

Prevalence of Cognitive Dysfunction among Geriatric Population attending Outpatient Departments of Selected Tertiary Hospitals of Pune

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Abstract: *Background:* Over the last 70 years, life expectancy has increased in India. In 1951, life expectancy at birth was 36.7 years and as per the data of 2012, it is reported to be about 67 years. Resultantly, the proportion of the elderly population in India has risen from 5.6% in 1961 to 8.5% in 2011. According to 2016 report by the ministry for statistics and programme implementation, India has 103.9 million elderly, people above age 60, about 8.5 percent population. Indian elderly population is currently the second largest in the world. 20% of illness in the elderly is due to mental or a neurological illness and the most common being dementia and depression. *Objectives:* The objectives of the study were to assess the prevalence of cognitive dysfunction among geriatric population attending OPDs of selected tertiary hospitals of Pune and associate cognitive dysfunction in geriatric population with selected demographic variables. *Methodology:* A cross sectional descriptive study was conducted in the year 2016-2017 on geriatric population attending Out Patient Departments of selected tertiary hospitals of Pune using a self administered semi structured questionnaire. The questionnaire included section I to collect data on socio demographic data and section II to assess cognitive dysfunction using Montreal Cognitive Assessment (MoCA) 7.1 Version. Ethical clearance obtained from Institutional Research Ethical committee. Permission obtained from tertiary hospitals and informed consent was taken. Data collected was analyzed using SPSS 19 and interpreted the cognitive dysfunction levels and their associations with the socio demographic variables. *Results:* 120 samples participated in the study, out of which majority of the sample were (76.7%) males and 23.3% were females. The majority of the samples were in the age group 60-70 yrs (61.7%), and minimum were in the age group of >80 (8.3%). Majority had education up to secondary (66%). Postgraduates were 5%. 82.5% were married and 11.7% widow/widower. Prevalence of cognitive dysfunction was 83%. On association with the selected socio demographic variables, none of them were found to have statistical significance with cognitive dysfunction of geriatric persons, except the level of education. ($p < 0.001$)

Keywords: Cognitive dysfunction, geriatric population, Montreal cognitive assessment (MoCA)

1. Introduction

Life expectancy has increased in India over the last 70 years. In 1951, life expectancy at birth was 36.7 years and as per the recent data of 2012, it is reported to be about 67 years. Resultantly, the proportion of the elderly population in India has risen from 5.6% in 1961 to 8.5% in 2011, and it will further rise to 9% by 2016. The Indian aged population is currently the second largest in the world and is projected to rise from 70 million, according to the National Census of 2011, to almost 324 million by the year 2050, with serious social, economic and public health consequences. Elderly will form 19% of the total population.

In the article by Prince MJ in the dementia supplement, The reported prevalence of dementia in the community varied between 0.9-7.5% among the people above 65 years. Methodological issues and the use of different diagnostic criteria could explain the variability in the reported prevalence rates.

Geriatric psychiatry is concerned with preventing, diagnosing and treating psychological disorders in older adults. There is growing evidence that healthy lifestyles may decrease the rate of cognitive decline seen with aging and help delay the onset of cognitive symptoms in the setting of age-associated diseases. These healthy lifestyle factors may include physical activity, mental stimulation, avoiding excessive exposure to neurotoxins (e.g., alcohol), treating

depression and managing stress, and controlling common medical conditions such as hypertension, diabetes, and obstructive sleep apnea. Thus, we may already hold the keys to driving a successful campaign to minimize the detrimental impact of age on cognition and to delay the onset of dementia in the elderly. (Murman (2015)

Studies have shown that 5% of people seeking help in a tertiary care or general hospital setting happen to be older than 60 years. In order to effectively plan intervention services for this needy population it is important to explore it in the context of the individual health status and wider socio-demographic determinants in the community. Such an initiative is all the more important in a rapidly changing urban setting as it exists in a metropolis like Pune and hence the need of the present study.

2. Materials and Methods

This was a cross sectional descriptive study that was conducted in the OPDs of selected tertiary hospitals of Pune for a period of 6 weeks in Sep-Oct 2016. Stratified simple random sampling was used. Sample size was 120.

Inclusion criteria

- Age more than 60 yrs
- Attending Out Patient Department of tertiary hospitals
- Who can read and write
- Willing to participate

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Exclusion criteria

- Person with Acute Delirium
- Individual with brain SOL/CNS infections
- Suffering from major mental illness
- Person suffering from oncological conditions
- Recent bereavement
- Suffering with HIV infection
- Post stroke
- Severe head injury

Tool and technique

- The Section- I of the tool consisted of the variables which have an effect on cognitive function of geriatric population such as Age ,Gender, Education, Marital status, Mobility, Living arrangement, Medical illness, Family income & Individual income
- Section- II Montreal Cognitive Assessment scale 7.1 Version to assess the cognitive function.

Legal and ethical aspects

Permission was taken from the Head of the institutions where the study was conducted. Ethical clearance from IEC obtained. Written Consent from participants taken.

3. Major Findings of the Study

- Prevalence of cognitive dysfunction-83%
- Educational status has significant association with cognitive dysfunction

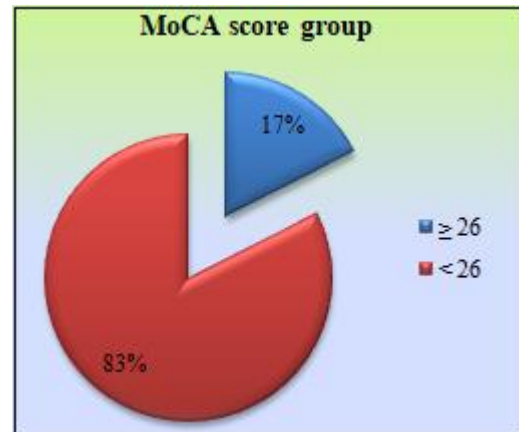
Table 1: Distribution of Socio demographic variables in frequency and percentage, n=120

		Frequency (f)	Percentage (%)
Gender	Male	92	77
	Female	28	23
Age	60- 70	74	61.7
	71 – 80	36	30.0
	> 80	10	8.3
	60- 70	74	61.7
Education	Primary	9	7.5
	Secondary	66	55.0
	Higher secondary	20	16.7
	Graduate	19	15.8
	Post graduate	6	5.0
Marital status	Married	99	82.5
	Unmarried	5	4.2
	Widow/Widower	14	11.7
	Divorcee/Separated	2	1.7
Mobility	Ambulatory	97	80.8
	Ambulatory with Support	22	18.3
	On Wheel chair	1	0.8

Living arrangement	Alone	8	6.67
	With family	107	89.17
	Others	5	4.17
Medical illness	Hypertension	41	34.17
	Heart Disease	24	20.00
	Diabetes Mellitus	20	16.67
	Renal illness	17	14.17
	Orthopedics	15	12.50
Family income	Gynecological	3	2.50
	No income	24	20.1
	up to 10000	25	20.8
	10001 – 20000	43	35.8
Individual income	> 20000	28	23.3
	No Income	39	32.5
	up to 5000	29	24.2
	5001 – 10000	21	17.5
	> 10000	31	25.8

Table 2: Distribution of prevalence of cognitive dysfunction in frequency and percentage, n=120

MoCA score	Frequency(f)	Percentage (%)
≥ 26	21	17.5
< 26	99	82.5
Total	120	100.0

**Figure 1:** Pie Diagram representing distribution of prevalence of cognitive dysfunction**Table 3:** Association of MoCA score and education, n=120

Education	MoCA score group		Total	p-value
	≥ 26	< 26		
Primary	0	9(100)	9	0.001
Secondary	6(10)	60(90)	66	
Higher secondary	4(20)	16(80)	20	
Graduate	9(47)	10(53)	19	
Post graduate	2(33)	4(67)	6	
Total	21	99	120	

*Figures in parenthesis represent percentage

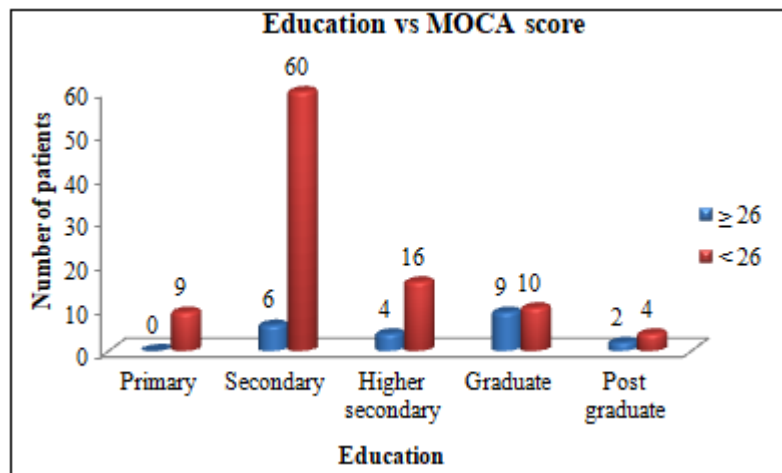


Figure 2: Bar diagram representing association of MOCA score and education

4. Discussion

Description of the Socio demographic variables

In the present study the 76.7% were males and 23.3% were females, in contrast with a study by Anita Bhaskar et al (2014). There were 43% males and 57% females among the subjects. Males accounted for 63.7% in a study by Bodhare et al (2013) which is similar to the present study.

In the present study the age group was divided into three class intervals. The majority of the samples were in the age group 60-70 yrs (61.7%), and minimum were in the age group of >80 (8.3%).

Mean age of the population was 65.75 ± 5.78 years, with male having mean age of 66 ± 5.9 years and female 65 ± 5.7 years, in a study by Inderjeet Gambhir (2014) which is similar to the present study.

Majority had education up to secondary (66%). Postgraduates were 5%. Study by Anita Bhaskar had primary level of education >50%.

82.5% were married and 11.7% widow/widower. Widowed (22.54%) were there in a study by Swapnil Yadav (2015).

80.8% were ambulatory and 18% were ambulatory with support. 23.9% had family income >Rs.20000 and 17.9% had no family income. 28.9% were having no individual income whereas 27.2% had individual income >Rs.10000.

Assessing the prevalence of Cognitive Dysfunction among geriatric population

Out of 120 samples 21 (17.5 %) participants had normal cognitive function, 99 (82.5%), had cognitive dysfunction as their score was below 26 out of 30. Similarly the crude prevalence rates of dementia in the study by Banerjee et al (2008) were 0.62% (95% CI 0.44-0.84) and 1.25% (95% CI 0.87-1.74) among those >50 and >60 years of age, respectively. The weighted prevalence rate among those above 50 years was 0.95% (95% CI 0.68-1.29).

Another study by Deepak Sharma et al (2008) the prevalence of cognitive impairment was 3.5%. It was higher in rural (2.3%) than in urban population (1.3%), with a rural/urban prevalence ratio (PR) of 1.8 (95% CI 0.6-5.7). In

a study by Inderjeet et al (2007) about 14.6% elderly had scored <17. 42.9% of rural elderly population had HMSE score <23, 70.6% <27 and 27.7% between 23 and 27 out of 30 which is suggestive of cognitive dysfunction. Saldanha et al (2010) identified prevalence of dementia in the sample population of elderly aged above 65 years in an urban center of Pune was 4.1%. Tiwari SC, Tripathi RK (2014), Lucknow, reported that the prevalence of cognitive impairment was 7.6%.

In the study by Naveen Kumar D, Sudhakar TP (2013) the prevalence of cognitive impairment and depression among elderly patients attending the medicine outpatient of a tertiary care hospital in South India, prevalence of cognitive impairment was - 31.0% (34.7% women, 23.4% men). The prevalence of cognitive impairment was 12.6% among elderly in China (Giri M, Chen T (2016)).

Association of cognitive dysfunction with the Socio demographic variables

Socio-demographic factors which conferred a statistically higher risk for dementia were identified to be older age, low socio-economic status, low level of education, presence of family history, whereas, marriage was found to be protective in the study by Saldanha (2010). There were significant differences observed with reference to age, gender, literacy and economic status in a study by Naveen Kumar (2013).

But in the present study only education level had significant association with cognitive function. 100% with primary education and 90% with secondary education had cognitive dysfunction. 80%, 53% & 67% geriatric persons respectively with Higher secondary, Graduate & Post graduate educational qualifications had cognitive dysfunction. There was no significant association of cognitive dysfunction with selected socio demographic variables such as gender, age, mobility, marital status, living arrangement and income. Whereas in the study by Deepak Sharma et al (2010) old-old, illiterate and widowed showed a higher probability of cognitive impairment. The age, gender, marital status, education, occupation, number of family members in the household and liquor addiction were found to be significantly associated with dementia in the study by Poddar K et al. The relative risk for the above-mentioned variables was found to be more than 1.

A general decline with age was found in one study (Koivisto *et al*, 1995) but others found no significant influence of age on the frequency of mild cognitive impairment (Hänninen *et al*, 1996; Frisoni *et al*, 2000). Like the study by Hänninen *et al* (1996) found no gender difference in the prevalence of mild cognitive impairment. However, higher prevalence rates for men (Koivisto *et al*, 1995) and women (Di Carlo *et al*, 2000) have been reported.

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