ORIGINAL ARTICLE

Prevalence of dementia and its associated risk factors among elderly patient attending Outpatient Department of a tertiary care hospital in Lucknow

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Citation

Article Cycle

Abstract

Background: Dementia is a broad category of brain diseases that causes a chronic, progressive and gradual decrease in cognitive function i.e. ability to think and remember that is great enough to affect a person's daily functioning beyond what might be expected from normal ageing. According to American Psychiatric Association, "Dementia is a syndrome caused by a variety of brain illnesses that affect memory, thinking, behaviour and the ability to perform everyday activities". **Aim & Objectives:** To assess the prevalence of dementia among the patients above 60 years of age attending the outpatient department of Tertiary care super specialty hospital. To assess the risk factors associated with occurrence of dementia in patients attending outpatient department of Tertiary care super specialty hospital. **Settings and Design**: Study design: - Cross-sectional observational study. Study area: - Tertiary care super-specialty hospital. Study setting: - Outpatient department (OPD)of Tertiary care super specialty hospital. **Methods and Material**: Study population: - Patients above 60 years of age and attending Outpatient Department of the tertiary care super specialty hospital. Duration of Study: - 4 months. Sample size:- 223 elderly participants from the registration counter of the Outpatient Department of tertiary care hospital. **Statistical analysis used**: Data was analysed using SPSS, version 24.0. Univariate Logistic Regression, Multivariate Logistic Regression, Odds Ratio. **Results**: The study was conducted on a total of 223 patients out of which only 210 patients completed the questionnaire and matched our criteria. Thus, 210 patients are analysed for the result. In our study which included the patients above 60 years of age out of which the maximum participants (52.4%) were of age group 65-75. In our study 66.2% participants had normal cognitive functioning while 33.8% of total participants were found to have dementia. Out of these 33.8% participants having impaired cognitive functioning, 13.8% and 20% had severe and borderline dementia respectively. Dementia was found to be more common in females. **Conclusions**: Statistically significant association of dementia has been found with female gender, rural residence, joint family and a greater number of family members, poor education, pan masala consumption, daytime drowsiness, and problem in sleep pattern, social intolerance and frequent fights.

Keywords

Introduction

As life expectancy is increasing more population is becoming older. This increase in life expectancy leads to increase in health problem related to age. One of the major health problems of old age is dementia. Dementia which is a broad category of brain diseases that causes a chronic, progressive and gradual decrease in cognitive

function i.e. ability to think and remember that is great enough to affect a person's daily functioning beyond what might be expected from normal ageing(1,2). There are various types of dementia like Alzheimer's disease, vascular dementia, Lewy body dementia, frontotemporal dementia, Parkinson's(1,3)

According to WHO around the world around 50 million people have dementia with yearly increase of 10 million cases leading to disability, which is further projected to increase to 82 million in 2030 and 152 by 2050. Prevalence of dementia increase with age and among people above 60 year of age the prevalence of dementia varies from 5 percent to 8 percent(1,4).

In India around approximately 2 to 4 million to people are suffering from various forms of dementia(4). Various study has shown the prevalence of dementia varies from 0.84 percent 8.04 percent depending upon study area and study setting. In rural areas of south India prevalence was 3.34 and urban area prevalence was 2.4 percent whereas in north India prevalence 0.84 percent in rural area and 1.84 percent in urban area(5-10). Among all the dementias, Alzheimer's disease is the most common around the world contributing 60 to 80 percent of all the cases(1,5).

Some of the risk factors assumed to be associated with dementia are Age, Genetics/family history, Smoking and alcohol use, Atherosclerosis, Cholesterol, Plasma homocysteine, Diabetes, Mild cognitive impairment, high blood pressure, obesity, hearing loss, Anticholinergic drugs used for depression, chronic obstructive pulmonary disease, overactive bladder, allergies, and gastrointestinal disorders(1,11).

For diagnosis of Dementia usually made clinically with help of mental state examination, laboratory investigations and neuro-imagery(11). There are many tools for screening of dementia most notably MMSE which is a validated tool in English with Hindi translation.

As there is paucity of research in India, regarding the prevalence of dementia. So current study was planned with objectives to assess the prevalence of dementia among the patients above 60 years of age attending the outpatient department of Tertiary care super specialty hospital.

Aims & Objectives

1. To assess the prevalence of dementia among the patients above 60 years of age attending the outpatient department of Tertiary care super specialty hospital.
2. To assess the risk factors associated with occurrence of dementia in patients attending outpatient department of Tertiary care super specialty hospital

Material & Methods

A Cross-sectional study was conducted at Outpatient department of Tertiary care super-specialty hospital among patients above 60 years of age over a period of 4

months between July 2019 to October 2019. Previous research suggested the prevalence of dementia of 8.04% in similar setting(10). Assuming similar prevalence in our study sample size was calculated 202 at Confidence interval at 95% with assumed error of 4 percent. Assuming 10% patients not consenting to interview (dropout rate) it was decided to sample 223 elderly participants from the registration counter of the Outpatient Department of tertiary care hospital. The tertiary care hospital selected for conduction of this study had a central computer-based Outpatient registry kiosk. The first 10 patients registered at outpatient registry kiosk fulfilling the inclusion and exclusion criteria and aged >60 years were included consecutively. To cover required sample size of 223, it was decided to conduct data collection for 25 working days. The patients hence selected were approached for their willingness to be part of the study; only those patients who gave consent and were above 60 years of age and attending the Outpatient Department were included in the study. Those Patients who were above 60 years of age and attending the Out-Patient Department but were not fit for interview were excluded. Thus 210 patients who gave consent and matched our inclusion and exclusion criteria were included in the study. Data was collected using Self-design questionnaire containing question regarding Bio Social Characteristics and various risk factors and Hindi Mental State Examination (HMSE) which is a validated screening and diagnostic tool for detecting Impaired cognitive function(dementia) with high specificity, sensitivity irrespective of literacy status of patients. HMSE was graded as 23-30 = normal, 19-23 = borderline Dementia, and <19= Severe Dementia (12). Ethical approval was taken from the institute ethical committee numbered IEC No.97/18 before starting of data of collection.

Data was analyzed using SPSS, version 24.0 licensed to Dr. RMLIMS. Descriptive summary such as mean, standard deviation for continuous variable, frequencies percentage for categorical variables were determined. Proportions, graphs and cross tabs were used to present study results. Univariate logistic regression analysis was done for finding predictors and odds ratio and those which came significant were included in multivariate regression (enter method) for predictors with adjusted odds ratios at 95 percent confidence interval.

Results

The study was conducted on a total of 223 patients out of which only 210 patients completed the questionnaire and matched our criteria. Thus, 210 patients are analyzed for the result. In our study which included the patients above 60 years of age out of which the maximum participants (52.4%) were of age group 65-75. Mean age of distribution is 69.36 ± 6.38. Majority participants (63.8%) constituted male patients. 75.2% patients were old patients with previously started treatment in the hospital.88.6% of the

total participants were Hindu and 64.8% were of general category.52.5% participants live in urban areas. Also, 69.5% participants were from joint families. Majority (63.3%) patients were with no parental history of dementia as shown in [Table 1].

In our study 66.2% of participants had normal cognitive functioning while 33.8% of total participants were found to have dementia out of these 33.8% participants having impaired cognitive functioning,13.8% and 20% had severe and borderline dementia respectively as shown in [Figure 1].

[Table 2] shows distribution of various factors according to dementia status. Among people aged more than 75 yrs. had 43.4 percent had dementia. 57.9 percent of female patients had dementia whereas 79.9% male didn't had dementia, 45.8 percent of Muslims had dementia whereas among Hindus 32.8 percent had cognitive impairment. patient belonging to general cast 63.2 percent did not had dementia According to area of residence,42% of patients from rural residence presented with dementia. Type of family, of all the participants from joint family 41.8% had dementia. It has also been noticed that as the number of family members increase, the prevalence of dementia increases. Participants when asked to rate their educations, 83% of those giving least rates to their education were found to have dementia and 96.2% patient with very good rating didn't had dementia. Patients which were physically active (exercising more than 30 min) 71.4 percent were not sufferings from cognitive impairment. Among people who using substance like tobacco (smoked), alcohol, pan masala, tobacco (chewed) marijuana/bhang had 28.6 percent,37.9 percent, 23.7 percent 42.1 percent, 75 percent were having impaired cognition. Nutritional status according to BMI (WHO classification), among patient who were overweight (BMI ≥25.0) 75.0 percent didn't had dementia. 48 percent who had poor sleep quality on self-rating had cognitive impairment

[Table 3] and [Figure 2] shows Multivariate analysis of various factors for Dementia which were found to be significant on univariate analysis. Patients who were female, living in joint family, poor/average educational rating, physical inactivity, average/poor/very poor sleep quality and suffering from depression had 2.3, 3.4, 5.5, 3.1, 2.4 and 5.3 times more chances of developing dementia respectively.

Discussion

The study was conducted on a total of 223 patients out of which only 210 patients

completed the questionnaire and matched our criteria. Among those Majority participants (63.8%) constituted male patients. 75.2% patients were old patients with previously started treatment in the hospital.88.6% of the total participants were Hindu and 64.8% were of general category.52.5% participants live in urban areas. Also,

69.5% participants were from joint families. Majority (63.3%) patients were with no parental history of dementia. Our study found that the overall prevalence of dementia in OPD of tertiary care hospital was 33.8%, out of which 20% participants had borderline dementia and 13.8% had severe dementia. This contrasts with the study conducted by Mahesh Kumar Mummadi (2018)(11) entitled "A cross-sectional study on dementia in elderly persons living in old-age homes of Hyderabad, Telangana" found that the prevalence of severe dementia was 8.04%. while the studies by Dominguez J et.al.(2018)(13) and Li Yang et.al.(2017)(14) which the conducted in Philippines and china respectively, found the prevalence of dementia to be 10.6% and 13% respectively. The higher values of prevalence of dementia in our study may be due to the above-mentioned studies were normal population-based studies while our study was conducted in a tertiary care hospital which includes a larger fraction of people with various diseased conditions including dementia. Current study found out significant association of dementia with gender as dementia was found to be more common in females. This observation was similar to the studies done in India by Jishnu S. Lalu et.al. (2018)(15) and Vas CJ et.al. (2001)(16) they also found out that dementia to be more common in females which is mainly due to ApoE-4gene that increases the risk of Alzheimer's. In this study we found the significant association of dementia with rural residence has been found in our study as well as that performed by S Rajkumar et. al.(17) which can be due to poor education and difficulty in understanding the HMSE questions leading to low scores. Dementia has also been found to be more common in people with joint family and a greater number of family members. This is similar to the results of study by Lalu et.al.(15) done in 2018 in urban part of India. The association of dementia with poor education has also been statistically significant in our study as well as those performed by Mahesh Kumar Mummadi (2018)(11) and Li Yang et.al.(2016)(14)this may be due to higher level of education compensate for the effects of dementia. Statistically significant relationship between dementia and sleep quality has been found in this study. As these are Behavioral and Psychological Symptoms of Dementia (BPSD) which shows that these are the symptoms of dementia and thus are associated with dementia patients.

The consumption of depression medication is also associated with dementia. This is similar

to the results of study entitled "Anticholinergic drugs and risk of dementia: case-control study" by Kathryn Richardson et.al.(2018)(18). It found that anticholinergic drugs that block a chemical messenger called acetylcholine, which affects muscle activity in the digestive and urinary tracts, lungs, and elsewhere in the body is also involved in memory and learning and cause brain inflammation. eg: amitriptyline, paroxetine, and bupropion (most commonly taken for depression) and

thus the medications are found to be associated with dementia.

Conclusion

The study has concluded that the total prevalence of dementia was 33.8% in the participants with 20% of them with borderline dementia and 13.8% with severe dementia. There is high prevalence of Dementia among elderly attending OPD of all the department not just Neurology department, so there is requirement for better screening services in hospitals for early detection of dementia. Further specialized dementia clinic should be there in tertiary care hospitals for management of dementia, they should provide holistic care to the dementia patient ranging from diagnosis, medical management, psychological therapy and counselling to the attendant of patients.

As demography of India is changing there will be high number of elderly people in India in future, which may lead to high number of dementia patients. So, to tackle that government should take initiatives to establish hospice care centres for proper management of dementia patients. Dementia has also been found to be significantly statistically associated on multivariate analysis with female gender, joint family and a greater number of family members, poor education, pan masala consumption, daytime drowsiness, problem in sleep pattern, physical inactivity poor sleep quality and depression. While other risk factors taken into consideration were not found to have any major effect on prevalence of dementia like caste, religion, smoking, alcohol consumption, tobacco, marijuana/ganja /bhang. All the modifiable risks factors should be controlled so that there is reduction in dementia occurrence.

Recommendation

Emphasis to be given for geriatric patients for increasing trend of dementia with better facilities for management and treatments in hospitals.

Limitation of the study

Above study is done at OPD of superspeciality hospital.So patients came here for consultation of their complains. So the finding of above study can't be generalized to general population.

Relevance of the study

As the demography of India keep changing. Now more than 9% of the population are above 60 years of age. Dementia is common problem in patients above 60 years. If Screening facility available at geriatric clinic then dementia will get diagnosed early and treatment started.

Authors Contribution

RK: Conception and design, drafting the article, AKS: revising it critically for important intellectual content, AK: Final approval of the version to be published, TT: acquisition of data, or analysis and interpretation of data, SS: analysis and interpretation of data, SDK: Final approval of the version to be published.

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Tables

TABLE 1 DISTRIBUTION OF PARTICIPANTS BY SOCIO-DEMOGRAPHIC PROFILE

Categories		Number of patients(N)	Percentage (%)
Age	<65	47	22.4
	65-75	110	52.4
	≥75	53	25.2
Age (Mean ± SD)		69.36±6.38	
Gender	Male	134	63.8
	Female	76	36.2
Type of patient	Old	158	75.2
	New	52	24.8
Religion	Hindu	186	88.6
	Muslim	24	11.4
Caste	General	136	64.8
	OBC	62	29.5
	SC	12	5.7
Area of residence	Urban	110	52.4
	Rural	100	47.6
Type of family	Nuclear	64	30.5
	Joint	146	69.5
Parental History of dementia	Yes	77	36.7
	No	133	63.3

TABLE 2 ASSOCIATION OF STATUS OF COGNITIVE FUNCTION WITH SOCIO-DEMOGRAPHIC PROFILE

| Categories		Dementia present N (%)	Dementia absent N (%)
Age	<65	15(31.9)	32(68.1)
	65-75	33(30.0)	77(70.0)
	>75	23(43.4)	30(56.6)
Gender	Male	27(20.1)	107(79.9)
	Female	44(57.9)	32(42.1)
Religion	Hindu	60(32.3)	126(67.7)
	Muslim	11(45.8)	13(54.2)
Area of Residence	Urban	29(26.4)	81(73.6)
	Rural	42(42.0)	58(58.0)
Type of family	Nuclear	10(15.6)	54(84.4)
	Joint	61(41.8)	85(58.2)
Self - Educational rating	Very bad	38(83.0)	8(17.0)
	Bad	9(30.0)	21(70.0)
	Average	17(25.0)	51(75.0)
	Good	5(12.8)	34(87.4)
	Very good	1(3.8)	25(96.2)
Physical activity	Inactive (<30 min)	31(44.3)	39(55.7)
	Active (>30 min)	40(28.6)	100(71.4)
Nutritional status*	Normal/underweight	47(41.2)	67(58.8)
	overweight	24(25.0)	72 (75.0)
Sleep quality	Very poor	26(48.1)	28(51.9)
	Poor	10(31.3)	22(68.8)
	Average	17(36.2)	30(63.8)
	Good	11(22.0)	39(78.0)
	Very Good	7(25.9)	20(74.1)
Depression	Yes	10(58.8)	7(41.2)
	No	61(31.6)	132(68.4)

*Using WHO BMI Classification

TABLE 3 ASSOCIATION OF DEMENTIA WITH STUDY VARIABLES

Variable	Univariate Analysis			Multivariate Analysis		
	Odds Ratio (OR)	95% CI		Adjusted Odds Ratio (AOR)	95% CI	
		Lower Limit	Upper Limit		Lower Limit	Upper Limit
Overweight						
Yes	0.475	0.262	0.86	-	-	-
No	Reference					
Gender						
Female	5.45	2.92	10.13	2.302	1.01	5.26
Male	Reference					
Place of Residence						
Rural area	2.02	1.13	3.61	-	-	-
Urban area	Reference					
Type of Family						
Joint	3.87	1.83	8.2	3.433	1.43	8.26
Nuclear	Reference					
Education Performance Grading (self)/ Satisfied with Academic Performance						
Poor/average	7.9	4.15	15.07	5.57	2.43	12.73
Good/ Very good	Reference					
Pan masala						
Yes	0.51	0.26	1	-	-	-
No	Reference					
Physical Inactive						
Yes <30 min	1.98	1.09	3.61	3.06	1.42	6.6
No >30 min	Reference					
Sleep Quality						
Average/Poor/ very Poor	2.17	1.15	4.08	2.38	1.04	5.43
Good/ Very good	Reference					
Depression						
Yes	3.09	1.12	8.5	5.29	1.35	20.78
No	Reference					

Figures

FIGURE 1 PREVALENCE OF DEMENTIA
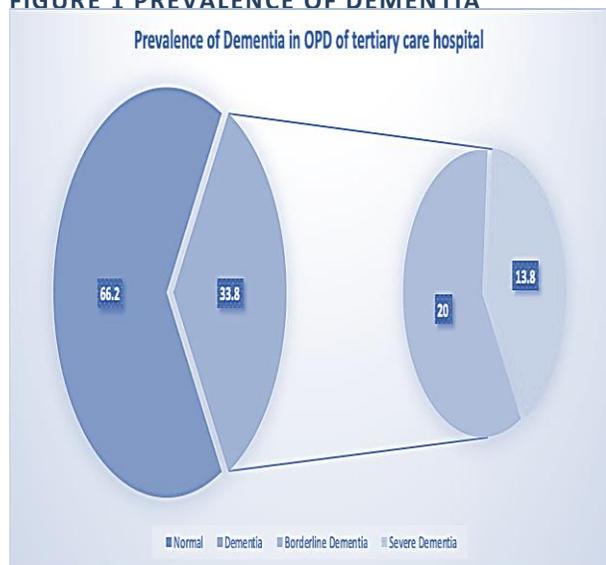
FIGURE 2 ODDS RATIO FOR VARIABLES USED IN MULTIVARIATE REGRESSION