

# Prevalence of Depression and Associated Risk Factors among the Elderly Population attending Government Medical College Hospital of North Karnataka: A Cross-Sectional Study

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## Abstract

**Background:** Depression among the elderly is a critical public health issue that significantly impairs physical health, cognitive functioning, daily activities, and social interactions. However, it often remains underdiagnosed and inadequately treated in this age group, exacerbating its impact on their overall quality of life. Recognizing the growing concern, this study aims to estimate the prevalence of depression and identify associated risk factors among individuals aged above 60 years attending a Government Medical College Hospital in North Karnataka.

**Methods:** This cross-sectional study was conducted at tertiary care hospital, BIMS, Belagavi. A total of 400 study participants were randomly selected and interviewed using a structured questionnaire which consisted of socio-demographic profile and The Geriatric Depression Scale (GDS) scale. GDS, a validated self-report assessment tool was used to assess depression. Statistical analysis, including chi-square test was used to determine association between depression and socio-demographic risk factors.

**Results:** A total of 400 geriatric subjects participated in our study. Majority of them were females (54.5%) and from rural area (64.5%). The overall prevalence of depression was found to be 21.25%. Depression was more prevalent among females, rural residents, and individuals staying alone or widowed. Illiteracy and presence of chronic disease were associated with higher rates of depression. Significant associations were found between depression and socio-demographic variables like gender, residence, marital status, literacy and presence of chronic illness.

**Conclusion:** This study highlights high prevalence of depression among geriatric population with various socio-demographic factors playing a role in its occurrence. Early recognition and appropriate interventions for depression in the elderly are crucial to prevent adverse consequences and improve overall quality of life.

**Keywords:** Depression, Geriatric, prevalence, elderly healthcare.

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## Introduction

Depression is not a natural part of aging.<sup>1</sup> Depression is often reversible with prompt recognition and appropriate treatment. However, if left untreated, depression may result in the onset of physical, cognitive, functional, and social impairment, as well as decreased quality of life, delayed recovery from medical illness and surgery, increased health care utilization, and suicide.

The GBD 2019 study found that the global burden of mental disorders, including depression, has increased significantly from 1990 to 2019. Specifically, mental disorders were among the top ten leading causes of DALYs worldwide, with no significant reduction in burden observed since 1990. The study also highlighted that depressive disorders remain a major contributor to global health challenges, with incidence rates remaining high, especially among women.<sup>2</sup> Depression is the most common psychiatric disorder among the elderly and although India is the most populous country in the world in terms of elderly population >60 years of age, depression in the elderly is not yet perceived as an important health problem in the country.<sup>3</sup> Significant predictors for depression found among the elderly in the studies conducted previously were urban residence, female sex, increasing age, nuclear family, illiteracy, and poverty. A meta-analysis of the risk factors of depression in the elderly found bereavement, sleep disturbance, disability, prior depression, and female gender to be significant risk factors for depression.<sup>4-8</sup> However, a study on community-dwelling elderly in Tamil Nadu found that age, female gender, cognitive impairment, and disability status were not significantly associated with geriatric depression.<sup>8</sup> hence, there is need to enquire into the prevalence of depression in the geriatric population. It was against this backdrop of importance of depression coupled with lack of community-based studies in these subjects i.e. geriatric population, in this part of India that prompted us to take up the present study.

## OBJECTIVE

To estimate the prevalence of depression and identify the associated risk factors in the elderly population.

## Methods

A cross sectional study was carried out at Government Medical College Hospital which is a government tertiary care hospital attached to medical college, BIMS, Belagavi. The study was conducted during two months. The estimated sample size was 400 with prevalence assumed to be 50% and 10% relative error of prevalence. All the patients above 60 years of age attending our hospital were included in the study after taking informed consent. Individuals who were living with hearing impairments, diagnosed psychiatric conditions (such as schizophrenia or intellectual disabilities), or neurological disorders (including Parkinson's disease, severe head injuries, or brain tumors) at the time of the study were not included. All 400 randomly selected geriatric study participants were interviewed using a pre-tested, pre-designed, structured questionnaire containing various socio-demographic parameters. Depression was assessed using the 15-item Geriatric Depression Scale (GDS), which is a 15-item self-report assessment used as a basic screening measure of depression in the elderly.<sup>9</sup>

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.<sup>10</sup> Moreover, the presence of a major depressive episode among elderly home-bound adults can be reliably detected. Hence, this scale is better suited in identifying depression in the elderly.<sup>11</sup> Those with a GDS score 5 or more were categorized as depressed. Using this cut-off, a high sensitivity and specificity of the 15-item GDS has been reported.<sup>12</sup>

Approval of the Institutional Ethics Committee has been obtained prior to commencement of the study.

## Statistical analysis

Data was entered and tabulated using SPSS version 22.0. Summary figures like rates, ratios, and percentages were used for statistical analysis. The Chi-square test was used to find the association between depression and socio-demographic risk factors.

**Results**

A total of 400 geriatric subjects were included in the study. The majority 218 (54.5%) of participants were females, 258 (64.5%) of them were from rural area, 186 (46.55%) of them belonged to 66-70 years of age, 224 (56%) and 236 (59%) of them were married and illiterate respectively, 285 (71.25%) were from nuclear family. (Table 1)

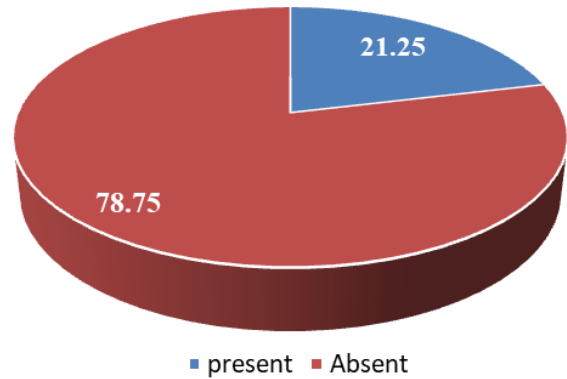
The prevalence of depression was found to be 21.25% among the study participants as shown in Figure 1. Depression was more among females (25.68%), rural population (24.08%) and those staying alone or widow (35.22%). The prevalence of depression was found to increase with age. We found that depression was more among illiterate (35.36%) and those with presence of chronic illness (27.6%). We found significant association between depression and various socio-demographic variables likeresidence, gender, marital status, literacy, and presence of chronic illness. (Table 2)

**Table 1: Distribution of socio-demographic profile**

Variable		Frequency (%)
Age	60-65	148 (37)
	66-70	186 (46.55)
	71-75	46 (11.5)
	76-80	20 (5)
Gender	Male	182 (45.5)
	Female	218 (54.5)

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Residence	Urban	142 (35.5)
	Rural	258 (64.5)
Marital status	Married	224 (56)
	Unmarried/ widow	176 (44)
Type of family	Nuclear	285 (71.25)
	Joint	115 (28.75)
Education	Literate	164 (41)
	Illiterate	236 (59)
Working status	Working	184 (46)
	Not working	216 (54)
Monthly Per capita Income	<= 1000rs	358 (89.5)
	>1000rs	42 (10.5)
Chronic Illness	Present	224 (56)
	Absent	176 (44)



**Figure 1: Prevalence of depression. (n=400)**

**Table 2: Association between Depression and socio-demographic variables. (n=400)**

Variable		Depression		Chi square value	p value
		Present	Absent		
Age	60-65	23	125	5.08	0.166
	66-70	44	142		
	71-75	12	34		
	76-80	06	14		
Gender	Male	29	153	5.63	0.018
	Female	56	162		
Residence	Urban	21	121	5.49	0.019
	Rural	64	194		
Marital status	Married	23	201	36.68	<0.001
	Unmarried/ widow	62	114		

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Type of family	Nuclear	63	222	0.432	0.51
	Joint	22	93		
Education	Literate	58	106	33.095	<0.001
	Illiterate	27	209		
Working status	Working	36	148	0.576	0.447
	Not working	49	167		
Monthly Per capita Income	<= 1000rs	79	279	1.358	0.244
	>1000rs	06	36		
Chronic Illness	Present	62	162	12.571	<0.001
	Absent	23	153		

### Discussion

In the present study, the prevalence of depression was found to be 21.25%. The prevalence was significantly higher in the rural residents, females, older elderly (in the age group of 76-80 years), those living alone without a spouse i.e. unmarried or widowed, nuclear families, illiterates, those not working, in the poor with monthly per capita income of <Rs.1000 and those with some chronic disease like hypertension, diabetes mellitus, asthma, cardiac and renal diseases. In the present study, the association between depression and residence, sex, marital status, educational status and chronic illness was found to be statistically significant.

Studies have revealed that the prevalence rates for depression in community samples of elderly in India vary from 6 to 50%.<sup>13</sup> The prevalence has been reported to be 45.9% in the urban slums of Mumbai,<sup>14</sup> 29.36% in the urban slums of Dharwad district, Karnataka,<sup>15</sup> 31.4% in a rural population of Ahmednagar, Maharashtra,<sup>16</sup> and 12.7% in a cross-sectional study of 1000 elderly in Vellore, Tamil Nadu.<sup>17</sup>

In the present study, the prevalence of depression was found to be significantly more in elderly females (25.68%) than in the male subjects (15.93%). Ramachandran et al., study observed that depression was significantly more frequent in females than in males, which was similar to the findings of the present study.<sup>18</sup>

In the present study, the prevalence of depression was found to increase with increasing age. Some of

the reasons for increase in the prevalence after the age of 60 years may be an increased economical and physical dependency, loss of the spouse, negligence by the family members and loss of self-esteem. Similar findings were found in Jariwala Vishal et al's and Raj Kumar et al's studies.<sup>19,20</sup> The subjects who were living alone i.e. unmarried or widowed had a significantly high prevalence of depression (35.22%) as compared to the other subjects. A low prevalence was found among the subjects who lived with their spouses and children. This reflected 'the loss of spouse' as one of the most important factors which were responsible for the increased prevalence of depression. The negligence by children, feeling of loneliness, a poor status in the family and a sense of insecurity may be the reasons for the increased prevalence of depression in these subjects as compared to those in those who were living with their spouses and children. Several studies also found that the prevalence of depression was significantly high among the elderly who lived alone.<sup>21,22</sup>

In the present study, there was an increase in the prevalence of depression from the higher to the lower socio-economic status. The prevalence was high among the subjects who were having a monthly per capita income of Rs. 1000. The increase in the prevalence among the subjects of the lower socio economic status reflect the role of economic dependency and thereby, negligence by the family members. The associated high prevalence of illiteracy in this group might be an additional factor for the increased economical dependency. Similar findings were also observed in Raj kumar et al., Ramachandran et al., and Jain RK's studies.<sup>23-25</sup>

## Conclusion

The prevalence of depression among the study participants was found to be 21.25%, with significant associations observed between depression and socio-demographic factors such as rural residence, female sex, increasing age, loss of spouse, nuclear family, illiteracy, dependency on others, and the presence of chronic illnesses. With the increasing longevity and a rising proportion of the elderly population in India, coupled with the trend towards urbanization and nuclear family setups, depression among the elderly is poised to become a prominent public health concern.

### Implications for Public Health and Community Medicine Professionals:

This study underscores the urgent need for community medicine professionals to prioritize mental health screening in elderly care, integrate mental health interventions into primary healthcare, and raise awareness about geriatric depression among healthcare providers and caregivers. Public health initiatives targeting early detection and management of depression in elderly populations, especially in rural and underserved communities, could significantly improve their quality of life and reduce the burden on healthcare systems.

### Limitations of the Study:

The study's cross-sectional design limits the ability to establish causality between identified risk factors and depression. Additionally, the use of a single hospital-based sample may not fully represent the broader elderly population, particularly those not seeking medical care. The reliance on self-reported data could also introduce bias, as participants may underreport or inaccurately recall their symptoms and socio-demographic details.

### Recommendations

The National Programme for Health Care of the Elderly (NPHCE) and its efforts to address elderly healthcare, including depression exists. However, our study highlights gaps at the community level, especially in rural and underserved areas where mental health services are often limited.

To enhance the NPHCE, we propose:

1. **Community-Level Screening:** Train health workers to screen for depression and integrate this into existing outreach services.
2. **Accessible Mental Health Services:** Implement telemedicine, mobile clinics, and mental health camps to reach underserved areas.
3. **Support for High-Risk Groups:** Develop support groups, psychoeducation, and caregiver training for vulnerable elderly populations.
4. **Monitoring and Evaluation:** Regularly assess the NPHCE's reach and impact to identify barriers and refine strategies.

These enhancements would complement NPHCE efforts, making it more effective in addressing elderly depression at the grassroots level.

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**Declaration of conflicts of interest statement:** Nil

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