Original Research Article

Association between socio-demographic profile and severity of cognitive impairment in elder patients presenting with new onset of psychiatric symptoms: a cross sectional study

Jery Antony, Anisha Nakulan, Shiny John*

Department of Psychiatry, Amala Institute of Medical Sciences, Amala Nagar, Thrissur, Kerala, India

*Correspondence:
Dr. Shiny John,
E-mail: shinyskd@gmail.com

ABSTRACT

Background: Cognitive impairment in the elderly is a common condition and, in most instances, primary care providers are the first point of contact for a patient and family. This study was aimed to find out the association between socio-demographic profile and severity of cognitive impairment in elder patients presenting with new onset of psychiatric symptoms.

Methods: A cross sectional study was done among elder subjects (≥60 years of age) presented with new onset of psychiatric symptoms during one year period. A structured questionnaire was used to assess the socio-demographic details such as age, sex, education, occupation, socio-economic status and marital status. Mini International Neuropsychiatric interview and Montreal Cognitive Assessment scale were used for psychiatric diagnosis and severity of cognitive impairment grading, respectively. Association between socio-demographic data and cognitive impairment was statistically analyzed.

Results: Among the 67 subjects included in the study, 76.2% had cognitive impairment. Majority of the subjects were females (56.7%) in the age group of 66-70 years. The association between cognitive impairment and sex (p=0.006), education (p=0.002) and occupation (p=0.015) were significant. But no significant association between cognitive impairment and marital status (p=0.0137) or socioeconomic status (p=0.400) was evidenced.

Conclusions: Females in the age group of 66-70 years were more prevalent to cognitive impairment. The association between sex, education, occupation and severity of cognitive impairment was significant. No significant association between severity of cognitive impairment score and marital status or socioeconomic status was found.

Keywords: Cognitive impairment, Dementia, Montreal cognitive assessment scale, Psychiatric symptoms

INTRODUCTION

Cognition is the set of all mental abilities and processes related to knowledge, attention, memory, judgment, reasoning, problem solving, decision making, comprehension and production of language. Neuropsychiatric symptoms include a broad range of psychological reactions, psychiatric symptoms, and behavioral disturbances. Cognitive impairment in the elderly is a common condition and in most instances primary care providers are the first point of contact for a patient and family. In persons over age 70 years, 14% have sufficient cognitive impairment to warrant a diagnosis of dementia and an equal number have mild but

unequivocal cognitive impairment short of dementia.[1,2] Persons with moderate to severe dementia are generally brought to medical attention because their care needs demand it.[3] Milder forms of cognitive impairment, on the other hand, present formidable conceptual and practical challenges in detection by primary care providers.

Psychiatric symptoms have been reported to occur at some point in 75% of patients with dementia.[4] Studies have examined the prevalence of neuropsychiatric symptoms in clinical samples with cognitive impairment.[5] Mild cognitive impairment (MCI), also known as incipient dementia, is a brain function syndrome involving the onset and evolution of cognitive impairments beyond those expected based on the age and education of the individual. But they are not significant enough to interfere with their daily activities.[6] Higher incidence rates of MCI are reported in men compared to women.[7] Persons with moderate to severe dementia are generally brought to medical attention because their care needs demand.[3] An Indian study from Calcutta, India has shown prevalence of MCI to be around 14%.[8] An incidence as high as 47.1% and 59% have been reported in Indian elderly population. Studies in various populations are warranted to cater to the need of care providers.[9,10] Studies on the association of cognitive impairment and socio-economic status of various Kerala populations are scant. This study was aimed to analyse the association of cognitive impairment and socio-economic status among elderly patients presenting with first onset psychiatric symptoms.

METHODS

Study design and sampling

A cross-sectional descriptive study conducted during one year period in the Department of Psychiatry, Amala Institute of Medical Sciences from January 2016-17. Sample size was calculated based on the previous study as approximately 67 for the standard error of 5%. Patients above the age of 60 years presenting with psychiatric symptoms for the first time were included in the study. For people who lack capacity to consent because of their condition, a best interest decision was made, taking the views of the next of kin. Patients who were not cooperative for interview, illiterate people and patients with significant sensory impairment were excluded from the study. Information is collected from the patient after getting an informed consent. The study was approved by the Institutional Ethics Committee. Information collected was treated confidentially at par with the standard practices of the hospital.

Study procedure

Socio-demographic details such as age, sex, education, occupation, socio-economic status and marital status were recorded. Diagnosis of the psychiatric disorder in the patients was made based on Mini International Neuropsychiatric Interview and clinical evaluation.[11] Montreal Cognitive Assessment scale in regional language was used to assess the cognitive status of the patient.[12] Score between 18 to 25 indicates mild cognitive impairment, score between 10 to 17 indicates moderate cognitive impairment and a score less than 10 indicate severe cognitive impairment.

Statistical analysis

Descriptive statistics was used for the study. Association between the cognitive impairment and Socio-demographic details were analysed by Fishers exact test using SPSS (v16, IBM, Illinois, US). $P<0.05$ was considered as significant.

RESULTS

Total 67 study subjects were enrolled in the study. Among them majority (n=30) were in the age group of 66-70 years, which constituted 44.8% (Table 1).

Table 1: Distribution of age.

Age	Frequency	Percentage
60-65 years	21	31.3
66-70 years	30	44.8
71-75 years	6	9.0
76-80 years	8	11.9
≥81 years	2	3.0
Total	67	100.0

Thirty one percentage (n=21) of the study population were between 60 to 65 years. Twelve percentage of the study population (n=8) were between 76-80 years. Nine percentage (n=6) of the study population were between 71-75 years of age. The least number of subjects were 81 years of age or above (n=2). The mean age group of the study sample was 68.28±5.441 years. Among the 67 study population, 56.7% (n=38) were females and the remaining 43.3% (n=29) were males. Majority (55.2%) of the study population (n=37) were educated till seventh standard, while 3 participants (4.5%) had completed a degree course Distribution of occupational status is depicted in table 2. Majority (53.7%) of the participants (n=36) were unskilled (Table 2).

Table 2: Distribution of occupation status.

Occupation	Frequency	Percentage
Unskilled	36	53.7
Skilled	23	34.3
Professional	8	11.9
Total	67	100.0

Twenty three participants (34.3%) were employed in a skilled job and 8 participants (11.9%) had completed a professional course. The distribution of marital status is depicted in Table 3.

Table 3: Distribution of marital status.

Marital status	Frequency	Percentage
Married	55	52.2
Unmarried	1	1.5
Single and living alone	1	1.5
Widow/Widower	30	44.8
Total	67	100.0

Analysis showed that majority (52.2%) of the participants (n=55) were married. 44.8% of the participants (n=30) were widow/widower. One (1.5%) among the participants was unmarried and one (1.5%) was single. The distribution of Socio-Economic status is depicted in Table 4.

Analysis showed that 82.1% of the participants (n=55) belonged to the Middle Socio-Economic status. 16.4% (n=11) belonged to the low socio-economic status and

1.5% (n=1) belonged to the high socio-economic status. Table 5 shows the association between Severity of cognitive impairment and socio-demographic characteristics of the study population. The Fisher exact test p value for association between cognitive impairment and sex, education and occupation was 0.006, 0.002 and 0.015, respectively which showed significant association. But there was no significant association between MOCA score and marital status, sex. The Fisher exact test p value for association between cognitive impairment and marital status, sex is 0.137 and 0.400, respectively.

Table 4: Distribution of socio-economic status.

Socio-Economic status	Frequency	Percentage
Low	11	16.4
Middle	55	82.1
High	1	1.5
Total	67	100.0

Table 5. Association between Severity of cognitive impairment and socio-demographic characteristics.

Characteristics		MOCA score				Total	P
		Severe	Moderate	Mild	Normal		
Sex	Male	0	8	10	11	29	0.006
	Female	7	11	15	5	38	
Education	<7th	7	14	12	4	37	0.002
	8th- 10th	0	4	11	7	22	
	Degree	0	0	2	1	3	
	Professional	0	1	0	4	5	
Occupation	Unskilled	7	12	13	4	36	0.015
	Skilled	0	6	9	8	23	
	Professional	0	1	3	4	8	
Marital status	Married	2	7	14	12	35	0.137
	Unmarried	0	0	1	0	1	
	Single	0	0	0	1	1	
	Widow/Widower	5	12	10	3	30	
Socio-economic status	Low	2	1	6	2	11	0.400
	Middle	5	18	18	14	55	
	High	0	0	1	0	1	

DISCUSSION

In this study, majority (44.8%) of the study subjects were in the age group between 66 to 70 years with a mean age of 68.28. This corroborates with both Indian and Western studies.[13,14] The possible reason for this observation in our study could be the growing level of awareness among the population regarding the behavioral changes in the elderly as a disorder which needs evaluation. Only 3% of the study subjects were in the age group of more than 80 years. A possible explanation of this could be that there will be a gradual decline in the number of persons surviving with increasing age (life expectancy-64.6 in India, according to 2002). This is consistent to the study

by Seby et al, in which the youngest age group accounted for high sample size, with decreasing number of people with advancing age.[15]

Mini international neuropsychiatric interview is a short structured clinical interview which enables researchers to make diagnosis of psychiatric disorders according to DSM-1V or ICD-10.[11] MOCA test validation study by Nasreddine in 2005 showed that it was a promising tool for detecting MCI and Early Alzheimer's disease.[12] According to the validation study, the sensitivity and specificity of the MOCA for detecting MCI were 90% and 87% respectively, compared with 18% and 100% respectively for the MMSE.[12]

In this study, the number of males was 29 (43.3%) and females were 38 (56.7%). This suggests that our sample had an almost equal distribution of males and females which would reduce gender bias to an extent. Even then, the females constituted a larger group who presented with first onset psychiatric symptoms after 60 years of age. A community study done by Premarajan et al, in urban population also found the higher prevalence of psychiatric illnesses in females than in males.[16] Copeland et al, in a western community study, and Jain and Aras, in a study conducted in North India found that females have high prevalence of psychiatric illnesses than males at any age.[17,18] In this study, 82.1% of the study subjects belonged to the middle socio-economic status, 16.4% belonged to the lower socio-economic status. This may be due to the fact that ours is a private set up and most of the patients visiting our outpatient services belong to middle socioeconomic status or higher. However, in general, persons with low socio-economic status have poorer mental health than persons with high socio-economic status.[19]

The severity of cognitive impairment was more among females than among males. The higher prevalence of MCI in women may be due to longer female life expectancy or may be due to higher samples of female in our study. This finding could be because of the family burden and responsibilities and discriminatory access to health services in females which would be contributing to increased perception of stress in them. Some recent findings also support an alternate hypothesis that women progress to Alzheimer's disease at faster rates than men due to greater neurobiological vulnerability.[20] There was also a significant association between severity of cognitive impairment with the education status and occupation of the study population. Severity of cognitive impairment was more among those who had a lower level of education or among those who were employed in an unskilled sector. This result was similar to various other studies which reported higher rates of cognitive impairment among illiterates and unemployed subjects.[21] This may be due to the fact that higher levels of education are thought to enhance people's skills, afford important structural advantages, and empower better coping mechanisms, all of which lead to better mental health. The finding of increased prevalence of psychiatric illness in subjects with lower level of education is in accordance with the study in urban population by Seby et al.[22] These findings imply that subjects who are female, subjects who have a lower level of education and subjects who are unskilled professionals have a higher chance of having cognitive impairment when they present with neuropsychiatric symptoms for the first time in late life. No significant association was identified between severity of cognitive impairment with marital status and socio-economic status of the study subjects. Short period of the study and small sample size are the major limitations of this study. Hence, a multicentre study among subjects in various populations is warranted.

CONCLUSION

Females in the age group of 66-70 years were more prevalent to cognitive impairment. The association between sex, education, occupation and severity of cognitive impairment was significant. No significant association was found between severity of cognitive impairment score and marital status or socioeconomic status.

ACKNOWLEDGEMENTS

REFERENCES

1. Plassman BL, Langa KM, Fisher GG, Heeringa SG, Weir DR, Ofstedal MB, et al. Prevalence of dementia in the United States: the aging, demographics, and memory study. Neuroepidemiol. 2007;29(1-2):125-32.
2. Petersen RC, Roberts RO, Knopman DS, Geda YE, Cha RH, Pankratz VS, et al. Prevalence of mild cognitive impairment is higher in men than in women. The Mayo Clinic Study of Aging. Neurol. 2010;75(10):889-97.
3. Knopman DS, Petersen RC, Rocca WA, Larson EB, Ganguli M. Passive case-finding for Alzheimer's disease and dementia in two U.S. communities. Alzheimers Dement. 2011;7(1):53-60.
4. Lyketsos CG, Lopez O, Jones B, Fitzpatrick AL, Breitner J, DeKosky S. Prevalence of neuropsychiatric symptoms in dementia and mild cognitive impairment: Results from the cardiovascular health study. JAMA. 2002;288(12):1475-83.
5. Lyketsos CG, Steele C, Baker L, Galik E, Kopunek S, Steinberg M, et al. Major and minor depression in Alzheimer's disease: Prevalence and impact. J Neuropsychiatry Clin Neurosci. 1997;9(4):556-61.
6. Ellison JM, Harper DG, Berlow Y, Zeranski L. Beyond the "C" in MCI: Noncognitive symptoms in amnestic and non-amnestic mild cognitive impairment. CNS Spectr. 2008;13(1):66-72.
7. Das SK, Bose P, Biswas A, Dutt A, Banerjee TK, Hazra A, et al. An epidemiologic study of mild cognitive impairment in Kolkata, India. Neurol. 2007;68(23):2019-26.
8. Tierney MC, Szalai JP, Snow WG, Fisher RH, Nores A, Nadon G, et al. Prediction of probable Alzheimer's disease in memory-impaired patients: A

prospective longitudinal study. Neurol. 1996;46(3):661-5.

9. Satishchandra S, Sivakumar PT, Matthew V. Mild Cognitive Impairment (MCI) in elderly patients attending Central Government Health Services Clinic. Souvenir of Alzheimer's and Related Disorders Society of India. XIV National Conference. 27-28 September. 2008;56.

10. Mridula KR, Alladi S, Shailaja M, Santoshi K, Subhash K. Mild Cognitive Impairment: Characterisation of clinical, neuropsychological, imaging profile and outcome. Souvenir of Alzheimer's and Related Disorders Society of India. XIV National Conference. 27-28 September, 2008;52.

11. Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E, et al. The Mini-International Neuropsychiatric Interview (M.I.N.I.): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. J Clin Psychiatry. 1998;59 Suppl 20:22-33;quiz 34-57.

12. Nasreddine ZS, Phillips NA, Bédirian V, Charbonneau S, Whitehead V, Collin I, et al. The Montreal Cognitive Assessment, MOCA: a brief screening tool for mild cognitive impairment. J Am Geriatr Soc. 2005;53(4):695-9.

13. Steinberg M, Shao H, Lyketsos CG, Zandi P, Welsh-Bohmer KA, Norton MC, et al. Point and 5-year period prevalence of neuropsychiatric symptoms in dementia: the Cache County Study. Int J Geriatr Psychiatry. 2008;23(2):170-77.

14. Prasad KM, Sreenivas KN, Ashok MV, Bagchi D. Psychogeriatric patients: A socio-demographic and clinical profile. Indian J Psychiatry. 1996;38(3):178-81.

15. Ritchie K, Artero S, Beluche I, Ancelin ML, Mann A, Dupuy AM, et al. Prevalence of DSM-IV psychiatric disorder in the French elderly population. Br J Psychiatry.2004;184(2):147-52.

16. Seby K, Chaudhury S, Chakraborty R. Prevalence of Psychiatric and physical morbidity in an urban geriatric population. Indian J Psychiatry. 2011;53(2):121-7.

17. Hu YR, Goldman N. Mortality differentials by marital-status-an international comparison. Demography. 1990;27(2):233-50.

18. Premarajan KC, Danabalan M, Chandrasekhar R, Srinivasa DK. Prevalence of Psychiatric morbidity in an urban community of Pondicherry. Indian J Psychiatry. 1993;35(2):99-102.

19. Jain RK, Aras RY. Depression in Geriatric population in urban slums of Mumbai. Indian J Public Health. 2007;51(2):112-3.

20. Mielke MM, Vemuri P, Rocca WA. Clinical epidemiology of Alzheimer's disease: Assessing sex and gender differences Clin Epidemiol. 2014;6:37-48.

21. Ritchie K, Artero S, Beluche I, Ancelin ML, Mann A, Dupuy AM, Malafosse A, Boulenger JP. Br J Psychiatry. 2004:184(2);147-52.

22. Seby K, Chaudhury S, Chakraborty R. Prevalence of Psychiatric and physical morbidity in an urban geriatric population. Indian J Psychiatry. 2011;53(2):121-7.