THE MORBIDITY PATTERN OF GERIATRIC AGE GROUP PATIENTS ADMITTED IN MEDICINE WARD THROUGH EMERGENCY

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ABSTRACT

Objectives: Geriatric patients have higher admission rates, readmission rates, mortality rates, and emergency department attendance rates as compared to younger patients. They suffer from multiple comorbidities. Hence, the current study aims to find out the common causes of emergency hospital admission of geriatric populations and to describe their morbidity pattern.

Methods: A total of 208 geriatric patients were included in the study. After taking proper consent from the caregiver/relative; the detailed history of the patient had been taken, along with clinical examination had been done at bedside. Then relevant laboratory investigation (Biochemical, Pathological and Radiological) had performed. Statistical analysis was done according to the study parameter.

Results: System-wise morbidities did not vary statistically among the participants of different age groups. Among the elderly population (>80 years) endocrinal morbidities (93.9%) followed by gastrointestinal morbidities were the most common (91.8%). On the other hand, among the relatively younger age group, that is, 60–70 years psychiatric morbidities were least common (18.3%). Among the morbidities noted, central nervous system (CNS) morbidities had a female preponderance, which was statistically significant. All the participants who were smokers were diagnosed with endocrinal morbidities. While among non-smokers 83.7% had endocrinal morbidities. The difference was statistically significant (p<0.001). All the participants who were chronic alcoholics were diagnosed with GI morbidities. While among non-alcoholics 81.9% had Endocrinal morbidities. The difference was statistically significant.

Conclusion: The elderly persons have significantly higher admission rates, mortality rates, and ICU admission rates. Social, economic, and healthcare support for the elderly people can be effective in reducing morbidities and unwanted clinical outcomes.

Keywords: Geriatric patients, Etiology, Morbidity, Emergency.

INTRODUCTION

Geriatric health and diseases are influenced by the process of aging. Age is a recognized constitutional risk factor for many medical conditions, especially non-communicable diseases. Older patients are likely to have multiple comorbidities or chronic illnesses with impaired physical and cognitive function and are likely to have lesser social support. Geriatric patients are therefore at a higher risk of morbidity and mortality when they present with emergencies. This poses a management challenge to the emergency department (ED) physicians. As the number of people over the age of 65 years is increasing in both the developed and developing countries, the number of ED visits is also bound to increase [1-3].

Common conditions in older age include hearing loss, cataracts and refractive errors, back and neck pain and osteoarthritis, chronic obstructive pulmonary disease, diabetes, depression, and dementia. Moreover, due to increasing age, they are more likely to experience several conditions at the same time. There is a rapid expansion of the geriatric age group due to increased longevity and so morbidities among them. Older age is also characterized by the initiation of several complex health states that mainly occur only later in life and that do not fall into discrete disease categories and these are commonly called geriatric syndromes [4-6].

As per 2001 statistics, around 75% of the elderly Indian population was residing in rural areas; approximately 73% of them were illiterate and involved in physical labor for their livelihood. The healthcare problems of the elderly are complicated as they suffer from both communicable as well as non-communicable diseases. Older patients have higher admission rates, readmission rates, mortality rates, and ED attendance rates as compared to younger patients. The susceptibility to infections increases with ageing. In addition, they suffer from multiple comorbidities. As a consequence, the morbidity and mortality of these infections increases in the geriatric population [7-9].

The current study aims to find out the most common causes of emergency hospital admission of geriatric patients and to describe their morbidity profile.

METHODS

This hospital-based cross-sectional observational descriptive epidemiological study was conducted in the indoor patient department of general medicine of Burdwan Medical College and Hospital in Purba Bardhaman District (West Bengal) for 18 months. The patients aged 60 years or above admitted in indoor department of general medicine through emergency; for the first time, were included for this study. Patients who died within 24 h of admission and did not give consent for participation were excluded from the study.

Sampling

Systematic random sampling method was used. Considering, the prevalence (P) of systemic etiology and morbidity (Genitourinary system)

among in-patients admitted through the ED 42.5%, as per a study by Vasanth *et al.* [17] (2018), the sample size was calculated. The standard deviate at 95% confidence interval (Z) was 1.96 and taking 80% power of the study the absolute error (l) was (0.425 × 0.2). Considering a design effect of 1.5 for this study the minimum required sample size (n) was {$1.96^2 \times 0.425 \times (1-0.425)$}/($0.425 \times 0.2)^2 \approx 208$.

Procedure

The study was conducted after obtaining clearance from the Institutional Ethics Committee and Scientific Advisory Committee, Burdwan Medical College and Hospital, and then the approval for the proposed research was obtained from the West Bengal University of Health Sciences. The geriatric patients (i.e. aged >60 years), who were admitted through emergency due to some serious illness in the indoor medicine department, were identified first. Patients who did not survive after initial management and resuscitative measures within 24 h of admission; were excluded from the study population. Those patients survived after 24 h were selected for this observational study. After taking proper consent from the caregiver/relative; the detailed history of the patient had been taken along with a clinical examination had been done at bedside. Then relevant laboratory investigation (Biochemical, Pathological and Radiological) had performed.

Statistical analysis

Data (from questionnaire and schedule) were entered into a spreadsheet class/section, roll no wise, and exported to Statistical Package for the Social Sciences® (SPSS) version 21.0 software for analysis. Descriptive statistics were used to describe the sociodemographic characteristics and etiologic and morbidity profile of the participants. Chi-squared tests were done to determine the difference between the observed proportions of etiologies and morbidities among different age groups, genders, and addiction habits. All tests were two-tailed, and p<0.05 was considered significant.

RESULTS

In the present study, the majority of the participants belonged to the age group 60–70 years, followed by 71–80 years and more than 80 years. 49.5% of the participants were male and 50.5% were female. Overall, the majority of the participants (81.7%) belonged to Hinduism and 18.3% belonged to Islam. The majority of the participants (64.9%) were from urban area and 35.1% from rural. About 41.8% were illiterate, and 36.5% had educational level till primary. Overall, 37.5% belonged to lower middle, 26.0% to the upper middle, and 25.0% to poor socioeconomic class. The majority of the participants (70.7%) had no smoking habit and 29.3% had smoking habit. The majority of the participants (82.2%) had no chronic alcoholism history and 17.8% had chronic alcoholism history (Table 1).

The clinical profile of the participants revealed that 48.6% of the participants were conscious, 28.8% were drowsy and 22.6% unconscious. About 30.3% had pallor, 7.2% had cyanosis, 4.3% had jaundice, 9.1% had clubbing, 15.4% had edema. Overall, 59.6% of the participants were normal weight, 35.6% were overweight and 4.8% were obese.

Etiological profile showed that 10.6% of the participants had CVDs. About 90.9% of the participants with CVD had acute coronary syndrome and 9.1% had cardiomyopathy and heart failure. Participants with neurological diseases comprised 17.8%, of which 59.5% had ischemic cerebrovascular accident (CVA), 29.7% had hemorrhagic CVA and 10.8% had meningitis. Among the participants with respiratory diseases, 73.7% had chronic obstructive pulmonary disease (COPD) and respiratory failure; 21.0% had pulmonary TB and 5.3% had CA lung. Participants with genitourinary diseases comprises 10.1%; of which 81.0% of the had chronic kidney disease (CKD) and 19.0% had urinary tract infection (UTI) and pyelonephritis. Participants with gastrointestinal (GI) diseases comprises 9.1%; among them 63.2% had CLD and 21.0% had intestinal TB and 15.8% had GI malignancy. Among the participants with endocrine diseases, 52.9% had hyperglycemia

Table 1: Sociodemographic profile of the participants (N=208)

Variables	Number	Percentage
Age		
60–70 years	81	38.9
71–80 years	78	37.5
>80 years	49	23.6
Total	208	100.0
Gender		
Male	103	49.5
Female	105	50.5
Total	208	100.0
Religion		
Hinduism	170	81.7
Islam	38	18.3
Total	208	100.0
Residence		
Urban	135	64.9
Rural	73	35.1
Total	208	100.0
Type of family		
Nuclear	31	14.9
Joint	177	85.1
Total	208	100.0
Education		
Illiterate	87	41.8
Below primary	6	2.9
Primary	76	36.5
Middle	19	9.1
Secondary	19	9.1
Higher Secondary	1	0.5
Total	208	100.0
Marital status		
Unmarried	2	1.0
Married	146	70.2
Widowed	60	28.8
Total	208	100.0
Socioeconomic status		
Upper high	1	0.5
High	23	11.1
Upper Middle	54	26.0
Lower Middle	78	37.5
Poor	52	25.0
Total	208	100.0

and 47.1% had hypoglycemia. Participants with psychiatric diseases comprise 4.3%; among them 88.9% had attempted suicide and 11.1% had other complications (Table 2).

Majority of the participants (88.46%) had endocrinal morbidity, followed by cardiovascular morbidity (74.03%) and respiratory morbidity (62.50%). Psychological morbidity was the least common (24.03%). Various morbidities which were found among the study participants were: 63.46% of the participants had ischemic heart disease, 40.38% with dilated cardiomyopathy, 27.40% with heart failure, and 9.13% with pericardial effusion. 58.65% of the participants had COPD, 19.71% with pulmonary TB, and 7.21% with Lung CA. 43.75% of the participants had ischemic CVA, 31.25% with hemorrhagic CVA, and 18.75% with transient ischemic attack (TIA). 81.25% of the participants had diabetes, 75.96% with dyslipidemia, and 48.55% with hypothyroidism. About 31.25% of the participants had CKD, 14.90% with UTI and pyelonephritis, 13.46% with BHP. 54.80% of the participants had fibromyalgia, 36.53% with osteoarthritis, and 22.59% with rheumatoid arthritis. 83.71% of the participants had peptic ulcer, 35.09% with CLD, 15.38% with intestinal TB. 14.42% of the participants had depression, 19.71% with insomnia, and 7.21% with attempted suicide (Table 2).

System-wise morbidities did not vary statistically among the participants of different age groups. Among the elderly population (>80 years) endocrinal morbidities (93.9%) followed by gastrointestinal

morbidities were the most common (91.8%). On the other hand, among the younger age group, that is, 60–70 years psychiatric morbidities were least common (18.3%). Among the morbidities noted, CNS morbidities had a female preponderance, which was statistically significant (Tables 3 and 4).

All the participants who were smokers were diagnosed with Endocrinal morbidities. While among non-smokers 83.7% had endocrinal morbidities. The difference was statistically significant (p<0.001). All

the participants who were chronic alcoholics were diagnosed with GI morbidities. While among non-alcoholics 81.9% had Endocrinal morbidities. The difference was statistically significant (p=0.002) (Table 5).

DISCUSSION

In the present study, the majority (38.9%) of the participants belonged to the age group 60–70 years, followed by 71–80 years and more than 80 years. Barman *et al.* (2014) [10] in their study reported that 55% of participants belong to age group 60–69. Yasmeen *et al.* (2015) [11] stated the 70.2% of participants belonged to young-old age group. Sehgal *et al.* (2016) [12] in their study done in outreach clinic stated that the maximum number of patients (38.54%) were from 60 to 64 years age group, followed by 22.37% from 70 to 74 years age group and 21.28% from 65 to 69 years age group, and there were only 17.83% of geriatric patients who were older than 75 years. Mean age of the participants in the current study was 74.44 years (±9.56) years. In the study by Sharma *et al.* (2013) [13] the mean age of the sample studied was 69.01 years. A community-based cross-sectional study by Gupta *et al.* (2016) [14] reported that the mean age of the participants was 66.27 ± 6.26 years. In the present study, 49.5% of the participants were male and 50.5% were female. Jadhav *et al.* (2012) [15] observed in their study that 52.48% were females and 47.52% were elderly males. Females represented 51% of the study sample as reported in the study done by Sharma *et al.* (2013) [13]. Sehgal *et al.* (2016) [12] stated that 48.84% were men and 51.16% were women. Vanitha *et al.* (2018) [16] revealed that among study participants 59.5% were male and 40.5% were female in their study. In the present study, it was observed that 29.3% had smoking habit and 17.8% had chronic alcoholism history. Vasanth *et al.* (2018) [17] stated that in their study 14% of patients had a history of active alcohol consumption, and 27% of patients were active smokers. Grover *et al.* (2018) [18] reported in their study that about one-third (31%) of the participants had tobacco dependence, and one-fifth (19.8%) of patients had alcohol dependence syndrome currently.

In this present study, 10.6% of the participants had CVDs; around 17.8% of the participants had neurological etiology, and 18.3% of the participants had respiratory etiology. Genitourinary etiology was diagnosed among 10.1% and 9.1% of the participants had GI etiology. About 8.2% of the participants had endocrinal diseases. Psychiatric etiology was present among 4.3%. Sehgal *et al.* (2016) [12] reported that the maximum cases (64.45%) presented with involvement of eyes, followed by musculoskeletal disorders (30.23%), cardiovascular diseases (CVD) (26.58%), respiratory system diseases (24.58%), gastrointestinal tract (GIT) diseases (19.93%), and ear diseases (11.30%) in that order. Vasanth *et al.* (2018) [17] reported that the presenting symptoms of the elderly patients in the inpatient ward at tertiary hospital were: Cardiorespiratory symptoms (65.5%), neuropsychiatric symptoms (63%), genitourinary symptoms (42.5%), and gastrointestinal symptoms (26%). Grover *et al.* (2018) [18] reported that among participants attending the medical ED, around half of the patients (47.4%) fulfilled at least one axis-I psychiatric diagnosis.

Table 2: Morbidity profile of the participants (N=208)

Variables	Number	Percentage
CVD		
Ischaemic heart disease	132	63.46
Dilated cardiomyopathy	84	40.38
Heart failure	57	27.40
Pericardial effusion	19	9.13
Neurological diseases		
Ischaemic CVA	91	43.75
Hemorrhagic CVA	65	31.25
TIA	39	18.75
Meningitis	14	6.73
Intracranial SOL	23	11.05
Epilepsy	19	9.13
Respiratory diseases		
COPD	122	58.65
Pulmonary TB	41	19.71
Lung CA	15	7.21
Genitourinary diseases		
CKD	65	31.25
UTI and pyelonephritis	31	14.90
BHP	28	13.46
Calculi in kidney and ureter	13	6.25
Prostatic CA	6	2.88
Gastrointestinal diseases		
Pepticulcerdisease	173	83.71
CLD	73	35.09
IntestinalTB	32	15.38
GImalignancy	19	9.13
Endocrinal disease		
Diabetes	169	81.25
Dyslipidemia	158	75.96
Hypothyroidism	101	48.55
Musculoskeletal diseases		
Fibromyalgia	114	54.80
Osteoarthritis	76	36.53
Rheumatoid arthritis	47	22.59
Gout	20	9.61
Fracture due to fall	4	1.92
Psychiatric diseases		
Depression	30	14.42
Insomnia	41	19.71
Attemptedsuicide	15	7.21

CVD: Cardiovascular diseases, CVA: Cerebrovascular accident, TIA: Transient ischemic attack, COPD: Chronic obstructive pulmonary disease, CKD: Chronic kidney disease, UTI: Urinary tract infection

Table 3: Morbidities pattern according to age (N=208)

Morbidities	Age groups			p-value
	60–70 years (%)	71–80 years (%)	>80 years (%)	
CVS	54 (76.1)	59 (75.6)	34 (69.4)	0.668
Respiratory	45 (63.4)	49 (62.8)	28 (57.1)	0.757
CNS	41 (57.7)	40 (51.3)	26 (53.1)	0.722
Endocrinal	59 (83.1)	69 (88.5)	46 (93.9)	0.202
Genitourinary (GU)	31 (43.7)	36 (46.2)	19 (38.8)	0.716
Gastro-intestinal (GI)	58 (81.7)	65 (83.3)	45 (91.8)	0.279
Musculoskeletal	45 (63.4)	48 (61.5)	28 (57.1)	0.785
Psychiatric	13 (18.3)	21 (26.9%)	14 (28.6)	0.339

CVS: Cardiovascular, CNS: central nervous system

Table 4: Morbidities pattern according to gender (N=208)

Morbidities	Gender		p-value
	Male (%)	Female (%)	
CVS	74 (71.8)	80 (76.2)	0.475
Respiratory	61 (59.2)	69 (65.7)	0.334
CNS	48 (46.6)	66 (62.9)	0.019
Endocrinal	94 (91.3)	90 (85.7)	0.211
Genitourinary	43 (41.7)	49 (46.7)	0.475
Gastro-intestinal	85 (82.5)	92 (87.6)	0.302
Musculo-skeletal	63 (61.2)	63 (60.0)	0.864
Psychiatric	28 (27.2)	22 (21.0)	0.293

CVS: Cardiovascular, CNS: central nervous system

Table 5: Morbidities pattern according to addiction (N=208)

Morbidities	No (%)	Yes (%)	p-value
Smoking			
CVS	106 (72.1)	48 (78.7)	0.324
Respiratory	94 (63.9)	36 (59.0)	0.504
CNS	83 (56.5)	31 (50.8)	0.457
Endocrinal	123 (83.7)	61 (100.0)	<0.001
Genitourinary	71 (48.3)	21 (34.4)	0.067
Gastro-intestinal	128 (87.1)	49 (80.3)	0.214
Musculoskeletal	91 (61.9)	35 (57.4)	0.543
Psychiatric	31 (21.1)	19 (31.1)	0.122
Chronic alcoholism			
CVS	129 (75.4)	25 (67.6)	0.322
Respiratory	110 (64.3)	20 (54.1)	0.242
CNS	93 (54.4)	21 (56.8)	0.793
Endocrinal	148 (86.5)	26 (97.3)	0.064
Genitourinary	80 (46.8)	12 (32.4)	0.111
Gastro-intestinal	140 (81.9)	37 (100.0)	0.002
Musculoskeletal	103 (60.2)	23 (62.2)	0.828
Psychiatric	42 (24.6)	8 (21.6)	0.704

CVS: Cardiovascular, CNS: central nervous system

In this present study, the majority of the participants (88.46%) had endocrinal morbidity, followed by cardiovascular (74.03%), respiratory (62.50%), musculoskeletal (60.58%), gastrointestinal (56.25%), CNS (54.80%), genitourinary (44.23%) morbidity. Morbidity pattern according to age and gender reveals the prevalence of various morbidity factors among 71–80 years age group and the prevalence of endocrinal and psychiatric morbidities more among male, whereas others are more among female. Morbidity pattern according to addiction reveals smoking and chronic alcoholism are not so much prevalent among geriatric population suffering from various comorbidities. Sudarshan Pai and Harsh Kumar (2017) [19] reported that the common morbidities in the elderly patients found were diabetes mellitus (54.5), CVD (50.3), and locomotive disorder (45.5). Gladius *et al.* (2016) [20] Common morbidities found in elderly patients to be arthritis (75%), followed by hypertension (63.9%), low back pain and other pain (52.8%), diabetes (33.3%).

CONCLUSION

Elderly persons have significantly higher admission rates, mortality rates, and ICU admission rates. In addition, the geriatric population has multiple comorbidities which render them susceptible to various infections and cripple their immune response. These morbidity conditions can be easily prevented by taking proper and timely measures. There is an urgent need for establishing specialist EDs and dedicated setups for geriatric population, to cater for the ever-increasing changes in demographic patterns; especially in developing countries like India. If social support, Government and economical support, and proper medical care for the elderly people can be assured; the morbidity factors can be reduced or eliminated and the fatal clinical outcome can be prevented. Thus, overall disease burden of the society can be reduced.

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