Original Article

Dementia and Co-morbid Risk Factors among Elderly: A Comparative Cross Sectional Study in Dhaka City

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Abstract

Background: Dementia is rapidly becoming the major public health problem in Bangladesh, as the prevalence of dementia is rising day by day. Therefore, risk factors assessment and early diagnosis of dementia is important to minimize this burden of the disease.

Objectives: To determine the co-morbid risk factors of dementia among the elderly people and relationship of age and sex with dementia.

Methods: This comparative cross sectional study was carried out in two purposively selected hospitals in Dhaka city i.e. Institute of Research and Rehabilitation for Diabetes, Endocrine and Metabolic Disorder (BIRDEM), National Institute of Neuroscience and Dementia Care Project of Sir William Beveridge Foundation, Dhaka during the period of one year. Sampling technique was purposive in nature to select 120 respondents in which 60 were dementia patients and rest 60 were healthy control without dementia for comparison. All the respondents were more than 60 years of age and willing to participate in this study. A pretested semi-structured questionnaire and a check list were used to collect data from the respondents. Selected investigation findings were collected through record review.

Results: In this study mean age of the dementia patients was 73.10 ± 4.93 years. Dementia was more prevalent among males (60.0%) and whose age was more than 70 years (71.67%). Furthermore, some medical illness such as diabetes mellitus ($p<0.01$), hypertension ($p<0.01$), liver disease ($p<0.01$) and stroke ($p<0.01$) were significantly associated with dementia

Conclusion: Diabetes mellitus, hypertension, liver disease and stroke were the predominant risk factors among the respondents having dementia in elderly people under study.

Keywords: Dementia, Risk factors, Elderly people.

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Introduction

Dementia is defined by Gale encyclopedia (2008) "is a loss of mental ability severe enough to interfere with normal activities of daily living, lasting more than six months, not present since birth, and not associated with a lose or alteration of consciousness". It is most common among the adults aged above 65 however it can also be seen in people under the age of 65 and then it's known as "early onset dementia".[1]

There were 7.7 million new cases of dementia each year, implying that there is a new case of dementia somewhere in the world every four seconds.[2] The case rates increasing significantly with age, dementia affects approximately 5% - 8% of peoples over age 65, 15%-20% of peoples over age 75, and 25%-50% of peoples over age 85. Alzheimer disease is the most common dementia, accounting for 50% -75% of the total, with a greater proportion in the higher age ranges.[3]

It is estimated that there are about 4,60,000 people with dementia in Bangladesh in 2015 while the number will rise 8,34,000 in 2030 and 21,93,000 in 2050 respectively.[4] WHO has given first line priority for dementia treatment and care.

Alzheimer's Association identified the main type of dementia as Alzheimer's disease (AD), vascular dementia,

dementia with Lewy bodies (DLB), fronto-temporal dementia and mixed dementia.[5] Several studies suggested that patient with dementia have short life expectancy as Alzheimer's and other form of dementia are more common among older people between the ages of 65 to 85 years.[6] In dementia the affected neurons in the basal forebrain amygdala, hippocampus and cerebral cortex, all of which correspond to clinical deficit in learning, memory, reasoning, behavior and emotional control.[7]

In an epidemiological study findings found that in 2001, 60.1% of all people with dementia were living in developing countries; this proportion is expected to rise to 71.2% by 2040 which is alarming for these countries as well Bangladesh. Aging demographic transition is proceeding rapidly especially in China, India, and Latin America, where dementia is rapidly becoming the major public health problem.[8-9] But there was scarcity or lack of information in this prospect in context of Bangladesh. Therefore, this study was a modest attempt to determine the co-morbid risk factors associated with dementia among the elderly people in Dhaka city.

Materials and Methods

This comparative cross sectional study was carried out in two purposively selected hospitals in Dhaka city i.e. Institute of Research and Rehabilitation for Diabetes, Endocrine and Metabolic Disorder (BIRDEM), National Institute of Neuroscience and Dementia Care Project of Sir William Beveridge Foundation, Dhaka during the period of one year. Purposive sampling technique was used to select 120 respondents in which 60 were dementia patients and rest 60 were healthy control without dementia for comparison. All the respondents were more than 60 years of age and willing to participate in this study. A pretested semi-structured questionnaire and a check list were used to collect data from the respondents. Selected investigation findings were collected through record review. After that data were sorted, cleaned and analyzed by using SPSS software (19th version). During the inferential statistics p value <0.05 was considered as significant statistics.

Results

Based on findings the results are presented in the form of tables and graphs as follows:
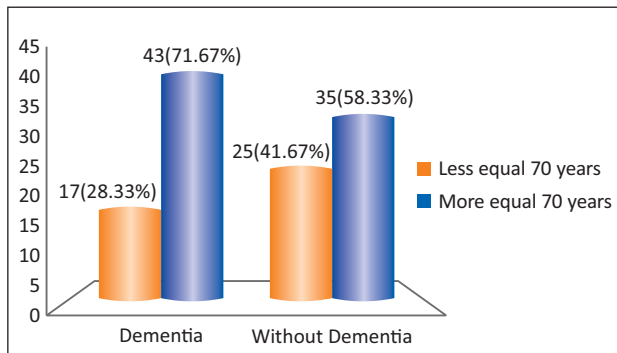

Figure 1: Distribution of the respondents according to age

Figure 1 shows that among the dementia patient most(71.73%) were more than 70 years age group and 17(28.33%) were less equal 70 years age group. On the other hand in without dementia patients only 58.33% were more than 70 years age group.
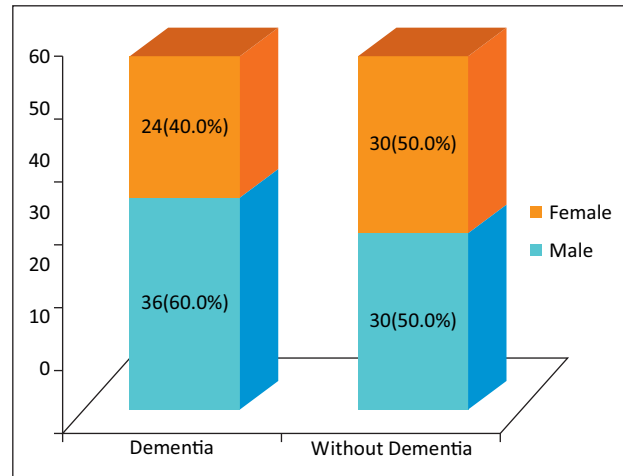

Figure 2: Distribution of the respondents according to sex

Figure 2 shows that among the dementia patients 36(60.0%) were male and 24(40.0%) were female. Without dementia patients male and female were equal in number.

Table 1: Distribution of the respondents according to other comorbid conditions

Co-morbid conditions	Dementia n=60 f(%)	Without Dementia n=60 f(%)
Diabetes mellitus	35 (58.3)	12 (24.0)
Hypertension	33 (55.0)	10 (16.7)
Liver disease	9 (15.0)	0 (0.0)
Stroke	26 (43.3)	0 (0.0)

Table 1 shows that 35(58.3%) dementia patients had Diabetes mellitus, 33(55.0%) had hypertension whereas only 12(24.0%) had Diabetes mellitus and 10(16.7%) had hypertension among without dementia respondents.

Table 2: Relationship of different risk factors with dementia and respondents without dementia.

Different risk factors	Groups		p value
	Dementia Mean ± SD	Without Dementia Mean ± SD	
Age (year)	73.10±4.93	71.80±5.32	0.168
BMI (Kg/m^2)	24.29±3.80	23.68±2.56	0.310
FBG (mmol/l)	7.75±2.49	6.21±1.23	0.001
Systolic BP (mmHg)	124±26	121±16	0.018
Diastolic BP (mmHg)	83±10	80±11	0.200
*Unpaired t test was done to measure the level of significance			

Table 2 shows the unpaired t test where Fasting blood glucose (p<0.001) and systolic blood pressure (p<0.05) is significantly associated with dementia

Table 3: Relationship of age with dementia and respondents without dementia

| Age (year) | Groups | | χ^2 | p value |
	Dementia n=60 f (%)	Without Dementia n=60 f (%)		
≤70	17 (28.3)	25 (41.7)		
>70	43 (71.7)	35 (58.3)	2.344	0.126
Total	**60 (100.0)**	**60 (100.0)**		
Chi-square test was done to measure the level of significance.				

Table-3 shows the chi square test where 43(71.7%) respondents of more than 70 years age group had dementia and only 17(28.3%) respondents of ≤70 years age group had dementia but the difference is not statistically significant (p>0.05)

Table 4: Relationship of sex with dementia and respondents without dementia

| Gender | Groups | | χ^2 | p value |
	Dementia n=60 f (%)	Without dementia n=60 f (%)		
Male	36 (60.0)	30 (50.0)		
Female	24 (40.0)	30 (50.0)	1.212	0.271
Total	**60 (100.0)**	**60 (100.0)**		
Chi-square test was done to measure the level of significance				

Table 4 shows the chi square test where male (60.0%) were more sufferer from dementia than female (40.0%) but the difference is not statistically significant (p>0.05)

Table 5: Relationship of co-morbid conditions of respondents with dementia and without dementia

| Co-morbid conditions | Group | | p value |
	Dementia n=60 f (%)	Without Dementia n=60 f (%)	
Diabetes mellitus	35 (58.3)	12 (24.0)	<0.001
Hypertension	33 (55.0)	10 (16.7)	<0.001
Liver disease	9 (15.0)	0 (0.0)	<0.002
Stroke	26 (43.3)	0 (0.0)	<0.001
Chi-square test was done to measure the level of significance			

Table5 shows the Chi-square test where different medical condition such as diabetes mellitus (p<0.01), hypertension (p<0.01), liver disease (p<0.01) and stroke (p<0.01) are significantly related with dementia.

Discussion

This study revealed that mean (±SD) age of dementia patients was 73.10(±4.93) years with the age range of 62 to 84 years. This result is consistent with some other study done in the world. The prevalence of dementia rapidly increases from about 2-3% among those aged 70–75 years to 20–25% among those aged 85 years or more.[9]

In this study subjects with age >70 years had more chance of dementia than the study subjects with age ≤ 70years which indicated that higher the age, higher the chance of dementia. In a good number of studies found that age is a strong risk factor.[10-11]

In context of history of medical illness, Diabetes mellitus was significantly higher in dementia patients than without dementia group. Diabetes mellitus was present in 35(58.3%) dementia patients. In a systemic review as well as in a cohort study, hyperinsulinaemia and type-2 diabetes are associated with greater risk of cognitive impairment and dementia.[12-13]

Hypertension was significantly higher in dementia patients than without dementia group. Hypertension was present in 33 (55.0%) dementia patients. Similarly, Stroke was significantly higher in dementia patients (43.30%) than control group (0.0%). On the other hand, developing societies where hypertension is the major problem seem to have proportionally high prevalence of dementia.[14] In a longitudinal study also found that hypertension is associated with development of cognitive impairment and dementia.[15]

Conclusion

As current study, it might be concluded that increase age, diabetes mellitus, hypertension, liver disease and stroke were considered as important co-morbid risk factor for respondents under study in Dhaka city.

Limitations

- The study was done in limited time of span, respondents were collected from few center hence it may not represent the whole population of the country.

- The sample size was small.

Conflict of interest

There is no conflict of interest with any organization or groups

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