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PREVALENCE AND PREDICTORS OF GERIATRIC SYNDROMES IN AN OUTPATIENT CLINIC AT A TERTIARY CARE HOSPITAL OF INDIA

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Abstract: *Background:* The precise prevalence of "Geriatric syndromes" among older patients in India is uncertain both in community or hospital setting. We examine the prevalence of geriatric syndromes in a dedicated outpatient clinic of a tertiary care hospital and to correlate their association with commonly encountered co-morbidities. *Methods:* OPD records of 343 older patients of the Geriatric Clinic of All India Institute of Medical Sciences, New Delhi, India, between August 2010 and January 2011 were reviewed. Data on prevalence of geriatric syndromes and the co morbidities were collected and the significance of their association was analyzed with appropriate statistical methods. *Results:* The mean age of presentation was 70.19(±5.6) years. The top five commonly associated comorbidities were hypertension (39.4%), diabetes (21.6%), cataract (12.5%), COPD (10.5%) and osteoarthritis (OA) (8.2%). Comprehensive geriatric assessment of these patients showed the prevalence of geriatric syndromes were depression 28(8.2%), cognitive impairment5 (1.5%), falls 26(7.6%), incontinence 15(4.4%) and functional dependency 37(10.9%). In our study CAD and osteoarthritis were strongly associated with cognitive impairment (p=0.000) and falls (p=0.004) respectively. Old CVA was found to be significantly associated with depression (p=0.010) and falls (p=0.007). *Conclusions:* Prevalence of Geriatric syndrome in outpatient settings was high. Under- recognition of these syndromes with routine medical assessments was common. Co- morbidities are very often independently associated with these geriatric syndromes. Therefore, routine screening by comprehensive geriatric assessment can prevent future disability.

Key words: Geriatric syndromes, co-morbidities, prevalence.

Background

India has seen rapid demographic transition for last few years with almost tripling of population over the age of 60yrs (i.e. the elderly) (1). Life expectancy at birth in 1990 was 58 yrs and has been increased to 66.6 by 2010.Increase in literacy rate, better health care and improved awareness on health gave rise to increase in longevity and survival of elderly population (2). In older patients association of multiple comorbidities is very common, which very often result in atypical symptoms (e.g. Immobility, instability, impaired cognition, incontinence and depression), not directly related to a particular disease process. They are referred to as "geriatric syndromes", leads to significant morbidity, and future disability (3). These syndromes may have a common pathophysiology despite their different presentations, and require interventions and strategies targeted towards the etiological factors (4). Elderly patients usually present with certain symptoms of a particular disease on the background of multiple co morbidities and geriatric syndromes. Health professionals underestimate the prevalence of these conditions, as they routinely don't look for these conditions (5). Under-recognition or suboptimal assessment of these syndromes in general medical outpatient clinic is common (6). A comprehensive geriatric assessment is very much needed for ideal management of elderly patients both in OPD and acute care settings. In Indian context there is no large scale study on this issue. Moreover there is no special or separate geriatric set up in most of the tertiary care centres of this country and hence the exact prevalence of geriatric syndromes in hospital settings is not known.

A third of the patients receiving care at All India Institute of Medical Sciences, New Delhi, India are

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elderly. Unfortunately, the prevalence of geriatric syndromes in this apex institute is not known. The Geriatric Medicine unit (Which runs daily outpatient services since August 2010), which uses the comprehensive geriatric assessment tool, may highlight the exact prevalence of geriatric syndrome and associated co morbidities.

The primary objective of this study is to determine the prevalence of the geriatric syndromes (cognitive impairment, depression, functional limitation, urinary incontinence, and falls) in Geriatric outpatient clinic of All India Institute of Medical Sciences, New Delhi, India. The secondary objective is to assess the significant association of particular comorbidity with these commonly encountered geriatric syndromes.

Materials and Method

Study participants

A retrospective study was carried out from geriatric assessment records of patients, 60 years of age or older, who attended the Geriatric Outpatient Clinic of All India Institute of Medical Sciences between August 2010 and January 2011. The comprehensive geriatric assessments were carried out in these patients, which includes, in addition to the usual assessment, a detailed functional, social, and environmental assessment. As part of the assessment, patients were screened for cognitive impairment, depression, functional dependency, urinary Incontinence, and falls. The diagnosis of cognitive impairment was based on the Folstein MMSE (score<24) was used as diagnostic criteria. Depression was determined with the help of Yesavage Geriatric Depression Scale-Short form (score ≥5). The BARTHEL ADL INDEX (BADL) was used to determine the functional dependency of the participants. Functional dependency was defined as,participant having dependency in any one domain of BADL (score<20). Urinary incontinence was defined as a self-reported presence of involuntary urine loss. A fall, defined as inadvertently coming to rest on the ground, floor or other lower level (excluding intentional change in position to rest),were taken into consideration only if there were at least one fall in last six months. All subjects (or their proxies) gave informed written consent. Baseline characteristics such as age, sex, marital status, and living environment, as well as data on comorbidities, including vision, hearing impairment was collected. Data on the geriatric syndromes was also collected. Based on this, the association of each comorbiditiy with the geriatric syndrome was statistically analyzed to predict for their significance of association ($p<0.05$).

Statistical analysis

The prevalence of the geriatric syndromes and comorbidities were analyzed using descriptive statistics. The results were expressed both as percentages and frequencies. Odd Ratio with 95% confidence intervals using the Chi-square test was used for analyzing the significance of association between comorbidities and geriatric syndromes. The continuous data was compared by t-test .Univariate and multivariate logistic regression was used find out the predictor for Geriatric syndrome. We regarded a two sided p-value less than 0.05 as significant. All analyses were undertaken using SPSS version 19 (IBM, USA).

Results

There were 343 patients, mean age was 70.19 (± 5.602). Females were 110(32.1%) and male 233(67.9%).The number of patients as per their age distribution 60 to 69,70 to 79 and 80 yrs or more were 144(42%),172(50%) and 27(8%) respectively (Figure 1).

Figure 1
Percentage of patients in different age group

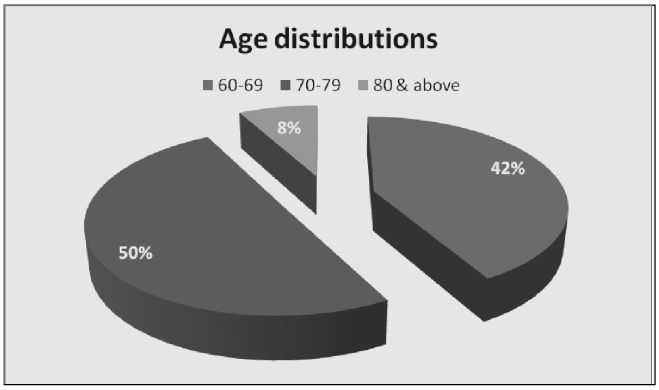
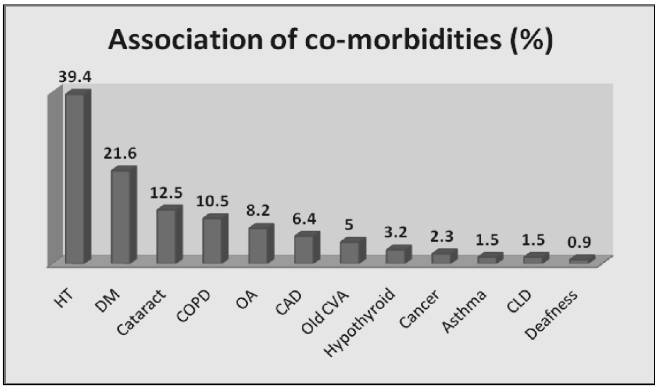


Figure 2
Association of co-morbidities

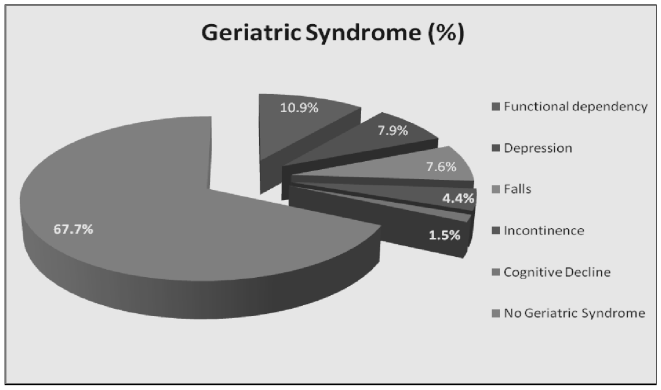


The associated comorbidities in our patients were shown in (Figure 2). The top five common underlying

diseases were hypertension (39.4%), diabetes (21.6%), cataract (12.5%), COPD (10.5%) and OA (8.2%).

After comprehensive geriatric assessment with different assessment tools, the prevalence of common geriatric syndromes were determined as shown in figure 3. In our study depression 28(8.2%), cognitive impairment 5(1.5%), falls 26(7.6%), incontinence 15(4.4%) and functional dependency 37(10.9%) were found. We analyzed the association of top seven important (HT, DM, Cataract, COPD, OA, CAD and old CVA) comorbidities with each of the geriatric syndromes separately to find out the significance of their association, which are enumerated in Table-1. CAD was strongly associated with Cognitive decline [odd ratio(OR)=25.02, 95% confidence interval (CI)=3.94,158.86), p=0.000] and Osteoarthritis(OA) was significantly associated with falls [OR=3.995, CI=1.455,10.970, p=0.004] .Old CVA was found to have significant association with Depression [OR=4.377, CI= 1.307, 14.65, p=0.010] and Falls [OR=4.591, CI=1.367, 15.419, p=0.007].

Figure 3
The prevelance of geriatric syndromes



All these variables with p<0.25 were enter in multivariate logistic regression and it shows none of the variable were significant. The possibility of this results may be due to less number of observation in the parameter.

Table 1
Sociodemogarphic profile of elders attending geriatric OPD

		Male (%)	Female (%)	Total (%)
Educational Status	Illiterate	15.1	33.9	24.8
	Primary	57.3	57.3	53.4
	Class12 and above	27.6	8.8	21.8
Occupational Status	Unemployment	63.2	90.3	72.47
	Employment	8.1	3.5	5.7
	Retired	28.7	6.1	21.83
Living Status	Spouse	5.1	6.4	5.3
	Spouse & Children	73.3	52.7	63.71
	Children	16.3	37.5	26.12
	Old Age Home	1.8	1.1	2.7
	Alone	3.5	2.3	2.1
Marital Status	Married	88.7	72.2	78.8
	Single	2.5	0.2	1.54
	Divorced	0.4	0.5	0.3
	Widowed	8.4	27.1	19.36

Discussion

This study provides the prevalence of the geriatric syndromes such as falls, cognitive impairment, functional dependency, urinary incontinence and depression in the geriatric outpatient clinic of the All India Institute of Medical Sciences, New Delhi. Most of the elderly patients (about 90%) were between the age group of 60 -79 yrs. Male outnumbers the female patients. Illiteracy was almost double in female compare to male and most of people have primary education only. Though maximum number of patients were unemployed, they live in joint family, signifies strong social system of Indian culture.

Hypertension was the most commonly associated comorbidity in our patients followed by DM, cataract, COPD, OA, CAD and old CVA. It is obvious that most of these comorbidities are preventable or treatable.

Functional dependency was the most prevalent geriatric syndrome in our patients, which is consistent with the Thailand study by Panita Limpawattana et al (6). This findings, is alarming, as this would increase the financial and social burden. Other important Geriatric syndromes were depression, fall, incontinence and cognitive impairment. These syndromes are very much underreported and neglected in Indian Geriatric population.

Table 2
Significance of association between comorbidities and Geriatric syndromes

		Depression	Cognitive impairment	Falls	Incontinence	Functional dependence
HT	*n(%) +p	7(2.1%) 0.130	1(0.3%) 0.367	10(.9%) 0.903	3 (0.9%) 0.113	17(5.0%) 0.402
DM	n(%) p	2(0.6%) 0.065	1(0.3%) 0.938	9(2.6%) 0.088	3(0.9%) 0.892	12(3.5%) 0.083
CAD	n(%) p	1(0.3%) 0.545	3(0.9%) 0.000	4(1.2%) 0.054	2(0.6%) 0.267	5(1.5%) 0.064
COPD	n(%) p	0(0.0%) 0.063	0(0.0%) 0.439	1(0.3%) 0.247	2(0.6%) 0.720	3(0.9%) 0.608
OA	n(%) p	0(0.0%) 0.105	0(0.0%) 0.500	6(1.8%) 0.004	2(0.6%) 0.460	5(1.5%) 0.213
Cataract	n(%) p	2(0.6%) 0.375	0(0.0%) 0.386	3(0.9%) 0.829	1(0.3%) 0.461	3(0.9%) 0.357
Old CVA	n(%) p	4(1.2%) 0.010	0(0.0%) 0.617	4(1.2%) 0.007	2(0.6%) 0.106	4(1.2%) 0.062

*Number of cases in percentage of total (343) with the corresponding comorbidities and geriatric syndromes; +p values showing significance of association between the corresponding comorbidities and geriatric syndromes.

Prevalence of depression is slightly lower in our study population than that of community prevalence (13 to 25%) as reported in various community based studies from different parts of India (7-9). This is because depressive behavior in elderly is very often regarded as old age phenomenon rather than a treatable medical problem and hence remains unreported in the community without seeking specialized service in tertiary care.

Older patients may assume that urinary incontinence is a normal consequence of aging. Some patients do not disclose the incontinence because of fear of invasive testing and females are hesitant to disclose due to social reason. Incontinence does not lead to death but it causes substantial debility. In India the overall prevalence of urinary incontinence is about 12% in all age groups (10), but practically there in no knowledge of its prevalence in geriatric population. In our outpatients the prevalence of urinary incontinence was 15%, which is although comparable to the prevalence of the all age groups, but gives an idea of urinary incontinence in geriatric population.

Falls in the elderly are a major health problem with medical and economic consequences to the individual, families, and society. The prevalence of falls increases with age (11). About 10% will suffer a serious injury (12). In our study we found out 7.6% had history of fall. Because of the scarcity of the elderly specific study on falls in tertiary care hospitals it is not very clear what's the exact incidence and impact of falls in elderly.

Cognitive impairment is one of the most common underestimated and under diagnosed geriatric syndrome in India. In our study prevalence of cognitive impairment was 1.2% which is lesser than industrialized western countries (5-10%) and among Japanese, the prevalence is around 7% in those aged >65yrs. It may be due to less awareness in common people about the disease and many patients might be attending to neurology and psychiatry OPD (as it is a tertiary care hospital) for the same disease.

Comorbidities such as CAD, osteoarthritis, and Old CVA were significantly associated with one or more of the geriatric syndromes individually, supported by other study (13) Explanation could be as there is reduction of mobility and impaired quality of life with the patient with CAD, OA knee or Old CVA, these can increase.

But none of the co- morbidity was significantly associated with Geriatric syndrome when we consider all the variable (comorbidities) together.

Study limitations

As it was a cross-sectional study for small duration with small sample size, it has its own limitation to conclude.

Conclusion

Our study shows the importance of comprehensive geriatric assessment, and there by analyzing the prevalence and predictors (comorbidities) of geriatric syndromes. Early diagnosis of Geriatric syndromes, proper prevention and ideal management of comorbidities is a must in Geriatric OPD services to reduce morbidity, mortality and disability in this population.

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