cardiovascular diseases. respiratory disorders, hearing and visual impairments, depression, and infections such as tuberculosis are common problems in elderly populations.8 The Chennai urban rural epidemiology study (CURES) showed the prevalence of depression among population over 20 years as 15.1%. Studies in primary care settings point to a higher prevalence of depressive disorders amongst the elderly (with chronic co morbid diseases), ranging from 10 to 25%. 10 A meta-analysis of 74 studies, including 487,275 elderly individuals found the worldwide prevalence rate of depressive disorders to be between 4.7 to 16%. This study indicates a comparatively higher prevalence of geriatric depression in India (21.9%). 11

## **Objectives**

- To estimate the prevalence of depression among the elderly in a rural field practicing area of Sri Lakshmi Narayana Institute of Medical Science, Puducherry.
- To assess the association between various socio demographic parameters and depression in the elderly.

#### **METHODS**

### Study area

The data for this cross sectional study was collected from the rural field practicing area of Sri Lakshmi Narayana Institute of Medical Science. The villages under the RHTC of Kumarapalayam were selected randomly and the study was conducted. The villages thus chosen were Kumarapalayam, Thethampakkam, Mutrampet, Suthukeni, Kodathur, Katterikuppam. A house to house survey was conducted to explore the prevalence of depression and its association with socio demographic parameters in the elderly.

#### Sample size calculation

The sample size was calculated with the prevalence of geriatric depression as 21.9% was 634 which was rounded off to 640. The study duration was 6 months.

#### Inclusion criteria

- Individuals who belonged to the age of 60 years and above.
- Elderly residing in the study area for at least one year preceding the date of survey.
- Elderly who gave consent to participate in the study.

#### Exclusion criteria

- Individuals less than 60 years.
- Elderly people who did not give consent to participate in the study.
- Those who were not at home even after the third visit.
- Elderly who were so much debilitated that they were unable to co-operate for the study.

## Method of data collection

A Pilot study was carried out among 30 elderly individuals in Thethampakkam village under the field practice area of Kumarapalayam RHTC using a predesigned and structured questionnaire in order to incorporate suitable changes if required. The investigator administered questionnaire was applied. Certain structural changes were made and few questions were modified based on the pilot study. Informed consent in the form of signature or if illiterate thumb print was obtained after thoroughly explaining the study objectives to the participants. The study participants were then interviewed in their doorstep. The data regarding their age, gender, marital status, religion, educational qualification, living arrangements, presence of chronic health conditions, adequacy of sleep, physical activities, frequency of attending religious services in the past month and hobbies were asked and recorded. The Geriatric depression Scale - Short form (GDS 15) was then used to assess the presence of depression in the elderly.

## Study period

The data for the study was collected from July 2015 to October 2015.

## Statistical analysis

The data collected was entered in Microsoft excel spread sheet and analysis was done using SPSS v18. The tests of significance used was Pearson's Chi square test, Fisher's exact test and Correlation.

#### **RESULTS**

The total study population constituted 640 elderly out of which 252 (29.4%) were males and 388 (60.6%) were females. Table 1 shows the demographic profile of the study population. A majority of the study population belonged to the age group of 60 - 69 years (69.5%). 58.9% of the elderly were married while 38.3% were

widowed. It was also found that of the 388 female elderly 50% were widows. 465 elderly (72.7%) of the elderly were illiterates. Of the total elderly 69.2% were not working. 33.8% of the elderly were living with their spouse and children and 25.8% elderly live with their children. 3% of the elderly were living neither with their spouse nor with their children but their relatives.

Table 1: Demographic profile of the study population.

A go group	Gender	Total	
Age group	Males	Females	1 0ta1
60 -69	166 (65.87)	279 (71.91)	445 (69.5)
70 – 79	72 (28.57)	79 (20.36)	151 (23.6)
80 – 89	14 (5.56)	26 (6.70)	40 (6.3)
$\geq 0$	0 (0)	4 (1.03)	4 (0.6)
Total	252 (100.0)	388 (100.0)	640 (100.0)
Marital status			
Single	7 (2.77)	7 (1.80)	14 (2.2)
Married	192 (79.19)	185 (47.680)	377 (58.9)
Widowed	51 (20.23)	194 (50)	245 (38.3)
Separated	2 (0.79)	2 (0.515)	4 (0.6)
Total	252 (100.0)	388 (100.0)	640 (100)
Religion			
Hindus	246 (97.61)	382 (98.45)	628 (98.1)
Christians	4 (1.587)	4 (1.030)	8 (1.3)
Muslims	2 (0.793)	2 (0.515)	4 (0.6)
Total	252 (100)	388 (100)	640 (100)
Educational qualification			
Illiterate	140(55.55)	325 (83.76)	465 (72.7)
Literate	112 (44.45)	63 (16.24)	175 (27.3)
Total	252 (100.0)	388 (100.0)	640 (100)
Current occupational status	S		
Working	80 (31.74)	117 (30.154)	197 (30.8)
Not working	172 (68.25)	271 (70.618)	443 (69.2)
Total	252 (100)	388 (100)	640 (100)

(Figures in parentheses indicate percentage)

Table 2: Grading of depression in the elderly according to the geriatric depression scale (GDS – 15).

Grading of depression	Frequency
Absent	271 (42.34)
Mild	153 (23.91)
Moderate	122 (19.06)
Severe	94 (14.69)
Total	640 (100.0)

(Figures in parentheses indicate percentage)

52% of the elderly were suffering some from some chronic health problems and 39.4% of elderly have stated that they have never checked for the presence of any chronic diseases like diabetes mellitus, hypertension, etc., of the chronic diseases the most commonly seen was diabetes mellitus (20.2%) and hypertension (18.4%). When asked about physical activity 31.1% of the total elderly stated that they do not do any kind of extra

physical activities apart from their regular day to day activities. Other elderly who involve themselves in minor physical activities a majority of 28.9% of them walk to nearby shops or bus stops. With sleep habits 56.4% of female elderly reported that their sleep was inadequate while 62.3% of the male elderly stated that their sleep was adequate.

Table 3: Grading of depression and demographic variables.

Depression and age	e group						
Age group		Grades of	depression		Total	P value	
(in years)	Absent	Mild	Moderate	Severe	Total	1 value	
60 – 69	213 (78.60)	120 (78.43)	68 (55.74)	44 (46.81)	445 (69.53)		
70 – 79	47 (17.34)	28 (18.30)	38 (31.15)	38 (40.42)	151 (23.60)	$\chi^2 = 58.425$	
80 – 89	10 (3.69)	4 (2.61)	16 (13.11)	10 (10.64)	40 (6.25)	df=9,	
≥90	1 (0.37)	1 (0.65)	0 (0)	2 (2.13)	4 (0.625)	p=0.000	
Total	271 (100)	153 (100)	122 (100)	94 (100)	640 (100)	-	
Depression and ger	nder						
Gender							
Males	108 (39.85)	63 (41.18)	48 (39.34)	33 (35.11)	252 (39.38)	$\chi^2 = 43.51$	
Females	163 (60.14)	90 (58.82)	74 (60.65)	61 (64.89)	388 (60.62)	df=6,	
Total	271 (100)	153 (100)	122 (100)	94 (100)	640 (100)	p=0.000	
Depression and ma	arital status						
Marital status							
Single	2 (0.74)	6 (3.92)	3 (2.46)	3 (3.19)	14 (2.19)		
Married	198 (73.06)	93 (60.78)	54 ( 44.26)	32 (3.04)	377 (58.90)	$\chi^2 = 65.705$	
Widowed	71 (26.20)	52 (33.99)	63 (51.64)	59 (62.76)	245 (38.28)	df= 9,	
Separated	0 (0)	2 (1.31)	2 (1.64)	0 (0)	4 (0.62)	p=0.000	
Total	271 (100)	153 (100)	122 (100)	94 (100)	640 (100)		
Depression and edu	ucational qualific	cation					
Education							
Illiterate	170 (62.73)	115 (75.16)	102 (83.61)	78 (82.98)	465 (72.66)	$\chi^2 = 48.94$	
Literate	101 (37.27)	38 (24.84)	20 (16.39)	16 (17.02)	175 (27.34)	df=3,	
Total	271 (100)	153 (100)	122 (100)	94 (100)	640 (100)	p=0.000	

(Figures in parentheses indicate percentage)

Table 4: Grading of depression and living conditions.

Living conditions	Grades of depression				— Total	Davolaro
	Absent	Mild	Moderate	Severe	Total	P value
Alone	18 (6.64)	20 (13.07)	30 (24.60)	37 (39.26)	105 (16.41)	
Spouse	78 (28.78)	28 (18.31)	18 (14.75)	11 (11.70)	135 (21.09)	2 02 406
Children	58 (21.40)	45 (29.41)	35 (28.69)	27 (28.72)	165 (25.78)	$\chi^2 = 93.406$
Spouse and children	114 (42.07)	55 (35.95)	32 (26.23)	27 (28.72)	165 (25.78)	df=12, p=0.000
Relatives	3 (1.11)	5 (3.27)	7 (5.74)	4 (4.25)	19 (2.97)	p=0.000
Total	271 (100)	153 (100)	122 (100)	94 (100)	640 (100)	

(Figures in parentheses indicate percentage)

Table 5: Grading of depression, physical activity and adequacy of sleep.

Depression and ph	nysical activity					
Presence of	Grades of dep	ression			— Total	P value
physical activity	Absent	Mild	Moderate	Severe	Total	r value
Yes	212 (48.1)	108 (24.5)	64 (14.5)	57 (12.9)	441 (100)	$\chi^2 = 29.597$
No	59 (29.6)	45 (22.6)	58 (29.1)	37 (18.6)	199 (100)	df= 3,
Total	271 (42.3)	153 (23.9)	122 (19.1)	94 (14.7)	640 (100)	p=0.000
Depression and ad	lequacy of sleep					
Sleep						
Adequate	201 (74.17)	87 (56.86)	22 (18.03)	16 (17.02)	326 (50.93)	$\chi^2 = 156.80$
Inadequate	70 (25.83)	66 (43.14)	100 (81.97)	78 (82.98)	314 (49.06)	df= 3,
Total	271 (100)	153 (100)	122 (100)	94 (100)	640 (100)	p=0.000

(Figures in parentheses indicate percentage)

Frequency of attending religious services	Grades of de	Grades of depression				D l
	Absent	Mild	Moderate	Severe	Total	P value
Never	101 (37.27)	67 (43.79)	87 (71.31)	74 (78.72)	329 (51.5)	
Once	91 (33.58)	47 (30.72)	20 (16.39)	9 (9.57)	167 (26.1)	
Twice	31 (11.44)	19 (12.42)	8 (6.56)	10 (10.64)	68 (10.6)	$\begin{array}{c} - \\ - \\ \chi^2 = 90.387, \\ - \\ df = 18, \\ - \\ p = 0.000 \end{array}$
Thrice	13 (4.80)	3 (1.96)	0 (0)	1 (1.06)	17 (2.7)	
Four times	25 (9.22)	9 (5.88)	7 (5.74)	0 (0)	41 (6.4)	
More than four	6 (2.21)	2 (1.31)	0 (0)	0 (0)	8 (1.8)	
Daily	4 (1.48)	6 (3.92)	0 (0)	0 (0)	10 (1.6)	
Total	271 (100)	153 (100)	122 (100)	94 (100)	640 (100)	

Table 6: Grading of depression and frequency of attending religious services.

(Figures in parentheses indicate percentage)

A question of frequency of attending religious services was asked to the elderly and almost half (51.1%) of the elderly reported that they have never attended any religious services in the past month. The most common hobby of the elderly was found to be watching television (20.6%). The most common hobby of the male elderly was agriculture. Females tended to show more interest in spending time with friends and family.

Based on the scores the elderly obtained from the geriatric depression scale short form it was found that 57.7% of the elderly were suffering from some forms of depression (Table 2).

According to Table 3 a majority of the elderly who were found to be normal belong to the age group of 60–69 years. This may be due to the reason that majority of the study population belonged to the age group of 60–69 years. Of the 40 elderly who were in the age group of 80–89 years only 10 persons were normal while others were suffering from depression. Of the 271 elderly who were normal the majority were females (60.14%). Of the elderly who were normal 73.06% elderly were married. Of the 122 elderly who were moderately depressed 51.64% were widowed. A majority of individuals who were severely depressed were also widowed. Of the moderately depressed and severely depressed the majority were illiterates.

Table 4 shows that most elderly who were normal were living with their spouse and children and most elderly who were severely depressed were living alone. Of the elderly who were pursuing some kind of physical activity 48.1% of elderly was not suffering from depression. 74.17% of elderly who were not suffering from depression reported that their night's sleep was adequate. 81.97% of elderly with moderate depression and 82.98% elderly with severe depression reported inadequacy of night's sleep. A majority of elderly with moderate and severe depression revealed that they have never attended any religious services in the past one month.

#### DISCUSSION

A major portion (57.7%) of the study population was found to be suffering from geriatric depression. This high prevalence indicates an urgent need both for great awareness of depression among community members and to ensure availability and accessibility of appropriate health services to manage it. This also indicates the importance of creating networks for better geriatric care.

A study conducted by Sinha et al in a rural area of Kanchipuram district, Tamil Nadu showed that the prevalence of depression was highest in the age group of 60–69 years which is different from our study findings as in our study group the majority of elderly who were not suffering from depression were in the age group of 60 - 69 years.<sup>4</sup>

A study conducted by Sherina et al in Selangor, Malaysia showed that the prevalence of depression in the elderly was only 7.6% in the community and there was no significant difference in the prevalence of depression for different gender, marital status and living arrangement in the study. <sup>12</sup> But in our study there was significant association between female gender, lonely living and widowhood with depression.

A majority of 198 (73.06%) elderly who were found to be normal by geriatric depression scale were married. Of the 122 elderly who were moderately depressed 51.64% were widowed. 62.76% individuals among the severely depressed group were also widowed. This is similar to the results revealed by Ramachandran et al who found that the prevalence of depression was significantly higher among the widowed elderly and the elderly who were living alone. <sup>13</sup>

A majority of the elderly who were found to be severely depressed were found to be living alone either due to the reasons of widowhood or due to abandonment by their family members. This could be prevented by providing adequate awareness about the need of elderly care to the family members as it is also a responsibility of the family members to make an elderly friendly environment. A large number of elderly also revealed that they have not screened themselves for the presence of morbidities associated with senility since they felt that it was inevitable and an outcome of senility. This attitude reflects that for the elderly health is not perceived as a felt need.

This study also shows that presence of physical activity in some forms other than their regular day to day activities and involvement in religious services contributes to positive mental health. Inadequacy of sleep also contributes to depression which could be easily overcome by lifestyle changes like meditation and relaxation techniques. This study emphasizes that improving the quality of life of the elderly should be done with a holistic approach and efforts are to be put by the elderly themselves, families, health related sectors and the government.

Governments in developing countries such as India should attempt to change the negative perception the community holds towards mental disorders by giving priority to public education as many aspects of a positive mental health care could be contributed by the community by its participation. It is also time to start the process of destigmatization of mental health disorders. Research on preventive and promotional aspects of mental health and sufficient allocation of funds should also be given consideration.

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