



# PREVALENCE AND DETERMINANTS OF COGNITIVE IMPAIRMENT AMONG RURAL ELDERLY POPULATION OF ALIGARH

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**Financial Support:** None declared  
**Conflict of interest:** None declared  
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#### How to cite this article:

Maroof M, Ahmad A, Khalique N, Ansari MA, Shah MS, Eram U. Prevalence and Determinants of Cognitive Impairment among Rural Elderly Population of Aligarh. Ntl J Community Med 2016; 7(3):189-192.

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**Date of Submission:** 24-12-15

**Date of Acceptance:** 17-03-16

**Date of Publication:** 31-03-16

## ABSTRACT

**Introduction:** Increase in life expectancy has resulted in increased proportion of elderly population. Elderly with Cognitive impairment have increased risk for progression to dementia and increased likelihood of contracting Alzheimer's disease than the general population.

**Objectives:** To study the prevalence of cognitive impairment in elderly population & to determine the various socio- demographic factors associated with the cognitive impairment.

**Material & Methods:** Community based cross- sectional study was done at field practice area of Rural Health Training Centre, JN Medical College, AMU, Aligarh by using systematic random sampling with PPS among 225 rural elderly individuals. Assessment of cognitive impairment was done using Mini Mental State Examination (Hindi version). Data was entered & analyzed using SPSS 20. Chi- Square test was used. P value <0.05 was considered significant.

**Results:** The prevalence of cognitive impairment was found to be 16%. Significant relationship of the prevalence of cognitive impairment was observed with the age, gender, literacy status, & marital status.

**Conclusion:** Approx. one- sixth of the elderly had cognitive impairment significantly related to various socio-demographic factors. Therefore, priority based care should be given to the vulnerable population by strengthening of the service available & creating awareness to utilize the services.

**Keywords:** Cognitive impairment, elderly, rural, Aligarh.

## INTRODUCTION

On account of better education, health facilities and increase in life expectancy, the percentage of elderly population (60+) has gone up from 6% to 8.3% during the period 1991- 2013<sup>1</sup>.

Cognitive impairment (CI) is defined as "confusion or memory loss that is happening more often or is getting worse during the past 12 months"<sup>2</sup>. Aging is considered as the main reason behind it; however, other factors such as literacy, family history, in-

jury to brain, etc. along with diseases like Parkinson's may also contribute in development of cognitive impairment<sup>2</sup>. Regular physical activity, control of blood sugar & cholesterol can attenuate its risk<sup>2</sup>.

Cognitive impairment debilitates daily life routine ultimately resulting in decreased quality of life and increased dependence. Till date, treatment of cognitive impairment is not available; therefore, only preventive measures taken at appropriate time can help in reducing the burden of disease.

Only few researches related to cognitive impairment in India are present and no study in this area is available; hence, the study was planned to know the prevalence of cognitive impairment in this area & identify the factors associated with cognitive impairment so that timely and appropriate preventive measures can be taken.

The objectives of the study were to study the prevalence of cognitive impairment in elderly population and to determine the various socio-demographic factors associated with the cognitive impairment.

## MATERIAL & METHODS

The present study is part of a large community based cross-sectional study carried out at field practice area of Rural Health Training Centre, JN Medical College, AMU, Aligarh. Elderly individuals aged 60 years & above giving informed consent were included in the study whereas individuals aged <60 years, not giving consent, severely ill & moribund individuals were not included in the study. The sampling method used was systematic random sampling with probability proportionate to size (PPS).

The sample size was calculated from the data obtained from pilot study. The results of the pilot study were not included in final analysis. Hearing loss (15%) was found to be least prevalent amongst the health problems studied. Thus, it was taken for the sample size calculation as shown under-

**Sample size calculation:**  $n = 4pq/l2$ ;  $p = 15\%$ , Absolute precision ( $l$ ) = 5%, non-response = 10%  $n = 224 \sim 225$

Socio-demographic characteristics of the individuals were recorded using pretested questionnaire, Mini Mental State Examination (Hindi version)

was used for detecting cognitive impairment. The study was approved by Institutional Ethics committee. Data analysis was done using SPSS 20. Chi-Square test was used to find association between cognitive impairment and various socio-demographic factors. P value <0.05 was considered as significant.

## RESULTS

### Socio-demographic profile of the elderly population

The socio-demographic profile of the study population shows that majority of the elderly included in the study were of age 60- 69 years (61.3%) followed by 70- 79 years (25.3%), 80 years & above (13.4%). The sex compositions revealed that majority of elderly were females (58.7%). As per literacy status it was observed that the proportion of illiterates were higher (66.7%) than the literates (33.3%). Currently married were found to be in higher proportion (53.3%) as compared to the widow (46.7%) in the study population.

### Prevalence of cognitive impairment among elderly population

The study revealed that the prevalence of cognitive impairment among rural elderly population in Aligarh was 16%.

### Association of cognitive impairment with various socio-demographic factors

The prevalence of cognitive impairment was significantly associated with the age. As the age advances the prevalence of cognitive impairment significantly increased. The prevalence was found to be highest in age group 80 years & above (46.7%) followed by 70- 79 years (15.8%), 9.4% in the age group 60- 69 years (Table- 1).

**Table 1: Distribution of cognitive impairment according to various socio-demographic variables**

Variables	Cognitive impairment		Total (n=225)	P value
	Present (n=36) (%)	Absent (n=189) (%)		
<b>Age</b>				
60- 69 years	13 (9.4)	125 (90.6)	138	<0.001
70- 79 years	9 (15.8)	48 (84.2)	57	
80 years & above	14 (46.7)	16 (53.3)	30	
<b>Gender</b>				
Males	9 (9.7)	84 (90.3)	93	0.030
Females	27 (20.4)	105 (79.6)	132	
<b>Literacy status</b>				
Illiterate	31 (20.7)	119 (79.3)	150	0.007
Literate	5 (6.7)	70 (93.3)	75	
<b>Marital status</b>				
Currently married	12 (10)	108 (90)	120	0.009
Widowed	24 (22.9)	81 (77.1)	105	

The prevalence of cognitive impairment was significantly associated with the gender. Elderly females had significantly higher prevalence of cognitive impairment (20.4%) as compared to elderly males (9.7%) (Table- 1).

The prevalence of cognitive impairment was significantly associated with the literacy status. Illiterates elderly had significantly higher prevalence of cognitive impairment (20.7%) than the literates elderly (6.7%) (Table- 1).

The prevalence of cognitive impairment was significantly associated with the marital status. Currently married elderly had significantly lower prevalence of cognitive impairment (10%) as compared to the widow elderly (22.9%) (Table- 1).

## DISCUSSION

The prevalence of cognitive impairment observed in the current study was 16% & it was significantly associated with age, gender, literacy status & working status.

The study conducted in elderly care home in Malaysia found prevalence of cognitive impairment to be 36.5% that was significantly related to age but not with gender<sup>3</sup>.

The prevalence of cognitive impairment was 31% as reported in an OPD based study in Tirupati that was significantly related to age, gender & literacy status. 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<sup>4</sup>.

The study conducted in day care centres of national council of senior citizens, Malaysia showed that the prevalence of cognitive impairment to be 4% with no significant association with age, gender & education<sup>5</sup>.

A camp-based study carried out in rural population of Varanasi showed that 42.9% of the elderly had cognitive impairment with literate & male elderly having statistically significant higher mean HMSE score as compared to illiterates & females, also significant correlation with age was observed<sup>6</sup>.

In habitants of eastern UP the prevalence of dementia was found to be 5.1% (5.5%- rural and 3.8%- urban) that was significantly related to age, gender, marital status & literacy status<sup>7</sup>.

The study done in day care center of Hamadan revealed prevalence of cognitive decline to be 2.8% which was significantly related to age & schooling<sup>8</sup>.

The prevalence of cognitive impairment was 3.5% (1.3%- urban, 2.3%- rural) as reported in a study conducted in Shimla hills; increasing age, educational level, and marital status acting as significant predictors of cognitive impairment in elderly<sup>9</sup>.

The study conducted in rural communities of Jeju Province, Korea showed that the prevalence of cognitive impairment was 33.1% that was significantly related to age, sex, education, standard of living, employment status, and subjective health state<sup>10</sup>.

The study from Ludhiana, Punjab showed that the prevalence of cognitive impairment in the elderly population was 8.8%. Increasing age, unmarried/widowed status, illiteracy, unemployment and poverty were found to be independently associated with cognitive impairment<sup>11</sup>.

The prevalence of cognitive impairment among the inmates of old age home in Hyderabad was found to be 38% that showed significant association with age, literacy status but no significant association with gender, marital status, socioeconomic status, type of family, residence was seen<sup>12</sup>.

In a UK based study the prevalence of cognitive impairment was found to be 18.3%, which was significantly related to age & gender<sup>13</sup>.

The prevalence of cognitive impairment among community-dwelling older adults in Jamaica was found to be 32.2%, which was significantly associated with age, educational level, gender, area of residence, hospitalization in the last three years, falls in the last three months, limit activities for fear of falling, self-reported diabetes mellitus and hypertension, depression and dependence in ADL<sup>14</sup>.

## CONCLUSION

The study offers baseline information regarding the cognitive impairment in the area studied. The findings of the study revealed that various socio-demographic play an important role in the prevalence of cognitive impairment. Therefore, timely screening & early intervention may prove useful in improving the quality of life of elderly population. Strengthening of the geriatric care services, prioritizing care for the vulnerable elderly & increasing utilization of the care services through raising awareness is required.

## Limitations

Sample size was taken from larger part of the study.

Various other risk factors and their association with the cognitive impairment were not studied.

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