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ASSESSMENT OF COGNITIVE IMPAIRMENT AMONG THE ELDERLY: A PILOT STUDY

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ABSTRACT

Aim: To assess the cognitive impairment among the elderly.

Method: Descriptive survey in which 40 elderly using convenient sampling were included. The level of cognitive impairment was assessed using Montreal Cognitive Assessment.

Result: The results revealed that 35% elderly have no cognitive impairment, 40% have mild cognitive impairment, 20% had moderate cognitive impairment and 5% have severe cognitive impairment. The level of cognitive impairment was associated with age, educational status, marital status, number of children, physical ailments, and type of family.

Conclusion: Mild cognitive impairment is quite prevalent among the elderly over 60 years of age, however, goes unnoticed because of lack of awareness among the health care professionals.

Keywords: Cognitive impairment, elderly, Montreal Cognitive Assessment (MoCA)

INTRODUCTION

Getting old is a natural process, growing up and growing old. It starts when we are born and ends when we die. It is classified into various categories, growth and development, maturation, and senility. Every organ and cell of the body slows down and deteriorates, vision is compromised,

hearing is reduced, kidneys can't filter. Like any other system of the body, the brain also suffers the consequences of ageing which again differs from individual to individual **[1]**.

Cognition is affected with ageing, some loss in the cognitive abilities are universal and acceptable, for instance not able to remember chunk of information, reduction in level of thinking, decrease attention and concentration, multitasking, all these changes are because of changes in the brain structures. Mild Cognitive impairment (MCI) is depreciation in the level of cognition of an individual, although mild cognitive impairment doesn't affect a person's ability to perform activities of daily living and instrumental activities of daily living, nevertheless if not taken care can accelerate to severe form like dementia. Cognition comprises of various domains like concentration, attention, memory and recall, orientation, language, visuospatial and all of which exhibits a decline with ageing **[2]**.

Life expectancy has substantially increased over the years, with better health care people are living longer. The longevity that is a reward of technological advancement is also associated with comorbidities. Since people are living longer, the issues related to cognition are also surfacing **[3]**. It is estimated that by the year 2050 the elderly population will reach 426 million, and most of this population will be residing in the middle- and low-income countries **[4]**.

In India the elderly population is on a steep rise since 2011, by the year 2031 the elderly population in India will be quintuple when compared to general population **[5]**.

Mild Cognitive Impairment is a high-risk indicator of developing dementia/ Alzheimer's among the elderly population, studies have revealed that every minute approximately 15 people are diagnosed with dementia globally. The majority of elderly who develop dementia are those suffering from MCI but are not clinically identified. The impact of severe cognitive decline is grave, it reduces the quality of life of the older individual and affects the family as whole **[6]**.

Impairment in cognition in older adults can be caused by diverse reasons like polypharmacy, metabolic disorders, systemic infections, depression. MCI quite often goes unidentified since the symptoms are subjective and health care professional's majority of the times are unaware or negligent of the condition **[7]**.

One of the studies reported the prevalence of cognitive impairment among the elderly 25%, more so in females (29.8%) than in males (19.1%) and in rural (27.6%) area than in urban (18.5%). It was cognitive impairment was more in illiterate elderly, whereas married and living with children had less cognitive impairment **[8]**.

The growing population of older adults is a threat to the existing health care in the developing countries. In India approximately 15% of elderly suffer from some form of cognitive impairment, more so in the rural areas than in urban **[9]**. Globally older adults suffering from cognitive impairments ranges from 5% to 41%, age is associated with the severity of the impairment **[10]**.

Most older adults suffer from some or the other form of cognitive impairments, various forms of dementia. Approximately 65% of the population above 60 years suffers from dementia and this number goes up to 40% for the masses over 85 years. The changes that happens with mild cognitive impairments are indistinct and are hardly identified, it can be perceptible to family members **[11]**.

METHODS AND MATERIAL

Study Design: Descriptive survey

Study site: The study was conducted at CHC, Berasia, Bhopal, Madhya Pradesh.

Sample size: 40 elderly age group 60 years and above.

Sampling technique: Convenient sampling

Inclusion criteria: Male and female elderly in the age group 60-80 who attended the camp organized at the CHC, Berasia, Bhopal, Madhya Pradesh.

Exclusion criteria: Those not willing to participate were excluded.

Study tool:

Montreal Cognitive Assessment (MoCA) was used in the study to assess the cognition level among the elderly, the scale was developed by Nasreddine. It consists of 30 items; the test takes 10-12 mins to complete. The test is specifically designed to measure cognitive impairment ranging from mild to severe. The test measures various cognitive domains like language, memory, attention, concentration, executive functions, arithmetic intelligence, and orientation. The maximum score is 30, a score below 10 is considered as severe cognitive impairment, 10-17 is moderate cognitive impairment, 18-25 is mild and in between 26-30 is normal cognition **[12]**.

Research ethics:

The study was approved by the Institutional ethical committee LNCT, University, Bhopal. Participants who were willing to participate were explained about the intent of the study. Informed consent verbal and written was obtained from the participants. Participants were assured of the confidentiality of the information.

Preparation and investigation:

One village was selected and the older adults who attended the camp were taken as samples. After explaining the purpose and obtaining the consent, those who were willing to participate were included. Demographic data was collected and thereafter MoCA was administered to the older adults. It took 15 – 18 mins to collect

the information and perform the cognitive assessment of one older adult. Thereafter the data collected was analyzed used descriptive and inferential statistics.

Statistical analysis:

The demographic profile and the prevalence of cognitive impairment among the elderly will be presented by frequency and percentage. The association of level of cognitive impairment with selected demographic variables will be done using Chi-square.

RESULTS

Most of the elderly were in the age group 71-80 years (50%), about 35% were between 61-70 years and the remaining 5% were of age 81 years and above. Majority of them were females (65%), whereas 35% males. The majority of elderly were educated up to secondary level (65%), 30% possessed primary level of education and only 2. 5% were illiterate. Half of the subjects were married (50%), about 45% had lost their spouses and only 5% were unmarried. More than half of elderly had 1-2 children (55%), about 30% had 3-4 children whereas only 15% had no children. **(Table 1)**.

Table 1: Frequency and Percentage distribution of demographic variables (N = 40)

S. No	Variables	Frequency (f)	Percentage (%)
1	Age in years		
	61-70	14	35
	71-80	20	50
	Above 80	6	15
2	Gender		
	Male	14	35
	Female	26	65
3	Education level		
	Non literate	2	5
	Primary	12	30
	Secondary	26	65
4	Marital status		
	Single	2	5
	Married	20	50
	Widow	18	45
5	No of Children		
	None	6	15
	1-2	22	55
	3-4	12	30
6	Physical Ailments		
	HT	16	40
	DM	10	25
	Asthma	8	20
	Both HT & DM	6	15
7	Family type		
	Nuclear	34	85
	Joint	6	15
8	Financial support		
	Family	34	85
	others	6	15

Table 2: Level of cognitive impairment Among elderly

Level of CI	No impairment		Mild Impairment		Moderate impairment		Severe impairment	
	f	%	f	%	f	%	f	%
Parameters	14	35	16	40	8	20	2	5

Table 3: Chi-square value showing the relationship between cognitive Impairment and demographic variables of elderly (N = 40)

Variable/CI	Absent	Present	Df	χ^2 value	Significance
Age in years					
61-70	5	9	2	8.14	Significant
71-80	4	16			
Above 80	5	1			
Gender					
Male	4	10	1	0.39	Not significant
Female	10	16			
Education Level					
Non-Literate	1	1	2	8.33	Significant
Primary level	8	4			
Secondary level	5	21			
Marital status					
Married	10	10	1	3.96	Significant
Single/widow	4	16			
No of children					
None	1	5	2	17.62	Significant
1-2	3	19			
3-4	10	2			
Physical ailment					
HT	2	14	3	9.85	Significant
DM	6	4			
Asthma	5	3			
Both HT & DM	1	5			
Family type					
Nuclear	9	25	1	7.25	Significant
Joint	5	1			
Financial support					
Family	10	24	1	3.11	Not significant
others	4	2			

df (1) = 3.84, p≥ 0.05; df (2) = 5.99, p≥ 0.05; df (3) = 7.81, p≥ 0.05

Table 2 illustrates the assessment of cognitive impairment among elderly. It is quite evident that most of the elderly had mild cognitive impairment (40%). Although 35% elderly did not show any impairment however 20% had moderate cognitive impairment whereas only 5% exhibited severe cognitive impairment.

Table 3 depicts that there is significant association between level of cognitive impairment with the age, educational status, marital status, number of children, physical ailment, and type of family as evident by chi square value of 8.14, 8.33,3.96,17.62, 9.85 and 7.25 respectively. It can be interpreted that with advancing age, cognitive impairment increases, higher the education status more the impairment, single/widowed people may have more impact on their cognition, elderly having children showed milder grade of cognitive impairment. Further hypertension and diabetes mellitus as co morbid illness have significant impact on cognition and elderly living as nuclear family exhibited higher grade of cognitive impairment.

Further cognitive impairment among elderly was found to be independent of gender of elderly, and source of financial support as evident by chi square value of 0.39, and 3.11 respectively.

DISCUSSION

The study showed that highest percentage of elderly were above age of 70 years, majority were females, majority had education up to secondary level, majority were married, most of them had 1-2 children, majority were diagnosed with hypertension. Somewhat inconsistent findings were reported in a cross-sectional study where majority of elderly were in the age group 60-69 years, with males more in number, most of them were illiterate, highest percentage with no comorbidities.

The current study findings revealed that most of the elderly (40%) exhibited mild cognitive impairment whereas 20% had moderate and 5 % had severe cognitive impairment. Similar findings were reported in a descriptive survey on cognitive impairment among elderly of Amritsar where 61.7% elderly have no cognitive impairment, 26.7% have mild cognitive impairment and 11.7% have severe cognitive impairment **[13]**.

Another cross-sectional study showed cognitive impairment in 4.5% of the elderly subjects **[14]**. Homogenous findings were revealed in a cross-sectional survey where 25% of elderly had cognitive impairment **[8]**. Although few studies revealed prevalence of CI among elderly as lower as 8.4%, 14% and 10% **[15]**.

A significant association was found between cognitive impairment and age of elderly, educational status, marital status, no of children, physical ailment, and type of family. Similar findings were revealed in a community-based survey that reported female gender, widow/widower status, illiteracy, and advanced old age (≥70 years) were statistically significant risk factors **[9]**. Furthermore, another cross-sectional survey in rural setting study also reported statistical association of CI with age, unmarried or widow/widower, illiterate, retired, living in isolation and low socio-economic status **[15]**. A contrary finding was revealed in a descriptive survey conducted in a community area of Punjab, where the age of elderly was not found to be significant with cognitive impairment **[13]**.

Another study in Punjab divulged those demographic variables like age, marital status, level of education were not significantly associated with cognitive impairment in the population above 60 years of age **[16]**. The elderly who are suffering with underlying co morbid diseases like hypertension, diabetes mellitus, combination of both, asthma etc. are at a risk for developing cognitive impairment. In current study hypertension and diabetes mellitus showed a significant association for

developing cognitive impairment, similar a study conducted among the older adults who were attending the non-communicable it was identified that those elderly who had one or more co-morbid disorder showed higher level of cognitive impairment **[17]**.

The present study showed that cognitive impairment is not associated with gender and financial status or security, somewhat contraindicatory findings were stated in research where it showed that the older adults who were financially independent had better cognition as compared to those who had lower financial status **[18]**. Another research revealed that females are more prone to develop cognitive impairment when compared to males, more so if they are suffering from any comorbid disorder like diabetes **[19]**.

CONCLUSION

The present study throws light on the presence of cognitive impairment among rural elderly. The results revealed that the majority (65%) of the elderly had cognitive impairment; among whom 40% of elderly had mild cognitive impairment. The study signifies that elderly population residing in rural area are too vulnerable to develop cognitive impairment. Nurses can work independently through nurse-led clinics in early diagnosis and providing necessary community support. These clinics can serve as day care centers where therapeutic interventions can be planned out to enhance the cognition level of rural community residents. These findings are related to one month data collection hence low sample size limits the generalization of findings. Longitudinal study in this area will be significant in validating the findings of the study. Further research is elucidated for assessing the association of cognitive impairment with other risk factors.

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