



---

**PREVALENCE OF DEPRESSION AND ASSOCIATED RISK FACTORS AMONG  
THE ELDERLY**

**VENKATESWARAMURTHY N\*, MUHAMMED SHAHEER K AND  
SAMBATHKUMAR R**

J.K.K.Nattraja College of Pharmacy, Kumarapalayam, Tamilnadu, India

\*Corresponding Author: E-mail: [venkateswaramurthy.n@jkkn.org](mailto:venkateswaramurthy.n@jkkn.org)

Received 24<sup>th</sup> Aug. 2019; Revised 8<sup>th</sup> Oct. 2019; Accepted 10<sup>th</sup> Dec. 2019; Available online 1<sup>st</sup> June 2020

<https://doi.org/10.31032/IJBPAS/2020/9.6.5087>

**ABSTRACT**

**Background:** Depression in elders is a significant problem causing substantial morbidity and disability worldwide. The assessment of depression in elders is important for defining the extent of depression. **Objectives:** The Objectives of this study have been designed to study the prevalence of depression and also to study the factors associated with depression in the elderly aged 60 years and above in Kumarapalayam Town, Namakkal district, Tamilnadu, India. **Materials and Methods:** In this cross-sectional study conducted on 382 elderly people (aged  $\geq 60$  years) using the 15-item Geriatric Depression Scale. Elderly persons were randomly selected. **Results:** The observed overall (GDS score  $>8$ ) prevalence rate of depression was 54.45%. The study showed a significant relationship between gender and depression. **Conclusion:** This study results showed that the prevalence rate of depression in the study area is significantly high among the elderly population. These study results can help to device a more comprehensive strategy for appropriate interventions to promote mental health and prevent depression in elderly people.

**Keywords:** Depression, associated factors, elderly, India

**INTRODUCTION**

Depression is one of the most common illness affects people worldwide. According to WHO, more than 300 million people are affected by depression [1].

Depression is one of the common health-related issues among elders. Particularly, 20% of adults aged 60 years are affected by mental or neurological disorders (excluding

headache disorders). This problem is more significant in developing countries, which already harbor two-thirds of the aged population [2].

Similarly, meta-analysis geriatric on depressive disorders in those aged 60 years and above, concluded that depression among world elderly population was 10.3%, while among the elderly Indian population, it was 21.9% [inter quartile range (IQR)11.6-31.1)]. The prevalence of depression is significantly higher among Indians. Despite the high prevalence rates of depression among elder people of India [3]. Only a few community-based studies were conducted in India to study depression among elder people. To the best of our knowledge, there is no community-based study of depression among elders residing in Kumarapalayam, Namakkal district, Tamilnadu, India was conducted. Hence, this study has been conducted to estimate the prevalence of depression in the elderly (>60 years old) in Kumarapalayam, Tamilnadu, India and to identify the major risk factors for depression in the study population.

## METHODOLOGY

A cross-sectional descriptive study was conducted to study the prevalence of depression and its association with sociodemographic parameters and risk factors in older adults (aged  $\geq 60$  years, the accepted criterion for the elderly in India). The study was conducted after Institutional

ethical approval (JKKNCP / Eth/ pharm 0428794). The study was carried out in Kumarapalayam Town, Namakkal district, Tamilnadu, India. All elder people aged  $\geq 60$  years willing to participate without any psychiatric morbidity were included. The purpose of the study was explained to the participants. Those with any psychiatric morbidity and without consent were excluded. In the study area, elder people residing in old age homes and critically ill were excluded. The dumb/deaf/blind, elders with diagnosed psychiatric complaints were excluded, as there was no way to obtain consistent data from them. The study population has explained the purpose of the study, and their signed consent was obtained. Consent was obtained from the caregiver in the event of the subject being unable to give informed consent. Taking the prevalence of depression as 46% from a study conducted in South India [4] and at a 95% confidence limit, the sample size of 382 was calculated. The random sampling technique was followed to reach the desired sample size.

In this study, depression was assessed using the 15-item Geriatric Depression Scale (GDS) [5] which is a 15-item self-report assessment used as a basic screening measure of depression in the elderly. Using GDS-15, scores of 0–4 were considered normal; 5–8 indicated mild depression; 9–11 moderate depression and 12–15 severe

depression. Accuracy of the GDS-15 is not influenced by the severity of medical burden, age, or other sociodemographic characteristics and even the “very old” and ill can be screened appropriately [6].

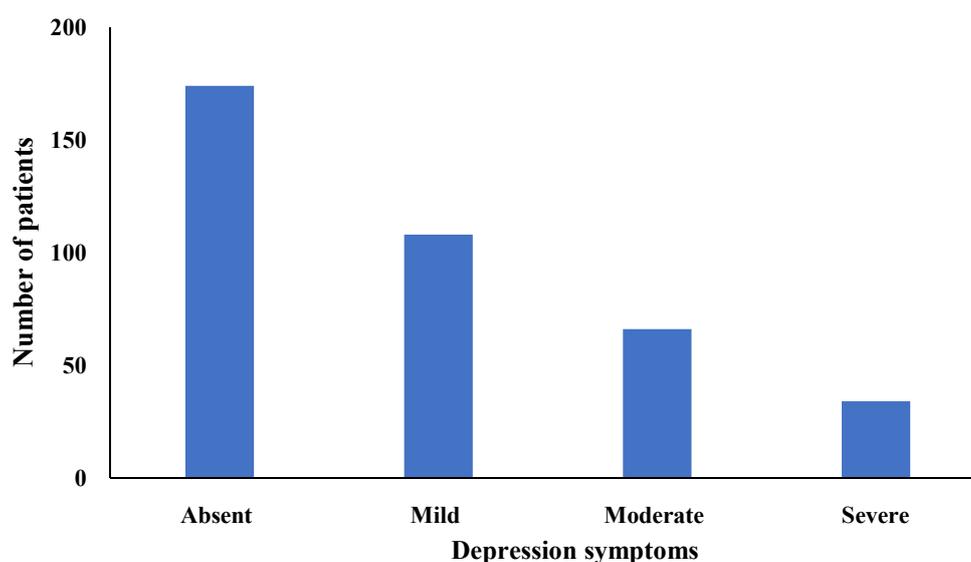
The interview was conducted in the Tamil language and the questionnaires were administered by an interview to all the study participants. The interviewer only explained the meaning of questions to the study population.

The remaining data were collected using a predesigned and pretested questionnaire

[7]. All participants were assessed face to face and socio-demographic data and risk factors were obtained in the same interview. Information regarding marital status, education status, occupation, substance abuse, presence of chronic diseases like diabetes, hypertension and other associated risk factors were also collected. Data analysis, data entry and statistical analyses used SPSS version 17 with the threshold for significance set at  $p = 0.05$ .

**Table 1: Distribution of GDS-15 Scores (n=382)**

S.No	GDS-15 Scores	Depression Symptoms	Distribution of GDS-15 Scores (n=382)	Percentage (%)
1	0-4	Absent	174	45.55
2	5-8	Mild	108	28.27
3	9-11	Moderate	66	17.28
4	12-15	Severe	34	8.90



**Figure 1: Distribution of GDS-15 Scores (n=382)**

Table 2: Sociodemographic Characteristics of the Sample and Prevalence of Depression

S. No	Gender	Number of Elder participants (n=382)	Percentage (%)	P - value
1	Male	184	48.17	
2	Female	198	51.83	
<b>Age-wise distribution of the participants</b>				
1	60-70	187	48.95	
2	71-80	145	37.95	
3	More than 81	50	11.54	
<b>Gender-wise distribution of depressive elders (n=208)</b>				
1	Male	92	44.23	0.031
2	Female	116	55.77	
<b>Age-wise distribution of depressive elders (n=208)</b>				
1	60-70	79	37.98	0.752
2	71-80	113	54.33	
3	More than 81	16	7.69	

Table 3: Factors Associated with Depression in the Elderly

S. No	Factors Associated with Depression in the Elderly	Distribution of depressive elders (n=208)
<b>Marital status of depressive elders</b>		
1	Living with a spouse	132(63.46%)
2	Either spouse expired	61 (29.33%)
3	Other	15 (7.21%)
<b>The literacy level of the depressive elders</b>		
1	Illiterate	153(73.56%)
2	Literate	55 (26.44%)
<b>Family type of depressive elders</b>		
1	Joint	141 (67.79%)
2	Nuclear	67 (32.21%)
<b>Family size of depressive elders</b>		
1	Small $\leq 5$	115 (55.29%)
2	Large $\geq 5$	93 (44.71%)
<b>Family Income of depressive elders (Indian Rupees)</b>		
	$\leq 10,000$	131 (62.98%)
	$> 10,000$	77 (37.02%)
<b>Past Occupation of depressive elders</b>		
1	Professional / administrative class	45 (21.63%)
2	Others (Includes Housewives, clerical and technical staff, teachers and others)	163 (78.36%)
<b>Current occupation of the depressive elders</b>		
	Employed	66 (31.73%)
	Unemployed	142 (68.27%)
<b>Family history of psychiatric illness in depressive elders</b>		
1	Present	07 (3.37%)
2	Absent	201 (96.63%)
<b>History of psychiatric illness in depressive elders</b>		
1	Present	19 (9.13%)
2	Absent	189 (90.87%)
<b>History of substance abuse in depressive elders in depressive elders</b>		
1	Present	14 (6.73%)
2	Absent	194 (93.27%)
<b>Opportunities for companionship in depressive elders (Spends day with someone)</b>		
1	Yes	23 (11.06%)
2	No	185 (88.94%)
<b>Family member illness in the past 6 months</b>		
1	Yes	89 (42.79%)
2	No	119 (57.21%)
<b>Death of family member/close relatives in the last 6 months</b>		

1	Yes	121 (58.17%)
2	No	87 (41.83%)
<b>Number of chronic diseases</b>		
1	0	8 (3.85%)
2	1 or 2	94 (45.19%)
3	3	32 (15.38%)
4	4 or more	74 (35.58%)
<b>Number of activities requiring assistance</b>		
1	0	124 (59.62%)
2	1	42 (20.19%)
3	2	11 (5.29%)
4	3 or more	31 (14.9%)
<b>Difficulty in Sleep pattern</b>		
1	No	65 (31.25%)
2	Yes	143 (68.75%)
<b>Wake up too early in the morning</b>		
1	No	94 (45.19%)
2	Yes	114 (54.81%)
<b>Forgetfulness</b>		
1	Yes	26 (12.5%)
2	No	182 (87.5%)

## DISCUSSION

Depression was the most common psychiatric problem in geriatric patients. This study examined the depression among elders and factors associated with depression among the elderly in Kumarapalayam Town, Namakkal District, Tamilnadu, India. 382 participants were randomly selected for this study (Table 1). Among 382 elders, according to the GDS-15 score, 28.27 % have mild depression (GDS score 5-8), 17.28 % have moderate depression (GDS score 9-11) and 8.90 % have severe depression (12-15) (Table 2). The overall (GDS score >8) prevalence rate is 54.45%. Among 208 depressive elders, 48.17% were male and 51.83% were female. Our study showed a significant relationship between gender and depression.

Out of 208 depressive elders, 79(37.98 %) were in the age group of 60-70 years, 113

(54.33%) were in the age group of 71-80 years and 16(7.69%) was more than 81 years (Table 3). Our study showed no significant relationship between age and prevalence of depression.

While studying the marital status of depressive patients, 132(63.4%) were living with a spouse, 61(29.3%) participants spouse had expired and the other causes reported to be 15(7.21%) (Table 3).

Among depressive elders, 153(73.56%) were illiterate, and 55(26.44%) were literate. The problem of depression was more among illiterate persons. The reason why literacy level decreases the depression is unknown. This may be due to the better understanding of the problems by the literate persons. Most of the depressive patients in our study come from joint family 141 (67.7%), only 67 (32.21%) comes from nuclear families. More than half of the participants were coming from a

small family size 115 (55.29%), 93(44.71%) patients had a larger family size (**Table 3**). In our study 131(62.9%) of the participants were having a low family income while 77(37.02%) had a family income of Rs 10000 and above (**Table 3**). In our study population, 163(78.3%) were employed as housewives, clerical and technical staff teachers, and others while 45(21.6%) were professionals before attaining 60 years (**Table 3**).

In the present study higher percentage of the participants are unemployed 142 (68.2%) and only 66 (31.7%) have a job (**Table 3**). In our study, 201(96.6%) patients do not have a family history of any type of psychiatric illness and 7(3.37%) only reported to have a family history (**Table 3**). It was found that among the depressive patients only a few 19(9.13%) had a history of past psychiatric illness and 189 (90.8%) do not have any past history in the current study (**Table 3**). History of substance abuse was studied in the depressive patients and the data showed that 14 (6.73%) were reported to have substance abuse while 194(93.27%) do not have any history (**Table 3**). It was also found that only 23(11.06%) depressive patients spend their day with someone, 185(88.9%) do not have any companion (**Table 3**) and the results state that a larger group of the patients 197 (94.7%) do not have anyone to confide in where

202(97.12%) do not make any new friends, only a very few 6(2.88%) makes new friends (**Table 3**).

In order to find out if death was a cause of depression in the patients, the death of any family members of the depressive patients was enquired and 121 (58.17%) stated true while 87 (41.8%) do state any death in their families (**Table 3**). When the disease condition was considered, 94 (45.19%) had a 1 or 2 medical condition, only a minor 8 (3.8%) proportion was not affected with any diseases, 74(35.55%) have more than 4 disease condition (**Table 3**) and on comparing the weight of the patients 138 (66.3%) do not have any weight change while 13(6.2%) had gained 10 Kg and 57(27.4%) had lost 10 Kg of their weight (**Table 3**).

When the past medical history of the patient was considered, 112(53.85%) of the patients were reported to have hypertension and while 96(46.15%) do not have any (**Table 3**). The cause of the index visit was a physical disorder in 98% while a psychiatric disorder was observed in 2% of patients. The most common physical diagnosis as per the case records was hypertension, osteoarthritis, diabetes mellitus, constipation, bronchial asthma, and anemia. Subjects having a physical diagnosis of predominantly hypertension suffered more from psychological distress (58.6%) as compared to the other physical

diagnoses (42.4%). Among the depressive patients, a majority of 124(59.6%) do not require any assistance for doing various activities and 31(14.90%) of the patients required assistance for doing more than 3 kinds of activities (**Table 3**).

The sleep pattern of the patients was studied and showed that 143(68.7%) had difficulty in falling asleep and only a minor proportion of patients 65(31.25%) gets good sleep (**Table 3**) and when it comes to waking up early 114(54.8%) patients used to wake up too early than their normal sleeping time and 94(45.19%) do not wake up too early (**Table 3**). 26(12.5%) elders, who were detected to have depression forgets to take medication on time or while the rest 182(87.5%) do not have any such difficulties (**Table 3**). This study results showed that the prevalence rate of depression in the study area is significantly high among the elderly population. The sample size of the study was small, so larger-scale studies are required for a better representation result. And also, further detailed study needs to confirm the association between factors and depression and also randomized trials to required assess intervention. In our study, the overall (GDS score >8) prevalence rate is 54.45%. A review work conducted by Barua *et al* [8] reported an 18.2% prevalence of overall depression in Indian elders. In our study area, the prevalence is higher than the

overall depression prevalence in Indian elders. A study was conducted by Sinha *et al* [9] in Sembakkam, Tamilnadu, India reported the prevalence rate of 57.3%. A similar study was conducted by Ravindra *et al* [10] at Mangalore reported 84.97% prevalence.

Our study showed a significant relationship between gender and depression. Various studies have consistently reported a higher rate of depression in elderly females. A critical review published by Piccinelli M and Wilkinson G [11] reported that adverse experiences faced by women in their childhood and adolescence period, social and cultural variables, psychological aspects related to exposure to life and coping skills are likely might be the cause for these gender variability [11]. Our study showed no significant relationship between age and prevalence of depression. These results may be due to the gradual decline in the number of persons surviving with increasing age (life expectancy - 68.8 in India, according to 2018) [12]. In our study elderly people living with a spouse had less affected by depression. A meta-analysis published by X-Y Yan *et al* [13] reported that compared with married elders ( $\geq 55$  years old), unmarried elders have more risk for depression (odds ratio [OR], 1.55; relative risk [RR], 1.36). And also, the widowed elders (OR 1.49; RR 1.71), divorced elders (RR 2.14) and unmarried

elders (OR 1.32) had a higher risk for depression compared with married elders. The authors finally concluded that being unmarried is a significant risk factor for depression in elders.

In our study population, the majority of elders are living in a joint family. The study reported that living in a nuclear family structure is a strong factor of depression in the elderly. This may be due to the existence of insufficient physical support for the management of age-related problems because of a lack of caregivers in the family. But in a joint family, the elderly have more chances to interact with caregivers/family members [14]. In our study, most of the participants were having a low family income. Differences in family income continuing to grow in most developing countries. The study reported the link between low levels of family income and mental illnesses and suicide attempts. The decrease in family income increases the risk of incident mental problems [15]. In the present study, the higher percentage of the participants are unemployed 142(68.2%). A study conducted by Prakash *et al* [16] reported the direct relationship between psychiatric problems and unemployment. The study indicated the positive relationship between unemployment with anxiety and depression. In our study, the majority of elders (96.6%) do not have a family history of any type of

psychiatric illness. The history of psychiatric illness is an important indicator of psychiatric problems, particularly for depressive disorders. Scott *et al* [17] reported the evidence for the relation between the presence of positive family history and depression.

## CONCLUSION

The prevalence of symptoms of depression in the elderly population under study was 54.45%. Depression in elders is a significant problem. These findings of the study would help to develop and implement effective health interventions for elders. By providing education to caregivers of elders, making available of trained counselors and providing better support systems setup for elders to interact with each other on a regular basis can reduce the depression in elders.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

- [1] World health organization. March 2018. Depression. Available <https://www.who.int/news-room/fact-sheets/detail/depression>. Accessed March 7, 2019.
- [2] World health organization. December 2017. Mental health of older adults. Available <https://www.who.int/news-room/fact->

- [sheets/detail/ageing-and-health](#). Accessed March 7, 2019)
- [3] A Barua, MK Ghosh, N Kar, MA Basilio. Prevalence of depressive disorders in the elderly. *Ann Saudi Med* 2011; 31: 620–624.
- [4] Ganguly M, Dubey 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.
- [5] Sheikh, J. I., & Yesavage, J. A. . Geriatric Depression Scale (GDS): Recent evidence and development of a shorter version. *Clinical Gerontologist: The Journal of Aging and Mental Health*, 1986; 5(1-2): 165–173.
- [6] Gary JK, Howard RK, Cynthia T, Wendy W, Helen M, Polly EB. Hierarchy of characteristics associated with depressive symptoms in an urban elderly sample. *Am J Geriatr Psychiatry* 1989; 146: 220-25.
- [7] Sandhya GI. Geriatric Depression and Related Factors –A Cross sectional Study from a Rural Community in South Kerala. *J Indian Acad Geriatr* 2010; 6: 61-63.
- [8] Barua A, Ghosh MK, Kar N, Basilio MA. Depressive disorders in elderly: An estimation of this public health problem *J Int Med Sci Acad* 2011; 24: 193-4.
- [9] Sinha SP, Shrivastava SR, Ramasamy J. Depression in an older adult rural population in India. *MEDICC Rev* 2013; 15: 41-4.
- [10] Ravindra YM, Poonam N, Shoeeb A, Abhay SN. Depression among the elderly: A cross-sectional study in an urban community. *Int J Med Sci Public Health*. 2017; 6(2): 318-322.
- [11] Piccinelli M1, Wilkinson G. Gender differences in depression. Critical review. *Br J Psychiatry* 2000; 177: 486-92.
- [12] World Bank. Life expectancy. <https://www.worldlifeexpectancy.com/india-life-expectancy>. Accessed May 05, 2019.
- [13] Yan XY1, Huang SM, Huang CQ, Wu WH, Qin Y. Marital status and risk for late life depression: a meta-analysis of the published literature. *J Int Med Res*. 2011; 39: 1142-54.
- [14] Taqui AM, Itrat A, Qidwai W, Qadri Z. Depression in the

elderly: Does family system play a role? A cross-sectional study  
BMC Psychiatry. 2007; 7:57.

- [15] Sareen J, Afifi TO, McMillan KA, Asmundson GJ. Relationship between household income and mental disorders: findings from a population-based longitudinal study. *Arch Gen Psychiatry* 2011; 68(4): 419-427.
- [16] Prakash S. Profile of psychiatric disorders and life events in medically ill elderly: experiences from geriatric clinic in Northern India. *Int J Geriatr Psychiatry*. 2007; 22: 1101–05.
- [17] Scott M. Monroe, George M. Slavich, and Ian H. Gotlib, Life Stress and Family History for Depression: The Moderating Role of Past Depressive Episodes, *J Psychiatr Res*. 2014; 49: 90–95.