

Research Article

Prevalence of cognitive impairment and depression among elderly patients attending the medicine outpatient of a tertiary care hospital in South India

Naveen Kumar D^{1*}, Sudhakar TP²

¹Assistant Professor, Department of Psychiatry, Santhiram Medical College, Nandyal, A.P., India

²Professor & Head, Department of Psychiatry, Sri Venkateswara Medical College, Tirupati, A.P., India

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*Correspondence:

Dr. Naveen Kumar D,

E-mail: naveendhagudu@gmail.com

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ABSTRACT

Background: Cognitive impairment is an important clinical issue among elderly patients with depression and has a more complex etiology. The aim of the present work was to examine the prevalence of cognitive impairment and depression in elderly subjects above 60 years.

Methods: A cross-sectional study on the prevalence of cognitive impairment and depression on elderly people (n=525) attending the General Medicine OPD of Sri Venkateswara Ram Narain Ruia Government General Hospital, Tirupati. Cognitive function and depression were assessed by applying standardized Mini-Mental State Examination of Folstein (MMSE) and the Geriatric Depression Scale (GDS), respectively.

Results: Prevalence of cognitive impairment was 31.0% (34.7% women, 23.4% men); there were significant differences observed with reference to age, gender, literacy and economic status. Prevalence of depression was 44.8% (51.0% women, 39.6% men); with relation to age, gender, literacy and economic status, there were significant differences observed.

Conclusion: Cognitive impairment and depression were present in elderly people and these disorders are more prevalent in the females than in the males. Hence, psychiatrist should pay special attention for early detection and treatment of depressive symptoms in elderly people with cognitive impairment.

Keywords: Cognitive impairment, Depression, Elderly subjects

INTRODUCTION

The geriatric population is defined as population aged 60 years and above.¹ People aged 60 years and over are expected to constitute 10.2% of the total world population by 2025.² The phenomenon of population ageing³ is already a major social and health problem in the developed countries. The life expectancy of an average Indian has increased from 54 years in 1981 to 64.6 years in 2002.⁴ According to Sharma,⁵ the population of people aged 60 years or above is likely to

increase to 18.4% of the total population in India by the year 2025.

Improved healthcare promises longevity but social and economic conditions, such as poverty, break up of joint families, and poor services to the elderly, pose a psychiatric threat to them.⁶ The feeling of loneliness along with the natural age-related decline in the physical and physiological functioning make the elderly more prone to psychological disturbances.⁷ Functional dependency is common among elderly people and many will need assistance in their activities of daily living.

Long-term care has become one of the major problems facing an aging society.⁸ A recent review reported a wide range of estimates for mental health morbidities in the elderly, ranging from 2.2 to 33.3% for age specific populations.⁹

The magnitude of mental morbidity in the Indian situation is a serious cause of concern. The main risk factors are loss of fortune, fall in self-esteem, sense of helplessness, illiteracy, poor health, social and gender discrimination, financial debt and status as a widowed person. The physical illnesses have role of causal or association with psychiatric illness especially with depression and significant or non significant association with cognitive impairment and depression. Of all the problems associated with an ageing population, health care demands top priority.¹⁰

In the light of the above considerations this study was intended to identify the psychiatric problems of the elderly subjects in a general hospital setting in order to assess their health needs, which will be useful to plan health and other supportive services for the elderly in initiation of geriatric clinics and in the community. So the aim of this study is to evaluate the cognitive impairment and depression problems in elderly subjects.

METHODS

Study design

The present cross-sectional descriptive study was conducted on 60 years and above elderly subjects. The study was undertaken to the people who were attending general medicine out patient department in Sri Venkateswara Ramnarain Ruia Government General Hospital, Tirupati for a period of six months from August 2009 to February 2010.

Inclusion and exclusion criteria

525 elderly subjects aged 60 years and above of both sexes were enrolled for the study. The subjects were attending the General Medicine OPD at S.V.R.R.G.G. Hospital, Tirupati, for various illnesses. After initial evaluation by physician, study was conducted based on inclusion and exclusion criteria.

Inclusion criteria:

- Age 60 years and above
- Both male and female
- Both new and old cases

Exclusion criteria:

- Who are not cooperative
- Who are not able to give informed consent
- Acute emergency and severe morbid cases

Each study subject was put to a series of tests using a pre-tested, pre-structured study questionnaire after completion of physical assessment by physician and all the information regarding socio-demographic profile, present physical health status and problems and mental abilities (cognitive status) and most common psychiatric illness (depression) were collected. Few measurements (e.g.: Blood pressure measurement) were taken to know the current health status of the study subjects. The study protocol was approved by the Institutional Ethical Committee and full informed written consent was obtained from all patients.

Assessment of cognitive function and depression

Cognitive function was assessed by applying standardized Mini-Mental State Examination (MMSE) of Folstein.¹¹ MMSE scores range from 0 to 30, with lower scores indicating increasing severity of cognitive impairments in the domains of orientation, memory, attention, and executive functions. Subjects with cognitive impairment had scores between 0 and 18. The sensitivity was 87%, and specificity was 82%.

Depression was assessed with the Geriatric Depression Scale (GDS)¹², a questionnaire specifically developed for screening depressive symptoms in elderly populations. Yesavage's Geriatric Depression Scale (GDS) - Shorter version 44 was used to detect whether the study subject was having depression or not. It is a screening tool and not a diagnostic one, having a sensitivity of 91.0% and a specificity of 72.0% in a community sample⁴⁵. The shorter version of the scale consists of 15 questions and each negative answer will carry a mark and thus the more the scoring is, the more the chances of having depression. The maximum score that one can get is 15, which indicates a severe depression. The cutoff for normal range was 10. The sensitivity and specificity was 84% and 95%, respectively.

Statistics

The data obtained were analyzed with the statistical package for social sciences software (SPSS). The prevalence of cognitive impairment and depression was calculated in percent. Chi-square analyses were conducted to look for differences between groups defined by age, gender and other factors.

RESULTS

525 elderly subjects aged 60 years and above of both sexes were evaluated in this study.

Socio demographic profiles and medical history of study subjects are shown in Table 1. In 46.0% of the subjects, Hypertension and Diabetes were common chronic diseases present in the study, which were 19.96% and 11.21% respectively (Table 1).

Table 1: Sociodemographic features of the subjects.

Distribution	Number of persons (n)	Percentage (%)
Age distribution (years)		
60-65	325	61.78
66-70	104	19.77
71-75	75	14.26
76-80	12	02.28
81-85	10	1.90
Sex distribution		
Male	295	56.08
Female	231	43.91
Religious distribution		
Hindu	475	90.3
Muslim	23	4.37
Christian	28	5.36
Educational status		
Illiterate	353	67.1
Primary Education	119	22.62
Secondary Education	45	8.55
Higher Secondary Education	3	0.57
Diploma	1	0.19
Degree And Above	5	0.95
Marital status		
Unmarried	9	1.7
Married	317	60.26
Divorced	0	0.0
Separated	4	0.76
Widowed	196	37.07
Socioeconomic status		
Upper Class	0	0.00
Higher Middle	6	1.14
Middle	132	25.09
Lower Middle	297	56.46
Lower Class	90	17.11
Chronic diseases		
Hypertension (HTN)	105	19.96%
Diabetes Mellitus (DM)	59	11.24%
HTN and DM	66	12.54%
Other diseases	296	56.27%

As evident from Table 2, 31.0% elderly subjects had cognitive impairment, in that 20.34% were mild cognitive impairment, 10.64% had moderate impairment and 0.5% had severe cognitive impairment. The prevalence and severity of cognitive impairment was found to be more with increasing age (26.3% in the age group of 60-70 years, 39.0% in age group of 71-80 years and 70.0% in 80 years and above), which was statistically significant ($p < 0.0001$).

The prevalence of cognitive impairment in males was 23.4% (16.27% had mild cognitive impairment, 6.44% were with moderate impairment and 0.67% were having severe impairment). While females had 37.7% impairment, of this 25.5%, 11.6% and 0.43% had mild, moderate and severe cognitive impairment, respectively. The females had higher value of cognitive impairment than in the males. This difference was statistically significant (p value < 0.005 , Table 3).

Cognitive impairment was more (33.33%) among those who were having combined chronic diseases (Hypertension and Diabetes), followed by only diabetes (32.20%) and hypertension (28.57%). But this was not statistically significant (Table 4).

Overall prevalence of depression was 44.86%. It was observed that the prevalence of depression increased with increasing age group (43.5% in age group of 60-70 years, 50.57% in age group of 70-80 years and 50% in age group 80 above), which was significant statistically (Table 5).

The prevalence of depression was found to be more in elderly females (51.8%) than in male subjects (39.66%). More than 50.0% of the females were suffering from depression while only a shade above 1/3rd of the males was suffering from the same. The difference in the prevalence of depression between the male and female subjects was statistically significant (Table 6).

The prevalence of depression in people suffering with hypertension was 46.6%. While people with diabetes had 42.37%. But this difference was not statistically significant when compared with elderly people having both diseases (Table 7).

Table 2: Distribution of subjects with cognitive impairment based on age.

S. No	Age distribution (Years)	MMSE				Total No. of persons
		Normal (%)	Mild (%)	Moderate (%)	Severe (%)	
1	60-65	234(72.00)	64(19.69)	25(7.69)	2(0.6)	325
2	66-70	82(78.88)	19(18.26)	3(2.8)	0(0)	104
3	71-75	46(61.33)	18(24)	10(13.33)	1(1.3)	75
4	76-80	5(41.66)	2(16.66)	5(41.66)	0(0)	12
5	81-85	3(33.33)	4(40)	3(30)	0(0)	10
	Total	370(70.34)	107(20.34)	56(10.64)	3(0.5)	526

$X^2 = 64.57$, $df = 2$; p value < 0.0001 ; highly Significant

Table 3: Distribution of subjects by cognitive status with relation to gender.

S. No	Gender	MMSE				Total No. of persons	Percentage (%)
		Normal (%)	Mild (%)	Moderate (%)	Severe (%)		
1	Male	226(76.61)	48(16.27)	19(6.44)	2(0.67)	295	56.19
2	Female	144(62.33)	59(25.54)	27(11.68)	1(0.43)	231	43.91
Total						526	100.0

$X^2= 64.57$, $df= 12.6$; p value < 0.005 significant

Table 4: Distribution of elderly subjects by cognitive status with relation to diabetes mellitus and hypertension illness.

S. No	Chronic diseases	Cognitive Impairment		Total No. of persons	Percentage (%)
		Normal	Impaired		
1	HTN	75 (71.42%)	30 (28.57%)	105	19.96
2	DM	40 (67.79%)	19 (32.20%)	59	11.21
3	HTN & DM	44 (66.66%)	22 (33.33%)	66	12.54
4	Others	211 (71.28%)	85 (28.71%)	296	56.27
Total		370 (70.34%)	156 (29.65%)	526	100

$X^2= 0.79$, $df= 3$; p value > 3.1 ; Not Significant

Table 5: Prevalence of depression in study population based on age.

S. No	Age distribution (Years)	GDS		Total No. of persons
		Yes	No	
1	60-65	150(46.15)	175(53.84)	325
2	66-70	37(35.57)	67(64.42)	104
3	71-75	40(53.33)	35(46.66)	75
4	76-80	4(33.33)	8(66.66)	12
5	81-85	5(50)	5(50)	10
Total		236(44.86)	290(55.13)	526

$X^2= 6.84$, $df= 1$; $p= 0.009$; Significant

Table 6: Distribution of depression in study subjects based on gender.

S. No	Gender	GDS		Total No. of persons
		Yes	No	
1	Male	117 (39.66%)	178 (60.33%)	295 (56.19%)
2	Female	118 (51.08%)	113 (48.91%)	231 (43.91%)
Total		235 (44.67)	295 (56.08)	526 (100.00%)

$X^2= 6.85$, $df= 1$; $p < 0.009$; Significant

Table 7: Distribution of depression in study population with diabetes mellitus (DM) and hypertension (HTN).

S. No	Chronic diseases	Depression		Total No. of persons	Percentage (%)
		Yes	No		
1	HTN	49 (46.66%)	56 (53.33%)	105	19.96
2	DM	25 (42.37%)	34 (57.62%)	59	11.21
3	HTN & DM	38 (57.57%)	28(42.42%)	66	12.54
4	Others	124 (41.89%)	172(58.10%)	296	56.27
Total		370 (70.34%)	156 (29.65%)	526	100

$X^2= 5.65$, $df= 3$; p value > 0.10 ; Not significant

DISCUSSION

The present cross sectional study was conducted to evaluate the prevalence of cognitive impairment and depression among the population 60 years and older who were residing in the Tirupati town of Andhra Pradesh. Depressive symptoms and cognitive impairment were highly significantly correlated cross sectionally, showing that they do co-occur in old age.¹³

Our study clearly showed that 31.0% elderly subjects had cognitive impairment. Besides, the prevalence and severity of cognitive impairment was found to be positively associated with increasing age. The females had a higher prevalence of cognitive impairment when compared to males, which was statistically significant. Interestingly, both mild and moderate impairment were higher in females compared to males. The reasons for higher scores among females might be difference in the literacy status, the age between male and female subjects and usage of social cognitive skills.

The present study also revealed that there was an inverse relationship between the cognitive impairment and the literacy status. Both prevalence and severity of cognitive impairment were decreased as the literacy status increased when compared to illiterate subjects. Furthermore, to substantiate these findings, the prevalence of cognitive impairment was found to be positively related with low socio-economic status: (a) Economic status- 15.1% in upper class and 34.8% in lower class & below the poverty line, (b) Living arrangement- those living alone and with others had prevalence of 43.2% and elderly people living with their family had 27.19 % and (c) Physical dependency- 50% prevalence in dependent people and 28.6% prevalence in independent elders who were doing activities for daily living.

Even though cognitive impairment was more (33.33%) with combined disease patients (Hypertension and Diabetes), but there was no significant difference observed with these patients when compared to individual diseases.

Our study's prevalence data was lower than the previously reported¹⁴, which found a prevalence of 36.2%. That discrepancy may be due to the number and characteristics of the sample. Prevalence studies in Europe, the United States, and Canada reveal relatively consistent findings. For instance, 22.2% of individuals in the United States of age 71 years or older have cognitive impairment without dementia¹⁵, and Canadian samples aged 65 and over report prevalence rates for cognitive impairment without dementia of 16.8%.¹⁶ In contrast, the prevalence of depression in elderly New Mexico Hispanic population was 13.2% (6.4% in men and 16.9% in women).¹⁷

In the present study the overall prevalence of depression was 44.86%. The prevalence of depression increased with increasing age group in this study. The prevalence of depression was found to be more in elderly females (51.8%) than in male subjects (39.66%). More than 50.0% of the females were suffering from depression while only a shade above 1/3rd of the males was suffering from the same. The reasons for high prevalence among elderly females might be widowhood status, living alone or neglected by family members, poor status in the family, increased physical dependency, lack of income and poor health. The difference in the prevalence of depression between the male and female subjects was statistically significant.

44.86% of study population had geriatric depression, in this nearly half of them were illiterates, 33.61% were primary educated persons, and nearly 41% of the secondary and above educated persons. So the prevalence of depression was found to be inversely proportional to the literacy status in this study.

The prevalence of depression in people suffering with hypertension was 46.6%. Whereas people with diabetes had prevalence of 42.37%. However there was no significant difference observed with these patients when compared to combined disease patients.

Earlier study by Singh VB et al (2005), showed that the prevalence rate of depression was 18.0%, more common in the elderly women (37.5%) than men (14.28%).¹⁸ In another study by Palmer RM (1999), found that 10.0% of people older than 65 years had depressive symptoms and 1.0% had major depressive disorders.¹⁹ In study by Goswami A et al (2006), it was found that the prevalence rate of depression was 44.5% and 63.2% in male and female subjects respectively, and this difference was found to be statistically significant.²⁰ Jain RK (2007) had showed that the prevalence of depression was found to be 45.9% with the mean score of 5.10+8.26.²¹ The studies of Hughes et al (1993)²² and Venkoba Rao A (1987)²³ revealed the prevalence of depression as 61.5% and 43.0% respectively. Our study concur with previous findings that depression is prevalent in elderly patients and that too in females.

A few studies show that depression is a risk factor for the development of cognitive decline, whereas others could not confirm this finding. The relationship between depression and cognitive impairment shows that depression in old age is an associated phenomenon of already existing cognitive impairment rather than an independent risk factor. Our findings, based on various measures of cognitive function and depression scale are in line with previous prospective population-based studies that people aged 60 and older showed an impairment of cognitive functions and depression. Therefore, early detection of depressive symptoms in elderly people with cognitive impairment is of great importance to develop preventive and early rehabilitation.

However, more detailed research into the causes of cognitive impairment, relationship between cognitive functions and depression, further identifying high risk groups for screening and which methods of screening are most successful would be useful.

CONCLUSION

In a busy geriatric clinic, there are chances to ignore the most prevalent psychiatric disorders like depression and cognitive impairment because of various reasons like unaware of prevalence rate, vague presentation of cases with multiple physical symptoms, negligence to find the accurate diagnosis. Given the findings of our research, we suggest that screening of elderly patients for mental disorders is must with help of a psychiatrist to provide better psychiatric services.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethical Committee

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