ORIGINAL RESEARCH ARTICLE
pISSN 0976 3325 | eISSN 2229 6816
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www.njcmindia.org
DOI: 10.55489/njcm.1332022388

Geriatric Depression and Its Association with Geriatric Malnutrition: A Cross-Sectional Study in Hubballi, North Karnataka

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ABSTRACT

Background: The world's elderly population is increasing rapidly. According to the 2011 censuselderly population contributes to 7.4% of the total population. Both physical and mental disorders are prevalent among the elderly. Symptoms of depression in older people are often overlooked and untreated. Depression leads to loss of appetite, diminution of food intake, and weight loss consequently leading to malnutrition.

Methodology: A community-based cross-sectional study was conducted among the geriatric population of urban field practice area using a predesigned, semi-structured questionnaire. Geriatric Depression was assessed using Geriatric Depression Scale and Nutritional Status using the Mini Nutritional Assessment Scale. House to house survey of the Geriatric population was conducted after obtaining written consent.

Results: Out of 260 participants, 51.5% of the population were males, 49.2% of the population belonged to 60-69 years age group and 16.9% of them were more than 80 years of age. The prevalence of geriatric depression was 68.5 %,). The majority (64%) of the elderly population were at risk of malnutrition. Depression scores were negatively correlated with nutritional scores.

Conclusion: The prevalence of depression and malnutrition was considerably high among the elderly population. Malnutrition among the elderly is a significant determinant of malnutrition.

Keywords: geriatric depression, malnutrition, elderly, mental health

INTRODUCTION

Aging is not a disease. Aging is a developmental process. In recent years because of socio-economic development and improvement in health care provision, there is a dramatic increase in life expectancy and increase in the number of people aged 60 years and above.[1,2]

According to the census of India elderly population was 5.6 % of the total population in 1961 and in the 2011 census, the elderly population contributed to 7.4%, the pace of population aging is much faster than in the past.[3]

WHO estimated that by 2050, the world's elderly population will nearly double from 12% (2015) to 22%[1]. According to the World health organization, Healthy Ageing is "the process of developing and maintaining the functional ability that enables well-being in older age".[2]

Aging occurs as a result of the accumulation of a wide variety of biological damage at the molecular and cellular level resulting in a decrease in physical and mental capacity and an increase in the risk of

How to cite this article: Nekar MS, Joshi AR, Bant DD. Geriatric Depression and Its Association with Geriatric Malnutrition: A Cross-Sectional Study in Hubballi, North Karnataka. Natl J Community Med 2022;13(3):133-138. DOI: 10.55489/njcm.1332022388

Financial Support: None declared | **Conflict of Interest:** None declared | **Date of Submission**: 20-01-2022 | **Date of Acceptance**: 31-01-2022 | **Date of Publication**: 31-03-2022

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disease and finally death.[2] These changes do not occur in the same way among all, along with these biological factors many other factors have a considerable role in the aging process such as life transitions like retirement, lifestyle, and support from the family, friends, and partners[4,5]. Elderly populations not only face physical problems but also mental health problems as well as social problems. In countries like India, only physical wellbeing is considered and mental disturbances are neglected by the individuals as well as clinicians.[5,6]

As per the National Mental health survey (2015) report about 15.1% of the population aged 60 years and above report one or the other mental health disorder.[7]

Lack of psychological support from the family members, financial dependence, presence of co-morbidities, loneliness contributes to the mental health problems[6]. Depression being the most common mental illness, it is very much underreported and neglected among the geriatric population. Decreased quality of life and increased physical, economic dependence and social withdrawal during the aging result in mental health problems.[8,9]

The most common symptoms of depression include loss of interest, sadness, and the inability to carry out the activities of daily living[7,8]. They may also complain of loss of energy, excessive or lack of sleep, loss of appetite, restlessness, feeling of worthlessness and hopelessness, self-harm, and suicidal tendencies. Depression and Malnutrition are associated with each other, depression led to loss of appetite leading to under nutrition, and malnutrition lead to depression by increasing the vulnerability of the elderly population.[10]

Diagnosis and management of depression improve the appetite and the nutritional status, improved nutrition is associated with better psychological and mental health.[10,11]

The majority of the geriatric population will have one or the other age-related physical health problems and co-morbidities. Healthy aging is not the absence of disease or infirmity; it's about how well the individuals cope with these problems and maintain a good quality of life while ageing[1]. Healthy aging requires the environment and opportunities that help the people to be and do what they value throughout their lives.[2]

Gerontology is in the initial stage in India only sporadic data has been collected on the mental health condition of the elderly in India. National Programme for Health Care of the Elderly (NPHCE) and National Mental Health Programmes (NMHP) are aiming at promoting the good physical and mental health of the elderly population.

As there are very few studies in this regard, the present study was conducted to assess the prevalence of depression and malnutrition among the geriatric population and the association between them. Other factors contributing to geriatric depression were also assessed.

OBJECTIVES

The research was undertaken to study the prevalence of depression and malnutrition among the geriatric population, and to assess association the between depression and malnutrition. This study also assessed factors determining geriatric depression.

MATERIALS AND METHODS

A community-based cross-sectional study was conducted among the elderly population residing in Hubli during 2018. The residents aged 60 years and above residing in the field practice area of the Department of Community Medicine, KIMS, Hubballi who give consent for the study were included, Individuals with debilitating illnesses and already diagnosed psychiatric illness on treatment were excluded from the study. A predesigned, pretested, and a semi-structured questionnaire consisting of the socio-demographic profile, Geriatric Depression Scale, and Mini Nutritional Assessment scale was used for the study. The study was approved by Institutional Ethics Committee.

Sample Size Estimation: In a study conducted by Sanjay T V in Bengaluru[12], the prevalence of Geriatric depression was 36% with p=0.36 and q=0.64, and d=0.06 at 95% confidence interval, the sample size was calculated using the formula,
$N = 1.96^2 \cdot pq/d^2$

Method of Data Collection: Urban health training center, Banati Katta, Old Hubli, is the urban field practice area of the Department of Community Medicine consisting of 3 wards of Hubli Dharwad Municipal Corporation. House to House Survey was conducted in the field practice area. Systematic random sampling was used for the selection of the houses. An equal number of the elderly population was interviewed from all the 3 wards after obtaining written consent in the regional language. Height, mid-arm circumference, calf circumference was measured using the standard measuring tape and were calibrated to ±1cm. Weight was measured using a digital weighing scale. Privacy was ensured throughout the interview and examination.

Geriatric Depression Scale (GDS)[13]: GDS is a screening tool, originally developed by J A Yesavage and colleagues in 1982. There are 2 versions of GDS-Long form and short form. GDS- S: Short form consisting of 15 items. Score<4 is normal and 5-9 suggestive of depression, 10-15 is indicative of depression, score > 5 is considered as depression for the analysis with scores of 5-8 being mild depression; 9-11 indicate moderate depression; and 12-15 indicate severe depression.

Mini Nutritional Assessment[14,15]: The MNA® was first developed in 1991 and published in 1994, and

1996 in Nutrition Reviews. The MNA® is a validated nutrition screening and assessment tool that can identify geriatric patients who are malnourished or at risk of malnutrition.

It is divided into five groups: a. Anthropometric measurement (Height, Weight, Mid Arm Circumference, Calf circumference), b. Functionality (mobility, autonomy of eating, independent living), c. General assessment (Acute disease, medication, neuropsychiatric problems), d. Diet information (protein intake, milk, and milk products intake), e. Subjective assessment (self-perception of health and nutritional status). The maximum score for the full MNA® is 30 points; a higher score indicates better nutritional status, subjects are categorized as normal or well-nourished (≥24 points), at risk of malnutrition (17–23.5) and undernourished (<17)

Data Analysis: Data was entered in MS Excel; Statistical analysis was done using SPSS 21 software. Suitable descriptive and inferential statistics were used for the study.

RESULTS

Socio-demographic Profile: Out of 260 participants, 51.5% of the population were males, 49.2% of the population belonged to 60-69 years age group and 16.9% of them were more than 80 years of age (Table 1)

The majority (48.5%) of them was married and living with a spouse, 32.5% of them were widowed /divorced. The majority of them lived in Joint families. About 8.8% of them were currently working. About 64.6% of the elderly population was literate. About 46.9% of the geriatric population did not have any co-morbidity.

Geriatric depression and Malnutrition: The prevalence of geriatric depression was 68.5%, about 42.7% of the geriatric population had mild depression, 16.2% had moderate and 9.6% of them had severe depression. The majority (64%) of the elderly population were at risk of malnutrition and 16% were malnourished.

Pearson correlation test was performed to assess the association between GDS Scores and MNA Scores; it showed a significant negative correlation with the correlation coefficient of -0.453. (Figure 1)

Independent t-test and ANOVA tests were performed to assess the association between the socio-demographic and the risk factors for geriatric depression (Table 2 and Table 3).

Current working status and the residence showed a significant difference in the mean scores of GDS with low scores among the currently working geriatric population (Table 2). Geriatric depression was significantly associated with the nutritional status of the geriatric population, geriatric depression scores were significantly different among the normal individuals and malnourished individuals, the scores were high among the malnourished individuals and individuals at risk of malnourishment when compared to the individuals with normal nutritional status. When post hoc tests were performed for assessing the association between the different groups of malnutrition and geriatric depression, there was a significant difference between the depression scores among all the 3 groups. (Table 4)

Table 1: Socio-demographic details of the geriatric population

Variables	Cases (%)
Age group	
60-69 years	128 (49.2)
70-79years	88 (33.8)
≥ 80 Years	44 (16.9)
Gender	
Male	134 (51.5)
Female	126 (48.5)
Residence	
Urban	171 (65.8)
Urban Slum	89 (34.2)
Marital status	
Married (living with spouse)	161 (61.9)
Unmarried	14 (5.4)
Widowed/ Divorced	85 (32.7)
Type of family	
Nuclear	68 (26.2)
Joint	146 (56.2)
Three Generation	31 (11.9)
Others	15 (5.8)
Working status	
Non- working	237 (91.2)
Working	23 (8.8)
Religion	
Hindu	143 (55.0)
Muslim	93 (35.8)
Others	24 (9.2)
Life style	
Lives alone	32 (12.3)
Lives With Children	207 (79.6)
Lives With Others	21 (8.1)
Education	
Illiterate	92 (35.4)
Literate	168 (64.6)
Socio-economic status	
Upper class	79 (30.4)
Upper Middle Class	50 (19.2)
Middle Class	62 (23.8)
Lower Middle Class	43 (16.5)
Lower Class	26 (10.0)
Addictions*	
None	195 (75)
Alcoholic	17 (6.53)
Smoking	19 (7.3)
Tobacco Chewing	35 (13.46)
Co-morbidities	
Nil	122 (46.9)
Hypertension	57 (21.9)
Diabetes Mellitus	20 (7.7)
HTN And DM	36 (13.8)
Others (Thyroid Disorders,)	25 (9.6)

*Multiple responses

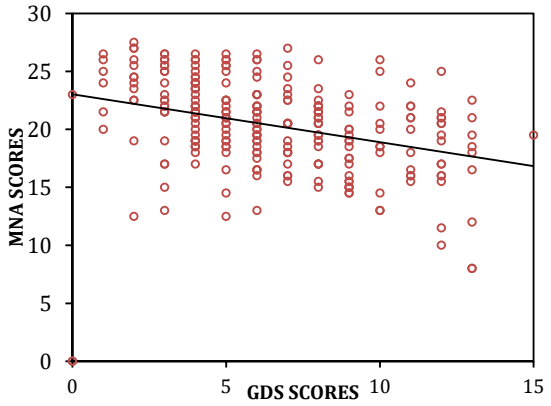

Fig 1: Scatter Plot showing the association between GDS Scores and MNA scores

Table 2: Independent T-test showing the association between GDS and Socio-demographic factors

Variables	N	Mean ±SD	P value
Gender			
Male	134	6.51±3.25	0.95
Female	126	6.53±3.02	
Working status			
Working	23	5.48±2.19	0.030*
Not working	237	6.62±3.19	
Literacy status			
Illiterate	92	7.02±3.34	0.055
Literate	168	6.24±2.99	
Residence			
Urban	171	6.18±2.96	0.016*
Urban slum	89	7.17±3.36	
Co morbidities			
Yes	57	6.28±3.29	0.516
No	203	6.59±3.09	

SD=Standard Deviation

Table 3: ANOVA Test showing the association between the geriatric depression and factors determining the depression

GDS	N	Mean± SD	P Value
Age group			
60-70 years	128	6.26 ±3.14	0.223
70-80 years	88	6.56±3.11	
> 80 years	44	7.20±3.13	
Marital status			
Married and staying with Spouse	161	6.19±2.97	0.03*
Unmarried	14	8.29±2.55	
Divorced/ widowed	85	6.83±3.42	
Life style			
Staying alone	32	8.5±3.84	0.001*
Staying with family	207	6.21±2.98	
Staying with others	21	6.62±2.36	
Malnutrition			
Normal	53	4.36±2.51	0.001*
Risk of malnourishment	167	6.68± 2.92	
Malnourished	40	8.70±3.01	
Socio-economic status			
Class I	79	5.78± 2.78	0.113
Class II	50	6.78±3.03	
Class III	62	6.87±3.15	
Class IV	43	6.53±3.26	
Class V	26	7.38±3.79	

SD=Standard Deviation

The marital status, the lifestyle of the geriatric population was also significantly associated with geriatric depression. (Table 3) Post hoc tests for marital status and GDS showed a significant difference in the scores among married and living with the spouse and unmarried individuals. (Table 4)

DISCUSSION

In the present study, the prevalence of geriatric depression was 68.5%, majority of the elderly population had mild depression (42.7%), and this is similar to a study conducted by Thilak S. A[6], in Kannur, Kerala, in which the prevalence of geriatric depression was 72.4%, In a study conducted by TV Sanjay[12] in Bangalore, the prevalence of geriatric depression was 36%. In a study conducted by Suraj Chawla[16], the prevalence was 22.72%. This variation in the prevalence may be because of differences in geographical areas and culture.

In this study, prevalence of malnutrition was 16%, with 64 % of the population, at risk of malnutrition, in a study conducted by Anil C Mathew[17] in Tamil Nadu, 24.73% of the population were at risk of malnutrition and 19.47% of them were malnourished. Similar findings to the present study were obtained by Yuvaraj Krishnamoorthy[18], 17.9% and about 58.8% of the population were malnourished and were at risk of malnutrition respectively.

The Pearson correlation test was conducted to assess the correlation between the Geriatric depression scale (GDS) scores and Mini Nutritional Assessment Scale (MNA) Scores. A significant negative correlation was observed, which means poor MNA Scores had higher depression Scores, which signifies that nutritional status is one of the important contributing factors for geriatric depression.

A study conducted by Bhardwaj Mamta[19] in Delhi, showed that the prevalence of depression was 77% and that of Malnutrition was 37% and 39% were at risk of malnutrition and the geriatric population who were malnourished and were at risk of malnutrition reported higher depressive symptoms. A study by Yogesh Mohan[4] in Chennai showed that the prevalence of depression was 76%, the depression was more among those who had lost their spouse and also who were physically dependent on others.

In a study conducted by Birpal Kaur[20] in Faridkot, Punjab, according to MNA Scale, the prevalence of Malnutrition was 13.1% and 35.2% were at risk of malnutrition. According to GDS Scale, 28.9% had mild depression and 9.8% had severe depression, and there was a significant association between nutritional status and geriatric depression.

Above studies show that malnutrition and at risk of malnutrition acts as a major determinant of Geriatric depression, despite this, the actual association whether the depression is causing malnutrition or malnutrition is causing depression is still unanswered.

Table 4: Post Hoc tests of ANOVA: Association between the different groups

Group 1	Group 2	Mean Difference	P value
Marital Status			
Married	Unmarried	-2.08696*	0.049
Married	Widowed/ Divorced	-0.63654	0.381
Unmarried	Widowed/ Divorced	1.45042	0.319
Lifestyle			
Staying with family	Staying alone	-2.29710*	0.0001
Staying alone	Staying with others	1.88095	0.087
Staying with family	Staying with others	-0.41615	1.000
Malnutrition			
Normal	Risk of Malnourishment	-2.32414*	0.0001
Normal	Malnourished	-4.34151*	0.0001
Risk of Malnourishment	Malnourished	-2.01737*	0.0001

In the present study, the factors determining the depression were assessed; there was no significant difference in the depression among the males and females, literacy status, presence of co-morbidities, age, and socio-economic status.

In the present study current working status (currently not working), residing in an urban slum, staying alone, married, and staying with the spouse had higher depression scores. Working status was one of the determinants as it improves the quality of life and minimizes loneliness, so the chance of depression is minimized.

Death or separation from the spouse also affected the psychological status of the elderly, staying with friends and family members showed a lesser depression when compared to staying alone.

Residing in urban slums with a lack of basic facilities and overcrowded environments also acts as a risk factor for depression as well as malnutrition.

CONCLUSION

The present study showed a higher prevalence of geriatric depression and geriatric malnutrition, and there is a strong negative association between depression and nutritional status. The factors determining the depression were the current working status, residence, staying with the family members, marital status. Despite the association between, depression and malnutrition, it is still unclear whether depression is the cause/ consequence of nutritional status; further studies are needed to determine the actual causation of depression and malnutrition.

RECOMMENDATIONS

Provision of primary mental health care services to the elderly population which enhances the early diagnosis and prompt treatment of psychological disorders among the elderly population. Providing Economic support for the elderly population. Creating a healthy environment and rehabilitation centres. Improving the nutritional status of the elderly population by improving the food security of the family and also proper psychological support from the family members. Integrating the mental health component with the other health programs for non-communicable diseases and the National program for Health care of the elderly.

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