

Correlation between the Cognitive Impairment and the Performance of Activities of Daily Living among Elderly People Residing in Selected Old-Age Homes of West Bengal

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ABSTRACT

Age associated cognitive decline is an important human experience which differs in extent between individuals. Activities of daily living are linked to cognitive function. A descriptive study was conducted to identify correlation between the cognitive impairment (CI) and the performance of activities of daily living (ADL) among elderly people residing in selected old-age homes of West Bengal. The study aimed to determine the relationship between the CI and the performance of ADL among elderly people. Non experimental survey research approach was adopted to collect data from 150 subjects by simple random sampling technique with the help of Demographic Proforma, GPCOG Screening Test and Barthel Index. The study findings revealed that 43.33% of the respondents had cognitive impairment whereas 56.66% were cognitively intact. ADL assessment depicted that 43.33% were moderately dependent, 33.33% were independent, 14.66% were slightly dependent, followed by 8.66% of the respondents who were severely dependent. A strong positive correlation was found between CI and ADL ($r = 0.87$) and also between CI and age ($r = 0.97$) of the participants. Statistically significant association was found between cognitive impairment and gender ($\chi^2 = 5.99$, <0.05), education ($\chi^2 = 8.81$, <0.05), previous occupation ($\chi^2 = 12.80$, <0.01), self financial support ($\chi^2 = 10.12$, <0.01), family type ($\chi^2 = 15.77$, <0.001), presence of chronic disease ($\chi^2 = 4.10$, <0.05). Considering the findings some recommendations were offered for future research such as to conduct the study on large sample and different settings.

Key Words: Cognitive impairment, Activities of daily living, Elderly people, Correlation, Performance

INTRODUCTION

“Old age is not a disease – it is strength and survivorship, triumph over all kinds of vicissitudes and disappointments, trial and illnesses” ~ Maggie Kuhn

“How old is old?” The concept of old has been changed drastically over the few years and is still changing. Our pre-historic ancestors probably had a life span of 40 years, with the average individual living around 18 years [1]. Life expectancy in India has increased from 49.7 years in

1970-75 to 59 years in 1990s (male; 58.3 years and female; 59.7 years) and currently to 68.6 years in 2012-16. In current times, life expectancy of male is 67.4 years and for the female it is 70.2 years [2]. Old age depends not only on the chronological age of people, but also on their physical and mental abilities, socio economic resources, educational background, and previous life experiences because age alone cannot be a determining factor in defining old age [3]. Today, old age and gerontology have gained

much more attention since the improved health conditions and increased life expectancy in the world have resulted in the boosting of the elderly population [4]. Besides this, because of the elongation of life span and the decline in birth rate, ageing crisis is spreading worldwide [5].

There are certain physiological as well psychological changes when it comes to aging. One of the domains that get affected while the process is going on is “the cognitive domain”. It is said that the cognitive domain is the key that keeps an individual going; “*The way to your body is through your spirit*” [6].

Hence, as one gets older there are certain cognitive changes that occur with the process of aging (either normal or pathological). The most important changes in cognition are declines in performance on cognitive tasks that require one to quickly process or transform information to make decision, including measures of speed of processing, working memory, and executive cognitive function, which may accelerate the impairment of their everyday functional abilities [6].

Cognitive ability is a term referring to an individual’s ability to process thoughts that should not deplete on a large scale in healthy individuals. It is defined as the ability of an individual to perform the numerous mental activities most closely related to learning and problem solving [7].

For elderly to possess good conditions of life, they should be able to maintain their autonomy and their independence. The autonomy is considered as the ability to make decisions, that is, to be in control of life, and independence is seen as the ability and power to perform activities of daily living without depending on any other people [8].

Physical activity is one among the well-established lifestyle factors to take care of cognition. Various studies have indicated that, in healthy older people, higher physical activity is associated with higher cognitive performance and lower risk of cognitive impairment in later life. Existing literature

shows that Functional Status (FS) decline is consistently related to cognitive impairment and is one of the most manifested features of dementia. Functional status can be measured by people’s activities of daily living (ADL). Decline in functional status has also been proved to be a predictor of cognitive impairment in older people [5]. For the elderly, quality of life is associated with the ability to remain autonomous in the performance of daily living activities [9]. The ‘Activities of daily living’ or ADLs are the basic tasks of everyday life, such as eating, bathing, dressing, toileting and transferring [10].

Cognitive impairment (CI) is characterized by declines in memory, attention and cognitive function, which greatly affect the quality of life [5]. The World Health Organization (WHO) estimates that the number of people over the age of 60 will be around 2 billion in 2050, while the number of dementia patients is expected to rise rapidly along with the aging population [11]. According to the World Alzheimer Report, over 46 million people were living with dementia worldwide in 2015, and this number is estimated to reach 131.5 million by 2050 [12].

Mild cognitive impairment (MCI) is often a precursor to Alzheimer disease (AD) and other forms of dementia, as 12% of individuals with MCI convert to AD over 1 year, and as many as 60% of people with MCI develop AD over a 5 years period. Individuals with MCI exhibit cognitive impairment but largely preserved functional abilities (Activities of Daily Living) comparable to that of cognitively normal older adults [13]. Cognitive decline is the defining characteristic of Alzheimer’s disease as well as dementia. It significantly increases the risk of functional dependence and poor quality of life in the elderly [14].

Cognitive loss and conditions like dementia have a crucial impact on the capacity to conduct activities of daily living (ADL) in older people, leading to dependency, distress, and reduced quality of life [15]. Cognitive impairment affects

people's ability to perform activities of daily life, initially in complex activities but later with the disease course, progressing to more basic activities such as dressing and toileting [16].

Cognitive impairments are among the most prevalent diseases in the elderly, and in more than half of the old people, mild cognitive impairment progresses to dementia within five years [4]. The prevalence of cognitive impairment grew significantly with age, with rates increasing by about 10% for every 10 years of age after age 65. Of those aged 85 and older, 38% is having some degree of cognitive impairment [17].

Current data suggests that the prevalence of cognitive impairment in 65 – year – olds is over 5%, and their mortality is 3.3 – 6.0 times higher than that of the general population [11].

Also in a study, cross-sectional and longitudinal data have demonstrated that physically active people have lower risk of developing Alzheimer's disease and related cognitive disorders when compared with sedentary people [18]. Another study reveals that memory and executive functioning were related to IADL (Instrumental Activities of Daily Living) scores [19].

As the population in the world grows older, the number of people with cognitive impairment increases. More knowledge is needed about how cognitive impairment influences people's everyday life and their perceived quality of life [16]. This research aims to provide more evidence in this field.

Need of the Study

Age associated cognitive decline (either pathological or non-pathological) – is an important human experience which differs in extent between individuals [20]. Activities of daily living are linked to cognitive function. Cognitive impairment creates significant challenges for patients, their families, and friends, causing cognitive changes in the patients that can interfere with daily activities or independent

functioning. The more cognitive functions decline, the more daily functions are inhibited.

Approximately 15 to 20% of people aging 65 or more have mild cognitive impairment (MCI) [21].

Functional skills deteriorate insidiously over time in patients with early stage dementia or cognitive impairment, examination of functional errors may capture early difficulties that precipitate global functional difficulties [22].

Johansson M (2015), investigated the relationship between cognitive function, ability to perform activities of daily living and perceived health related quality of life in a population of 85 year old individuals in the community of Linkoping (n = 373). Even mild cognitive dysfunction correlated with impaired ability to perform activities of daily living and lower health related quality of life [16].

James Hall R et al (2011) conducted a study to determine the link between cognitive measures and ADL and IADL functioning among older adults. The result shows, memory and executive functioning were related to IADL scores. Executive functioning was linked to total ADL as well [19].

Boyle P.A et al (2002) had done a research on cognitive and motor impairments predicting functional declines in patients with vascular dementia where it showed that IADL performance is sensitive to early cognitive decline whereas physical functioning is often a significant driver of basic ADL ability.

Early recognition of the cognitive impairment allows the person to reprioritize personal life goals, and to develop advanced directives for health, legal, and financial matters that fit with their preferences [24]. Knowledge of the predictors of functional decline associated with MCI would aid the health care providers in making determinations regarding these individuals' functional independence and disease course. Such predictions would be extremely useful

for those patients without direct care providers [22].

Henceforth it is important to determine the cognitive abilities and its associated impairments as well as its contributions in the performance of activities of daily living among old-age people. Predicting the effect of cognitive functions in changes of daily functions is essential not only for clinical practitioners to provide appropriate interventions to improve or maintain daily performances but also for care-givers to prepare sufficient socioeconomic resources to treat patients with MCI and dementia. Therefore, the impact of different levels of cognitive functions on the changes in daily living activities in older adults with cognitive impairment must be explored [25]. Taking steps to address this issue will ultimately have a positive impact on the entire community.

From these observations, curiosity and interest in the field the researcher was prompted to undertake the present study. Keeping the view in mind, the researcher has intended to do a study on relationship between cognitive impairment and activities of daily living (ADL) among the elderly people.

MATERIALS AND METHODS

Research approach

To accomplish the objectives of this study, a non experimental approach had been adopted. The survey research approach was considered to be the most appropriate for the present study.

Research design

The research design depicts the overall plan for organizing a scientific and systematic investigation. Keeping the objectives of the study in view, correlational research design was used.

Research variables

- Cognitive impairment
- Activities of daily living (ADL)

Demographic variables

Age, gender, educational qualification, marital status, previous occupation, self financial support, type of family, history of chronic disease (physical), family history of memory loss, history of substance abuse.

Setting of the study

For Pilot Study, the setting that had been chosen was –

- Ganguly Banprastha Ashram, Duttapukur, North 24 pgs

For Final Study, following settings were chosen –

- Amar Ghar Briddhashram, Madhyamgram, North 24pgs
- Seba Old-age Home, P-9 Panchasayar, Kolkata
- Kasba Divine Foundation, Ballygunj, Kolkata
- Swapna Neerh Old-age Home, Dum Dum Cantonment, Kolkata
- Navanir Old-age Home, Chetla, Kolkata
- Anandaniketan age care home, Barrackpore, North 24pgs
- Bholananda Old-age Home, Barrackpore, North 24pgs
- OLD AGE HOME “Sandhya Mita”, Baguiati, Kolkata
- Shanti Elderly Care, Santoshpur, Kolkata

Population of the study

The population of the present study was elderly people aged 65 years or more living in old-age homes.

Sample

In the preset study, the sample comprised of the elderly people aging from 65 years or more in selected old-age homes of West Bengal.

Sample size

Appropriate sample size for the present study was determined by using power analysis formula. Hence, using the standard formula of power analysis, the sample size can be computed as –

$$\text{Sample size (n)} = Z^2 pq/e^2$$

Where 'n' is the sample size that to be calculated; 'Z' is the standard deviation, the value of which is 1.96 at 95% confidence level; 'p' denotes the prevalence rate. For the present study, prevalence rate of cognitive impairment (CI) had been taken as 8.8% [58]; 'q' is equal to (1 - p) and 'e' symbolizes the margin of error, the standard value of which is taken to be 5% for the present study.

$$\begin{aligned}
 n &= \frac{Z^2 \times p \times q}{e^2} \\
 &= \frac{(1.96)^2 \times (8.8/100) \times (1 - 8.8/100)}{(5/100)^2} \\
 &= 3.8416 \times 0.088 \times 0.912 / 0.0025 \\
 &= 0.3083 / 0.0025 \\
 &= 123.32 \approx 123
 \end{aligned}$$

The sample size by power analysis was calculated to be 123. And 150 elderly people were selected for the present study from specific old-age homes of West Bengal.

Inclusion criteria

Elderly people with the following conditions were included in the study –

- Who were willing to participate in the study.
- Who were present at the period of data collection.
- Who were able to speak and understand English and Bengali.

Exclusion criteria

- Elderly people who were mentally unable.

Sampling technique

Simple random sampling technique had been used for the present study.

Ethical consideration

Ethical permission was taken from –

- IPGME&R Research Oversight Committee, Institution of Post Graduate Medical Education and Research (IPGME&R), SSKM hospital, Kolkata-20.
- Written informed consent was obtained from the subjects under study.
- Written permission was obtained from the concerned authority of selected old-age homes of West Bengal.

Administrative permission was obtained from –

- Principal of West Bengal Govt. College of Nursing, SSKM Hospital Campus.
- Director of Health Services, Health and Family Welfare Department, West Bengal.
- Joint Director of Health Services Nursing, Health and Family Welfare Department, West Bengal.
- Administrative heads of selected old-age homes of West Bengal.

Data collection tool and technique

Table 1 Data collection tools and techniques

Tools	Variables to be measured	Techniques/methods
Semi structured Interview Schedule	Demographic data	Interviewing
GPCOG Screening Test	Level of cognitive impairment	Interviewing
Barthel Index	Performance of ADL	Observation

RESULT

In the present study, analysis and interpretation of the findings were based on data collected through Semi Structured Interview Schedule on Demographic Data, GPCOG Screening Test to determine the level of cognitive impairment and Barthel Index to assess the performance of activities of daily living (ADL) among elderly people residing in selected old age homes of West Bengal. The analysis was done according to the objectives of the study. Both descriptive and inferential statistics were applied to analyze the data. Results of the analysis of the obtained data were organized by statistical method, so that summarized results could be visualized in scientific way.

Organization and presentation of study findings

The data obtained were analyzed by using descriptive and inferential statistics. The data were organized and presented under the following sections.

Section I: Findings related to the demographic characteristics of the elderly people of old-age homes.

Section II: Findings related to identification of cognitive impairment of elderly people.

Section III: Findings related to the level of activities of daily living (ADL) of elderly people.

Section IV: Findings on relationship between the cognitive impairment and the level of activities of daily living (ADL) among the elderly people.

Section V: Findings related to association between the cognitive impairment and selected demographic variables in terms of age, gender, educational qualification, previous occupation, self financial support, type of family, presence of any chronic disease, family history of memory loss.

Section I: Findings related to the demographic characteristics of the sample

Table 2 Frequency and percentage distribution of elderly people according to age, gender, n = 150

Sample characteristics	Frequency (f)	Percentage (%)
Age (in years)		
65 – 74	57	38
75 – 84	55	36.66
≥85	38	25.33
Gender		
Male	76	50.66
Female	74	49.33

Table 3 Frequency and percentage distribution of elderly people according to educational qualification, n = 150

Sample characteristics	Frequency (f)	Percentage (%)
Education		
No formal education	10	6.66
Primary level	28	18.66
Secondary level	24	16
Higher secondary level	25	16.66
Graduation	45	30
Post graduation	18	12

Table 4 Frequency and percentage distribution of elderly people according to marital status and previous occupation n = 150

Sample characteristics	Male		Female	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Marital status				
Married	06	7.89	05	6.75
Unmarried	11	14.47	06	8.10
Widower	55	72.36	Nil	–
Widow	Nil	–	61	82.43
Divorcee	03	3.94	02	2.70
Separated	01	1.31	Nil	–
Previous occupation				
Farmer	Nil	–	Nil	–
Daily wage labour	Nil	–	Nil	–
Business	31	40.78	Nil	–
Service	45	59.21	13	17.56
Homemaker	Nil	–	56	75.67
Unemployed	Nil	–	05	6.75

Table 5 Frequency and percentage distribution of elderly people according to the self financial support, type of family, family history of memory loss, history of substance abuse, n = 150

Sample characteristics	Frequency (f)	Percentage (%)
Presence of self financial support		
Yes	91	60.66
No	59	39.33
Type of family		
Nuclear	57	38
Joint	93	62
Family history of memory loss		
Yes	37	24.66
No	113	75.33
History of substance abuse		
Yes	63	42
No	87	58

Table 6 Frequency and percentage distribution of elderly people according to the presence of any chronic disease, n = 150

Sample characteristics	Male		Female	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Presence of chronic disease				
Yes	63	82.89	65	87.83
No	13	17.10	09	12.16

Section II: Findings related to identification of cognitive impairment of elderly people

Table 7 Frequency and percentage distribution of elderly people according to the presence of cognitive impairment, n = 150

Cognitive impairment	Frequency (f)	Percentage (%)
Present	65	43.33
Not present	85	56.66

Table 8 Range of score, Mean, Median, and Standard Deviation (SD) of elderly people according to the presence of cognitive impairment, n = 150

Variable	Range of score	Mean	Median	SD
Cognitive impairment	2 – 9	5.80	6	2.09

Table 8 depicts that, range of the score of cognitive function of the elderly people was 2 – 9 (minimum score – 2 and maximum score – 9), mean was 5.80,

median was 6, and the values of both mean and median were nearly same, SD was 2.09 that indicates scores of cognitive function were mildly dispersed.

Section III: Findings related to the level of activities of daily living (ADL) of elderly people

Table 9 Frequency and percentage distribution of elderly people according to the level of activities of daily living (ADL), n = 150

Level of independence	Range of score	Frequency (f)	Percentage (%)
Independence	100	50	33.33
Slight dependency	91 – 99	22	14.66
Moderate dependency	61 – 90	65	43.33
Severe dependency	21 – 60	13	8.66
Totally dependency	0 – 20	Nil	–

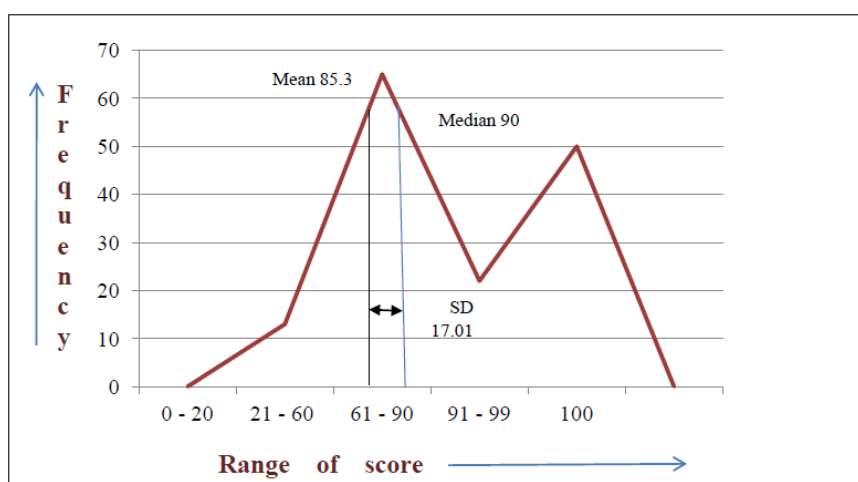


Fig 1 Frequency polygon showing distribution of activities of daily living scores of elderly people, n = 150

The figure shows that majority of the participants (65) lie in the score range of 61 – 90. The figure also denotes mean as 85.3, median as 90 and standard deviation as 17.01. Here the mean lies to the left of the median indicating negative skewness (Sk) which was – 0.82.

cognitive impairment and activities of daily living (ADL) which was also found significant from ‘t’ value of 21.48 at 0.001 level of significance. Therefore it can be interpreted that, those who were cognitively impaired also had a lower level of ADL.

Section IV: Findings on relationship between the cognitive impairment and the activities of daily living (ADL) among the elderly people

Table 10 Correlation between the cognitive impairment and the activities of daily living (ADL) among the elderly people, n = 150

Variable	‘r’	‘t’
Cognitive impairment and Activities of daily living (ADL)	0.87	21.48***

$t' df(148) = 3.35, p < 0.001$

Table 10 reveals that there was a strong positive correlation (0.87) between

Section V: Findings related to association between the cognitive impairment and selected demographic variables in terms of age, gender, educational qualification, previous occupation, self financial support, type of family, presence of any chronic disease, family history of memory loss

Table 11 Correlation between the cognitive impairment and age of the elderly people, n = 150

Variable	‘r’	‘t’
Cognitive impairment and Age of the elderly people	0.97	54.52***

$t' df(148) = 3.35, p < 0.001$

Table 11 reveals that there was a strong positive correlation (0.97) between the presence of cognitive impairment and age of the participants, which was also

found significant from 't' value of 54.52 at 0.001 level of significance. Therefore it can be interpreted that, cognitive impairment is evident with advancement of age.

Table 12 Chi square value showing association between the cognitive impairment and selected demographic variables (gender and educational qualification) n = 150

Selected variables	Cognitive impairment		Total	Chi square	p value
	Yes	No			
Gender					
Male	26	50	76	5.99*	0.014
Female	40	34	74		
Total	66	84	150		
Educational qualification					
No formal education	09	01	10	8.81*	0.012
≤ Secondary level	25	27	52		
> Secondary level	32	56	88		
Total	66	84	150		

$$\chi^2, df(1) = 3.841, p < 0.05, \chi^2, df(2) = 5.991, p < 0.05$$

Data further displayed in table 12 shows that among the male respondents, 26 were having cognitive impairment and 50 were cognitively intact. As well as among all the female respondents, 40 had cognitive impairment and 34 were cognitively sound.

Chi square value was calculated to determine the association between presence of cognitive impairment and gender of the respondents, which was found 5.97 for df (1) at 0.05 level of significance. It could be thus concluded that the presence of cognitive impairment was significantly associated with the gender of the respondents.

Data displayed in table 14 reveals that among the respondents who had no formal education 9 participants had cognitive impairment and only 1 participant

was cognitively sound. Similarly, among the participants who had ≤ secondary level of education, 25 were having cognitive impairment and 27 were cognitively intact. For those whose educational qualifications were more than secondary level, among them 32 respondents had cognitive impairment and the remaining 56 respondents did not have any cognitive impairment.

Chi square value was computed to determine the association between presence of cognitive impairment and educational qualification of the respondents, which was found 8.79 for df (2) at 0.05 level of significance. Thus it could be concluded that presence of cognitive impairment was dependent on the educational qualification of the respondents.

Table 13 Chi square value showing association between the cognitive impairment and selected demographic variables (previous occupation and self financial support), n = 150

Selected variables	Cognitive impairment		Total	Chi square	p value
	Yes	No			
Previous occupation					
Business	14	17	31	12.80**	0.005
Service	15	43	58		
Home maker	34	22	56		
Unemployed	02	03	05		
Total	65	85	150		
Self financial support					
Yes	30	61	91	10.12**	0.001
No	35	24	59		
Total	65	85	150		

$$\chi^2, df(3) = 11.35, p < 0.01, \chi^2, df(1) = 6.635, p < 0.01$$

Data represented in table 13 shows that the 5 respondents who were unemployed, among them, only 2

respondents had cognitive impairment and the rest were cognitively sound. Similarly among the respondents who were home-

makers, 34 respondents had cognitive impairment and 22 respondents did not cognitive impairment. As well as among the 58 participants who were service holders, 15 had cognitive impairment and the rest 43 were cognitively intact. And among those with business as the previous occupation, 14 had cognitive impairment and remaining 17 were cognitively sound.

Chi square value was computed to determine the association between presence of cognitive impairment and the previous occupation of the respondents, which was found to be 12.852 for df (3) at 0.01 level of significance. Hence it could be concluded that presence of cognitive impairment was significantly associated with the previous occupation of the respondents.

Table 15 further depicted that among the respondents who had self financial support, 30 were having cognitive impairment and 61 were cognitively sound. And the remaining participants who did not have any kind of self finances, among them, 35 had cognitive impairment and the rest 24 participants were cognitively intact.

Chi square value was calculated to determine the association between presence of cognitive impairment and the presence of self financial support of the respondents, which was found 10.1 for df (1) at 0.01 level of significance. Hence it could be depicted that presence of cognitive impairment was dependent on the presence of self financial support of the respondents.

Table 14 Chi square value showing association between the cognitive impairment and selected demographic variables (type of family, presence of any chronic disease and family history of memory loss), n = 150

Selected variables	Cognitive impairment		Total	Chi square	p value
	Yes	No			
Type of family					
Nuclear	13	44	57	15.75***	0.00007
Joint	52	41	93		
Total	65	85	150		
Presence of chronic disease (physical)					
Yes	56	72	128	5.1*	0.042
No	04	18	22		
Total	60	90	150		
Family history of memory loss					
Yes	15	22	37	0.07	0.787
No	43	70	113		
Total	58	92	150		

$\chi^2, df(1) = 10.83, p < 0.001$, $\chi^2, df(1) = 3.841, p < 0.05$, $\chi^2, df(1) = 3.841, p > 0.05$

Data displayed in table 16 shows that respondents who belonged to nuclear family, among them, 13 respondents had cognitive impairment and 44 respondents were cognitively intact. Similarly, respondents who belonged to joint family, among them, 52 respondents had cognitive impairment and 41 respondents were cognitively intact.

Chi square value was calculated to determine the association between presence of cognitive impairment and the family type of the respondents, which was found to be 15.75 for df (1) at 0.001 level of significance which was more than the table value. Thus it could be interpreted that presence of cognitive impairment was

dependent on the family type of the respondents.

Data displayed in table 16 reveals that respondents who had chronic disease (physical), among them, 56 respondents had cognitive impairment and 72 respondents were cognitively intact. Similarly respondents who had no history of any chronic illness, among them, 4 respondents had cognitive impairment and 18 did not have cognitive impairment.

Chi square value was computed to determine the association between presence of cognitive impairment and the presence of any chronic disease of the respondents, which was found 5.1 for df (1) at 0.05 level of significance. Hence it could be concluded

that presence of cognitive impairment was dependent on the presence of any chronic disease of the respondents.

Data displayed in table 16 depicts that respondents who had family history of memory loss, among them, 15 had cognitive impairment and 22 were cognitively sound. Similarly, among the respondents who had no family history of memory loss, 43 respondents had cognitive impairment and 70 respondents did not have cognitive impairment.

Chi square value was calculated to determine the association between presence of cognitive impairment and family history of memory loss of the respondents, which was found to be 0.07 for df (1) at 0.05 level of significance. Hence it could be interpreted that presence of cognitive impairment was independent on the family history of memory loss of the respondents.

DISCUSSION

Discussion of the major findings in relation to other studies are presented below -

Discussion of the major findings in relation to other studies are presented below –

Findings related to demographic characteristics of the elderly people

The findings of the present study revealed that majority (38%) of elderly people belonged to the age group of 65 to 74 years.

Gamage MWK, Hewage C, Pathirana KD (2019) conducted a descriptive cross sectional study on the associated factors for cognition of physically independent elderly people. The findings revealed that 42.8% of participants belonged to the age ≤ 70 years, with a mean age of 71.9 ± 6.7 years which were consistent with the present study findings [26].

The findings of the present study also revealed that 50.66% of the elderly people were male and majority of the elderly people that is, 58% had never abused substances.

These findings were consistent with the findings of the descriptive study on cognitive functioning and associated factors in older adults by **Peltzer K et al (2019)** which showed that 55.3% of elderly people were male followed by, 65.4% with no history of substance abuse [32].

Abbasian M, Ghalichi F, Ahmadi B et al. (2016) conducted a cross-sectional study on the status of daily living activities among older people. The study resulted in majority of the participants to be male (59.3%) which was consistent with the present study [31].

The findings of the present study showed that majority of the participants (30%) were graduates, followed by primary and higher secondary level education. It also revealed that majority of the respondents were widowed (72.36% widower, 82.43% widow).

The findings of the present study were consistent with the findings of the cross sectional study on cognitive impairment and associated factors among institutionalized elderly person by **Roig JJ et al (2017)** which showed that 71% of participants had higher level of education. Marital status showed that 79% of the elderly people were widowed [33].

Poddar K, Kant S, Singh A, Singh TB (2011) conducted a cross-sectional epidemiological study of dementia among the habitants of Eastern Uttar Pradesh, India. The study findings which were similar to that of the present study revealed that, Widows/widowers/unmarried had a double prevalence (9.3%) as compared with married (4.3%) people [29].

The findings of the present study revealed that majority of the elderly people that is 62%, belonged to joint families.

Santos AA dos (2012) conducted descriptive study on family functionality regarding the elderly with cognitive impairments. The findings were in consistence with the present study findings that was 76.4% of participants belonged from the extended families [34].

The present study findings showed that among 150 participants, majority (38.6%) were service holders, followed by 37.3% of participants who were home makers.

The findings were consistent with the findings of the longitudinal study on the impact of occupational experience on cognitive and physical functional status among older adults by **Min JY, Park JB et al (2015)** which showed that majority of the respondents' (63.1% - male, 66.5% - female) principal job type during lifetime was manual work i.e., service [35].

Another descriptive study on an investigation into the prevalence of cognitive impairment and the performance of older adults by **Soleimani R, Shokrgozar S et al (2018)** revealed that majority of the elderly people (41.7%) were housewives [36].

The findings of the present study revealed that majority of the participants, that is, 75.33% had no family history of memory loss.

The findings were similar with the findings of the descriptive study on age, family history and memory and future risk for cognitive impairment by **Locke DEC, Ivnik RJ et al (2009)** which showed that 35% of the sample reported a family history of dementia and remaining did not have any family history of memory loss [37].

The findings of the present study revealed that majority of the respondents, that is, (89.18% - female, 81.57% - male) had chronic diseases.

Kim J, Park E et al (2019), conducted descriptive study on the cognitive impact of chronic diseases on functional capacity in older adults. The findings were consistent with the present study findings. As per the study, the majority of the participants reported to have chronic illnesses, i.e., either hypertension (40.0%) or DM (10%) or other conditions (15.6%) [38].

The findings of the present study revealed that majority of the elderly people (60.66%) had some self financial support.

The current study findings were consistent with the findings of the descriptive study on the impact of transfer on cognitive impairment in the elderly by **Weng W et al (2018)** which showed that majority (59.9%) of the participants had some sort financial back up that is, various allowance, property and pension [39].

Findings related to identification of cognitive impairment of elderly people

The findings of the present study revealed that cognitive impairment was evident among 43.33% of the elderly people and remaining 56.66% of the respondents had no cognitive impairment.

Similarly the findings were in consistence with the findings of the descriptive study on an investigation into the prevalence of cognitive impairment and the performance of older adults by **Soleimani R, Shokrgozar S et al (2018)** which founded that 37% of the older adults had mild cognitive impairment [36].

The findings have also in similarities with the findings of the descriptive study on the prevalence of cognitive impairment by **Unverzagt FW, Gao S et al (2001)**, revealing that the overall rating of cognitive impairment among community dwelling elderly was 23.4% [40].

The findings were consistent with the findings of the descriptive study on the prevalence of cognitive impairment and its associated socio demographic variables using mini mental status examination among elderly population by **Patel RM, Singh US (2018)** which showed that the overall prevalence of CI was 25% [27].

Findings related to the level of activities of daily living (ADL) of elderly people

The findings of the present study showed that majority of the respondents that is, 43.33% were moderately dependent, 33.33% were independent, 14.66% were slightly dependent followed by 8.66% of the participants who were severely dependent.

The findings were consistent with the findings of the descriptive study on the

determinants of ADL and IADL in older adults by **Sozanski B et al (2019)** which founded that 37.5% of the participants reported at least one problem with IADLs. At least one problem with ADLs was reported by 17.13% of the participants [30].

Sjolund BM, Wimo A, Strauss EV et al (2015), conducted a longitudinal study on incidence of ADL disability in older persons, physical activities as a protective factor. The findings were in consistence with the findings that the incidence rates for male were similar in the age groups 78-81 and 84 years and older 42.3 vs. 42.5/1000 persons-years. For women the incidence rate had a significant rise for ADL disability from the age group 78-81 years to the age group 84 years and older, 20.8 vs. 118.3/1000 persons-years [41].

Findings on relationship between the cognitive impairment and the activities of daily living (ADL) among the elderly people

The findings of the present study revealed a strong positive correlation between the two variables; Cognitive impairment and activities of daily living (ADL).

The findings were consistent with the findings of the descriptive study on the correlation between cognitive functions and activities of daily living by **Biben V, Ong PA (2016)**, which showed that there is a significant correlation between cognitive functions and IADL among post stroke patients. The only cognitive domain positively correlated with IADL was orientation to time and verbal recall ($r = 0.517, p = 0.03$) [42].

The present study findings were similar with the findings of the descriptive study on the relationship between functional fitness and cognitive impairment in older adults by **Yang M et al (2017)** which founded that the rate of ADL disability was significantly higher in the CI group. The older adults with cognitive impairment (CI) had significantly lower frequency of 30s chair stand, 30s arm curl and 2 min step, and relatively longer time to complete the 8

foot up-and-go, shorter chair sit-and-reach an back scratch distance than the non-CI group [43].

Findings related to association between the cognitive impairment and selected demographic variables

The findings of the present study also revealed that, there is a strong positive correlation between the presence of cognitive impairment and age of the participants.

Sharma D, Mazta SR, Parashar A (2013) conducted a cross-sectional population based descriptive study on the prevalence of cognitive impairment and related factors among elderly. The result revealed that, in the logistic regression model, increased age (odds ratio = 2.2-22.2; significant at $P < 0.05$) showed a higher probability of cognitive impairment [28].

The findings of the present study revealed that there is significant association among age, gender, educational qualification of the participants and cognitive impairment of the participants.

Poddar K, Kant S, Singh A, Singh TB (2011) conducted a cross-sectional epidemiological study of dementia among the habitants of Eastern Uttar Pradesh, India. The study findings got similarities with the present study that revealed, the age ($\chi^2 = 49.9, df = 5$), gender ($\chi^2 = 16.60, df = 1$), education ($\chi^2 = 111.0, df = 3$) were found to be significantly associated with dementia [29].

The current study findings have similarities with the findings of the descriptive study on an investigation into the prevalence of cognitive impairment and the performance of older adults by **Soleimani R, Shokrgozar S et al (2018)**. They founded that gender of the respondents, age of the respondents and educational qualification of the participants were associated with the level of cognitive impairment of the participants [36].

The findings of the present study determined that there is a significant association between presence of any chronic

illness and cognitive impairment of the participants.

Unverzagt FW, Gao S et al (2001), conducted a descriptive study on the prevalence of cognitive impairment. The findings which were consistent with the present study showed that cognitive impairment was dependent on the presence of any chronic disease of the respondents [40].

The findings of the present study determined that there is significant association between previous occupation and self financial support of the participants and cognitive impairment of the participants.

The findings were in consistence with the findings of the descriptive study on the prevalence of cognitive impairment and its associated socio demographic variables using mini mental status examination among elderly population by **Patel RM, Singh US (2018)**. They founded that occupation/profession and economic class of the respondents are significantly associated with cognitive impairment of the participants [27].

Poddar K, Kant S, Singh A, Singh TB (2011) conducted a cross-sectional epidemiological study of dementia among the habitants of Eastern Uttar Pradesh, India. The study findings got similarities with the present study that revealed that, occupation ($\chi^2 = 17.13$, $df = 3$) was significantly associated with dementia [29].

CONCLUSION

From the present study, it was funded that majority of elderly people with cognitive impairment belonged to the age group 65 to 84 years. Among 150 participants, 43.33% had cognitive impairment and majority of the elderly people were moderately dependent according to the ADL scale. It was revealed that significant relationship exists between cognitive impairment and activities of daily living (ADL). Present study also depicted that age, gender, educational qualification, previous occupation, self financial support,

family type, presence of any chronic illness (physical) of the respondents were significantly associated with cognitive impairment of the participants.

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