Original Research Article

MORBIDITY PROFILE, DEPRESSION AND FUNCTIONAL ASSESSMENT AMONG GERIATRIC POPULATION IN A RURAL AREA OF CENTRAL KERALA

Nanditha Suresh[1], Jaya K V[2], Alok K P[3], Mohamed Althaf[1], Mansoor Abdul Muneer[1], Liya Mariya Thomas[1]

[1]Resident, Department of Community Medicine, Govt Medical College, Thrissur, Kerala, India
[2]Associate Professor (CAP), Department of Community Medicine, Govt Medical College, Thrissur, Kerala, India
[3]Junior Resident, Department of Community Medicine, Govt Medical College, Thrissur, Kerala, India

ABSTRACT

Background: India is undergoing a rapid demographic transition, with a significant rise in the elderly population. This aging demographic is vulnerable to multiple morbidities, functional limitations, and mental health issues, particularly depression. Region-specific data are crucial to formulate tailored healthcare strategies for the geriatric population. Objectives are to assess the morbidity profile, the prevalence and severity of depression using the Geriatric Depression Scale (GDS-15) and the functional ability using the Barthel Activities of Daily Living (ADL) Index among elderly individuals in a rural area of Thrissur district, Kerala.

Materials and Methods: A community-based cross-sectional study was conducted from November 15 to 28, 2019, among 80 elderly individuals aged $\geq$65 years using convenience sampling. Exclusion criteria included psychiatric illness, muteness, deafness, and cognitive disorientation. Data were collected using a structured, interviewer-administered questionnaire, GDS-15, and Barthel ADL Index. Data were analyzed using SPSS. Statistical associations were tested using chi-square, with $p < 0.05$ considered significant.

Results: The most prevalent morbidities were visual impairment (86.2%), musculoskeletal disorders (68.8%), hypertension (50%), diabetes (46.2%), and gastrointestinal disturbances (36.2%). Depression was observed in 28.9% of participants, more common among males (32.4%) than females (26.1%). Significant associations were found between depression and the presence of NCDs ($p = 0.009$), functional dependency ($p = 0.016$), being bedridden ($p = 0.001$), frequent falls ($p = 0.010$), urinary problems ($p = 0.033$), gastrointestinal diseases ($p = 0.000$), and musculoskeletal diseases ($p = 0.033$). Nearly half (48.8%) of the elderly were dependent in some form for daily activities.

Conclusion: The study highlights a high burden of morbidities and a notable prevalence of depression among the rural elderly, with strong links to physical dependency and chronic illnesses. Given the limited geographic scope and sample size, larger-scale studies and targeted geriatric health interventions are urgently needed to promote healthy aging and functional independence.

Keywords: Elderly, Depression, Morbidity, Dependency.

INTRODUCTION

India is currently experiencing a rapid demographic transition characterized by an increasing elderly population, estimated to be around 104 million individuals aged 60 years and above.[1] This substantial growth in the aging population presents significant challenges to the healthcare system and social support structures. Older adults are vulnerable to a distinct spectrum of health issues, including a high prevalence of non-communicable diseases (NCDs), multiple comorbidities, and mental health disorders, which complicate their overall health status.[2]

Among the mental health concerns, depression is particularly prevalent, affecting between 8% and

22% of the elderly in India.[3,4] Despite its frequency, depression remains largely underdiagnosed and undertreated, often due to overlapping somatic symptoms, stigma associated with mental illness, and limited access to geriatric mental health services.[5] Functional decline also constitutes a critical health challenge, as many elderly individuals suffer from restricted mobility, cognitive impairment, and physical disabilities that compromise their ability to carry out activities of daily living independently.[6]

Furthermore, the morbidity profile of the elderly population in India is complex, characterized by a dual burden of communicable and non-communicable diseases. Cardiovascular diseases, chronic respiratory conditions, infections, hypertension, and diabetes are among the leading causes of morbidity and mortality in this age group.[7] Given these multifaceted health challenges, a comprehensive understanding of the medical, psychological, and social needs of the elderly is essential for designing effective healthcare interventions aimed at promoting healthy aging and improving quality of life.

Therefore, it is imperative to conduct region-specific studies that investigate the morbidity patterns, mental health status, and functional abilities of older adults. Such research will provide valuable insights into the specific healthcare and psychosocial support required by the elderly, enabling policymakers and healthcare providers to deliver care that respects their dignity and addresses their unique needs within families and communities.[8]

MATERIALS AND METHODS

This cross-sectional study was conducted to assess the morbidity profile, prevalence of depression, and functional ability among elderly individuals residing in a Panchayat of Thrissur district, Kerala, India. The objectives of the study were: first, to identify the morbidity patterns among the elderly; second, to evaluate the presence and severity of depression using the Geriatric Depression Scale (GDS-15); and third, to assess functional status using the Barthel Activities of Daily Living (ADL) Index. The study was conducted over a two-week period from November 15 to November 28, 2019, and data collection was completed over two days, November 22 and 23, 2019. The study population included male and female residents aged 65 years and above. Exclusion criteria included individuals who were mute or deaf, those diagnosed with psychiatric illnesses, or those with disorientation or memory loss. A convenience sampling method was used to recruit participants. The sample size was calculated as 80 using the formula $N = (Z\alpha)^2 pq / d^2$, with p = 79.9%, based on a previously reported prevalence of morbidity among the rural elderly in Kerala [9]. The first household with an eligible elderly resident was selected conveniently, and subsequent households were visited consecutively until the target sample size was reached. Informed consent was obtained from all participants prior to data collection, which was conducted in their homes to ensure comfort and compliance. The morbidity profile was assessed through a semi-structured oral questionnaire. Data were collected using a structured, interviewer-administered questionnaire, the Geriatric Depression Scale (GDS-15), and the Barthel ADL Index. For the GDS-15 scale, scores were interpreted as follows: 0–4 = normal, 5–8 = mild depression, 9–11 = moderate depression, and 12–15 = severe depression.[10] The Barthel ADL Index scoring was interpreted as follows: 0–20 indicated total dependency, 21–60 severe dependency, 61–90 moderate dependency, and 91–99 slight dependency.[11] A higher score was associated with greater independence. The Barthel Index has demonstrated high inter-rater and test-retest reliability, as well as good correlation with other measures of physical disability.[11] Operational definitions were adopted as follows: "elderly" was defined as individuals aged 65 years and above; depression was defined using the GDS-15 scale and categorized based on the scoring system described above; functional ability was assessed based on the Barthel Index score. All data were coded and entered into Microsoft Excel and later analyzed using Statistical Package for the Social Sciences (SPSS) software. Ethical approval was obtained prior to commencement of the study. Informed consent was obtained from all participants.

RESULTS

The Mean age was 73.61 years with SD 7.846 years. They were again divided into Young old (age 65-74years), Middle old (age 75- 84years), and Old old (age ≥85 years). Young old subjects were 62.5%, Middle old were 23.8% and Old were 13.8% of the population. In the study population 57.5% were females and 42.5% were males. Of the total study subjects 47.5% live in a joint family whereas 52.5% live in nuclear family. Of the total study subjects,61.3% are married and living with their spouse, while 36.3% are widowed and 2.5% are unmarried. Educational status of the study subjects show that 92.5% are literate and 7.5% are illiterate. Only 1 (1.3%) among them had professional level education. Of the 80 study subjects in the study population,11.3% are currently employed and the remaining 88.8%are not currently employed. Of the total study subjects, 95% were previously employed and 5% were unemployed. 36.3%of the total study subjects were homemakers.12.5% were involved in unskilled works, 11.3%were involved in each skilled and clerical/shop/farmer occupation,8.8% are were involved in semi professional and professional jobs and 6.3% were doing semi skilled occupation. Most (67.6%)of the study population were having Non priority ration cards, while 27.5% and 5% had priority and Andhyodaya Anna Yojana cards respectively. Of the study population, 60% of the

subjects avail social security schemes and 40% do not receive any social security schemes. Social security schemes available to the 60% of the study subjects include Retirement pension, Old age pension, Widow pension, Farmer's pension, Husband's pension. Of the total study subjects, 30% have barrier free housing. Barrier free housing include one or more features like non slippery stiles, European closets, attached bathroom, hand rails and ramps. 70% of the study subjects did not have any barrier free housing facilities.

Figure no 1 represents the morbidity profile among the study subjects with gender- wise distribution.
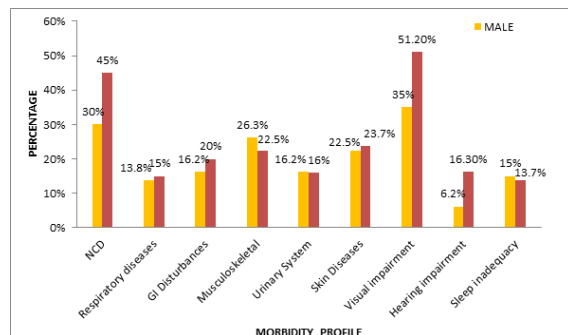

Figure 1: Morbidity Profile of Study participants

Prevalence of depression was measured using Geriatric Depression Scale and was found to be 28.9% among the study population (n=80). According to this scale depression is classified as no depression (0-4), mild (5-8), moderate (9-12) and severe (13-15) in figure no.2.
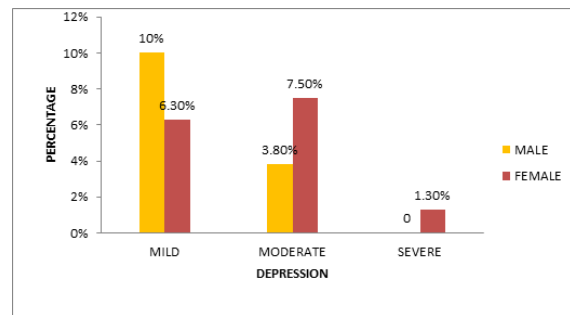
Figure 2: Gender-Wise Distribution of Depression

Figure no.3 shows that 48.8% of the elderly are dependent in some way to do their daily activity
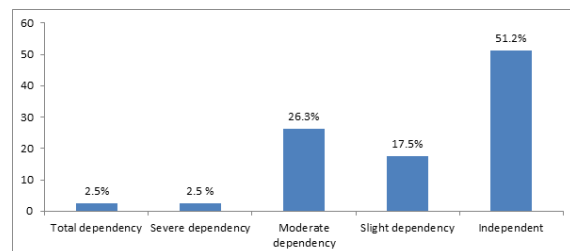
Figure 3: Degree of dependency

Association of depression between various factors like gender, age group, presence of NCD, dependency, bed ridden, frequent falls, urinary problems, GIT diseases, musculoskeletal diseases and skin diseases is discussed below. The following table [Table 1] shows the association between depression and gender. This study depression was found to be higher among males (32.4%) compared to females (26.1%).

Table 1: Association between gender and depression

Sl no	Gender	Depression		Total N(%)	p value
		Yes N (%)	No N (%)		
1	Male	11(32.4)	23(67.6)	34(100)	0.540
2	Female	12(26.1)	34(73.9)	46(100)	
3	Total	23(28.8)	57(71.2)	80(100)	

Table 2: Association of Depression with Age Group

Sl no	Age group	Depression		Total N (%)	p value
		Yes N (%)	No N (%)		
1	Young old	13(26)	37(74)	50(100)	0.752
2	Middle old	6(31.6)	13(68.4)	19(100)	
3	Old old	4(36.4)	7(63.6)	11(100)	
4	Total	23(28.8)	57(71.2)	80(100)	

In this study [Table 2] depression was found to be higher among old old age group (36.4%) while it was lesser among young old (26%).

[Table 3] shows associations between presence of NCD and depression. In this study depression was found in 36.7% among the persons with presence of NCD which was statistically significant.

Table 3: Association of depression with presence of NCD

Sl no	Presence of NCD	Depression		Total N (%)	p value
		Yes N (%)	No N (%)		
1	Present	22(36.7)	38(63.3)	60(100)	0.009*
2	Absent	1(5)	19(95)	20(100)	
3	Total	23(28.8)	57(71.2)	80(100)	

*p value<0.05 and have statistical significance

[Table 4] shows association between dependency and depression. The study depicts depression increases with dependency. Persons with severe dependency shows higher depression (100%).

Table 4: Association of Depression with Dependency

Sl no	Dependency	Depression		Total N (%)	p value
		Yes N (%)	No N (%)		
1	Total dependency	1(50)	1(50)	2(100)	0.016*
2	Severe dependency	2(100)	0(0)	2(100)	
3	Moderate dependency	10(47.6)	11(52.4)	21(100)	
4	Slight dependency	3(21.4)	11(78.6)	14(100)	
5	Independent	7(17.1)	34(82.9)	41(100)	
6	Total	23(100)	57(100)	80(10)	

*p value<.05 and have statistical significance

[Table 5] shows association between bed ridden and depression. The study depicts all the bed ridden persons have depression which was found to be statistically significant.

Table 5: Association of Depression with Bedridden Patients

Sl no	Bed ridden	Depression		Total N (%)	p value
		Yes N (%)	No N (%)		
1	Yes	5(100)	0(0)	5(100)	0.001*
2	No	18(24)	57(76)	75(100)	
3	Total	23(28.8)	57(71.2)	80(100)	

*p value<0.05 and have statistical significance

[Table 6] shows association between frequent falls and depression. In this study persons with history of frequent falls have significantly higher percentage of depression (57.1%).

Table 6: Association of Depression with Frequent Falls

Sl No.	H/O Frequent Falls	Depression – Yes N (%)	Depression – No N (%)	Total N (%)	p value
1	Present	8 (57.1)	6 (42.9)	14 (100)	0.010*
2	Absent	15 (22.7)	51 (77.3)	66 (100)	
3	Total	23 (28.8)	57 (71.2)	80 (100)	

*pvalue < 0.05 and have statistical significance

[Table 7] shows association between urinary problems and depression. In this study persons with urinary problems shows a significantly higher percentage of depression (46.2%) than those without urinary problem (20.4%).

Table 7: Association of Depression with Urinary Problems

Sl No.	Urinary Problems	Depression – Yes N (%)	Depression – No N (%)	Total N (%)	p value
1	Present	12 (46.2)	14 (53.8)	26 (100)	0.033*
2	Absent	11 (20.4)	43 (79.6)	54 (100)	
3	Total	23 (28.8)	57 (71.2)	80 (100)	

*pvalue < 0.05 and have statistical significance

[Table 8] shows a significant association between GIT problems and depression. The study depicts high percentage of incidence of depression among the patients having GIT problems (55.2%).

Table 8: Association Of Depression With GIT Diseases

Sl No.	GIT Diseases	Depression – Yes N (%)	Depression – No N (%)	Total N (%)	p value
1	Present	16 (55.2)	13 (44.8)	29 (100)	0.000*
2	Absent	7 (13.7)	44 (86.3)	51 (100)	
3	Total	23 (28.8)	57 (71.2)	80 (100)	

*pvalue<0.05 and have statistical significance

[Table 9] shows association between musculoskeletal diseases and depression which was statistically significant. In this study persons with musculoskeletal diseases have higher depression (36.4%).

Table 9: Association of Depression with Musculoskeletal Diseases

Sl No.	Musculoskeletal Diseases	Depression – Yes N (%)	Depression – No N (%)	Total N (%)	p value
1	Present	20 (36.4)	35 (63.6)	55 (100)	0.033*
2	Absent	3 (12.0)	22 (88.0)	25 (100)	
3	Total	23 (28.8)	57 (71.2)	80 (100)	

*p value<0.05 and have statistical significance

DISCUSSION

Morbidity Pattern among the Geriatric Population in South India: An Observational Study by Divyamol K Sasidharan et al. found that about 98% of the study population suffered from at least one comorbidity.[12] The common health issues identified were knee pain and arthritis (84.6%), hypertension (76.8%), visual impairment (59.4%), problems of the feet (48%), vertigo (38.8%), urinary symptoms (31.6%), and CAD (23.4%). Morbidity pattern and its relation to functional limitations among old age rural population in Kerala, India, a study by R. Anil Das et al,[13] revealed an overall prevalence of any morbidity to be 89.2%. The most common morbidities reported were hypertension (37.7%), diabetes (36.5%), visual problems and joint pains or backache (30.5% of them each), constipation (12.20%), cardiovascular diseases (6%), and acid peptic disease (5.4%). On comparison with the above studies, the major comorbidities were identified to be visual impairment (86.2%), musculoskeletal disorders (68.8%) comprising arthritis (16.2%), joint pain (63.8%), and joint stiffness (23.8%). This study revealed morbidities such as hypertension (50%), diabetes (46.2%), urinary disorders (32.2%) and GI disturbances (36.2%) to be relatively higher as compared to the above-mentioned data. The incidence of morbidity such as respiratory ailments (28.8%) was found to have higher prevalence in the study population. According to the results of this study, it was seen that females tend to predominate in most of the morbidities, especially in hypertension with almost a 10% difference, whereas there is almost a twofold increase in the percentage of visually impaired females than males. Also, the prevalence of depression among the study population was found to be 28.9%, which, when compared to A Cross-sectional study from a rural community in South Kerala by Dr. Sandhya G I, was higher by 3.5%.[14] In addition to this, in a study performed by Leyanna Susan George on Morbidity pattern and its socio-demographic determinants among elderly population of Raichur District, Karnataka, India,[15] the depression among the population was found to be 16.5% with the majority of them being females (71.1%) than males (28.9%). These values along with our study results substantiate the fact that depression is higher among the female population. In this study, depression was found to be higher among males (32.4%) compared to females (26.1%), even though it was not statistically significant. A study done by Sandhya et al. in the year 2010,[14] also showed higher prevalence of depression among males (29.1%) compared to females (22%). In this study, 48.8% of elderly were dependent in some way to do their daily activity. In a study conducted in rural Bihar by Yadav UN et al,[16] 38% had moderate to severe functional limitations. Another study conducted by Joseph N et al,[17] among elderly in rural Karnataka showed that 25.6% of elderly had dependency in at least one

ADL. In a study conducted by Verma M et al. in Punjab,[18] out of 58.1% of elderly attending an NCD clinic, 34.1% had severe depression. Another study conducted by T. Aruna et al,[19] in Chennai reported that among those with osteoarthritis (~25.5%), 82.6% had severe depression, and 63% had severe anxiety; associations statistically significant. Patel V et al,[20] conducted a study in Indian adults using LASI Wave 1 data and showed that major depressive disorder was associated with higher risk of both moderate and severe ADL/IADL disability (adjusted ORs ~2.5 for ADL and ~2.0 for IADL limitations). In the current study, NCDs, dependency, bedridden state, frequent falls, urinary problems, GIT diseases, and musculoskeletal diseases all were significantly associated with depression.

CONCLUSION

This study also identified a high burden of morbidities among the elderly population, with visual impairment, non-communicable diseases (NCDs), and musculoskeletal disorders emerging as the most prevalent conditions. In addition, depression was found to be a significant concern, showing strong associations with the presence of comorbidities, functional dependency, and frequent falls. However, the study was conducted within a limited geographical area and involved a relatively small sample size, which may restrict the generalizability of its findings. Therefore, there is a compelling need to assess the prevalence and correlates of geriatric morbidities on a larger, more representative scale. Nationwide surveys and evidence-based health programs must be designed and implemented to address these critical issues and improve the overall health and quality of life of the elderly in India.

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