

Education and Cognitive Function among Older Adults in Uttara Karnataka

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ABSTRACT

As aging brings progressive changes in all parts of the body, Due to ageing, changes in the structures of brain and function lead to cognitive decline as well as physical and behavioral changes. The aim of the study was to study the association between education and cognitive function among older adults. The study encompassed 180 older adults aged 60 years and above who were selected from Dharwad taluk through snowball technique. The tools used were General information schedule to collect the personal information, Mini mental state examination (MMSE) assess the cognitive function among older adults. The results revealed that about 48 per cent of older adults had normal cognitive function followed by 32% of them mild while 20 % had severe cognitive impairment. A significant association and difference between education and cognitive function was found. Also, there was a significant and positive correlation between education and cognitive function: indicated higher the education better in the cognitive function older adults.

Key Words : Mini mental state examination, Older adults, Cognitive function

INTRODUCTION

According to the 2011 census 7.7 per cent of the population were above the age of 60 years and estimated to be double (15.4%) by 2025. The estimated number of people living with dementia will triple by 2050, increasing from 57.4 million to 153 million. Currently, 58.0% of people living with dementia live in low- to middle-income countries (LMIC), and this prevalence is expected to reach 68.0% in 2050. Cognitive reserve refers to the ability of the cognitive processes to withstand brain insult with little or no loss in performance. Cognitive function is a broad term that refers to mental process involved in the acquisition of knowledge, manipulation of information and reasoning, which include the domains of perception, memory, learning, attention, decision making, and language abilities.

Cognitive reserve is built over the life course through dynamic processes as a consequence of exposure to education, occupation, and leisure-time activities.

Education is an early surrogate marker of cognitive reserve and is a predictor of better cognitive performance both in early and middle ages, and higher educational attainment is a protective factor against cognitive decline and dementia. The most important changes in cognition with normal aging are declines in performance on cognitive tasks that requires one to quickly process or transform information to make decision, including measures of speed of processing, working memory, and executive cognitive function. Education can influence cognitive functioning in the elderly by contributing to enhanced cognitive skills that emerge in early adulthood and persist into older age.

Objectives of the study:

1. To assess the cognitive function among older adults.
2. To know the relationship between education and cognitive function among older adults.

METHODOLOGY

Research Design:

Correlation research designs was used in the study.

Locale:

The present research study was carried out in Dharwad Taluk of Karnataka state, India. The city area and two villages were selected for the study.

Population:

The present research study was carried out exclusively in Dharwad Taluk of Karnataka state, India. The city area and two villages were selected for the study.

Sample:

The sample of the study included 180 older adults (90 from urban and 90 from rural) who were aged 60 years and above and residing at home with family members selected by snowball technique of sampling.

Research tools:

Structured general information schedule was used to collect the information about age, gender, and locality and education of the older adults.

Mini Mental State Examination (MMSE) by Lenore and Wallace in (1975):

The MMSE is effective as a screening tool for cognitive impairment in older adults. It was used to assess cognitive abilities such as orientation, registration, attention, calculation, recall and language. It consists of 11 questions. The maximum score is 30 and minimum is 0. Levels are classified and categorized as follows:

Levels of cognitive impairment	Score
No impairment	24-30
Mild impairment	18-23
Severe impairment	0-17

Data collection procedure:

A household survey was conducted and data collection tools were administered individually. The elderly were briefed about the purpose of the study and oral consent was obtained to conduct the study. The caregiver's opinion was also sought in cases wherever available in order to substantiate the responses given by the elderly, especially for physical functioning. It took about 30-40 minutes to collect the data from each sample.

Statistical analysis

Frequency and percentage:

These were calculated to interpret the distribution of age, gender, locality, education and cognitive function among elderly.

Chi-square:

It was used to know the association between dependent and independent variables of elderly.

One-way ANOVA:

This technique was used to know the influence of education on cognitive function among elderly.

Correlation:

Karl Pearson's correlation coefficient analysis was used to measure the degree of relationship between dependent and independent variables.

The collected data was analyzed by using the following statistical technique. The data entry was done using IBM SPSS 26 software.

RESULTS AND DISCUSSION

Table 1 indicates the details of demographic characteristics of the respondents. Age of the respondents ranged from 60 to 85 years of age. Among the respondent's majority (73%) of them belonged to young old (60-74 years) and 27 per cent of elderly belonged, old (75-85) years group category respectively. With regard to gender wise distribution of elderly shows that 35 per cent of the male and 65 per cent of the respondents were belonged to female group. About locality 50 per cent of

Table 1: Demographic characteristics of the respondents (N=180)

Characteristics	Category	Frequency (%)
Age	Young old (60-74)	131(73.0)
	Old-old (75-85)	48(27.0)
Gender	Male	63(35.0)
	Female	117(65.0)
Locality	Rural	90 (50.0)
	Urban	90(50.0)
	Illiterate	70 (39.0)
Education	Primary	41(23.0)
	High school	27(15.0)
	PUC	22(12.0)
	Graduation and above	20(11.0)

Figures in parenthesis indicates percentages

the respondents are from rural areas while the remaining 50 per cent of the respondents are from urban areas were purposively selected. It is also observed from Table 1 that 39 per cent of the respondents belonged to illiterate category followed by 23 per cent, 21 per cent, 15 per cent, 12 per cent of the respondents belonged to primary, PUC and above and high school.

Fig. 1 represents the levels of cognitive function among elderly. About 48 per cent of had normal cognitive function followed by 32% of them mild while 20 % had severe cognitive impairment. Abdul Karim and Venkatachalam (2021) and Akila *et al.* (2020) Alkhunizan *et al.* (2018) who are also in same line with this study.

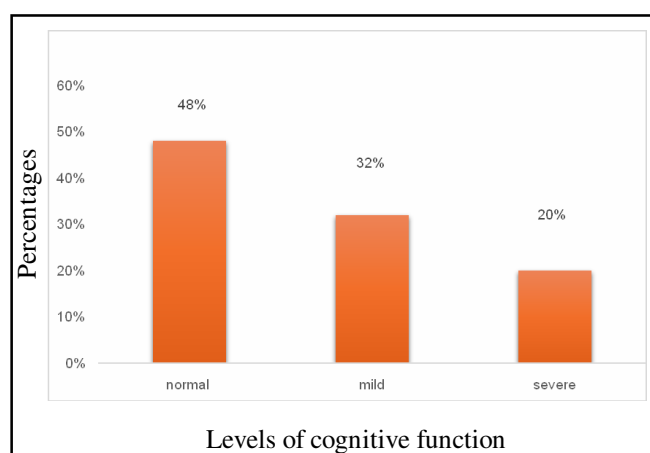


Fig. 1 : Percentage distribution of cognitive function among older adults

Among the sample, 40 per cent of illiterates belonged to normal function, followed by (33%), (27%) belonged to mild and severe impairment. Most of the elderly who completed primary education (63.4%) normal function and (22%) mild and (14.6%) severe impairment. Those who completed high school education half (52%) of them fell into normal function followed by mild (37%) and severe (11%) impairment. Elderly who possessed PUC shows 40.9 per cent of them fall under the mild impairment followed by normal (32%) and severe (27%) levels of cognitive function. Most of the elderly who completed graduation and above comes into normal (60%) while 25 and 15 per cent articulated in mild and severe levels of cognitive function (Table 2).

From Table 3 Chi- square value indicated that a significant association was found between education and memory function. A significant difference was found between educational groups with respect to cognitive function. Whereas those who completed graduation and above were better in cognitive function as compared to elderly who possessed PUC, high school, primary and illiterates. Also, there was a significant and positive correlation between education and cognitive function: indicated higher the education better in the cognitive function older adults. Shen *et al.* (2021) also revealed that education attainment was significantly and positively correlated with cognitive function in older adults. Higher educational levels and active engagement may contribute to cognitive reserve and had protective effect on memory

Category	Levels of cognitive function			Total
	Normal	Mild	Severe	
Illiterate	28(40.0)	23(33.0)	19(27.0)	70(100.0)
Primary	26(63.4)	9(22.0)	6(14.6)	41(100.0)
High School	14(52.0)	10(37.0)	3(11.0)	27(100.0)
PUC	7(32.0)	9(40.9)	6(27.0)	22(100.0)
Graduation and above	12(60.0)	5(25.0)	3(15.0)	20(100.0)
Total	87(49.0)	56(31.0)	37(20.0)	180(100.0)

Category	χ^2 Value	Mean \pm SD	F	r
Illiterate		19.81 \pm 4.420		
Primary		21.28 \pm 4.384		
High School	2.76*	20.51 \pm 4.822	13.9*	0.24*
PUC		21.45 \pm 4.559		
Graduation and above		21.78 \pm 4.384		

ability. Cheval *et al.* (2023) who found a significant association and difference between education and cognitive function. Between the low and highly educated elderly, higher levels of education was associated with higher levels of cognitive processes like encoding, storage and recall.

Conclusion:

From the study it is concluded that majority of the older adults belonged normal cognitive function followed by mild and severe impairment. A significant and positive relation was observed between education and cognitive function indicates higher the levels of education better cognitive function. So, there is need to provide intervention programme and engage in cognitive activities.

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