Original Article

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Characterization of the Elderly Patients Admitted with Infection to a Tertiary Hospital in Bangladesh

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ABSTRACT

Background: *The proportion of hospitalizations attributable to infectious diseases is high, and likely to increase further in the future as a result of the expected aging of the population and the increasing prevalence of comorbid conditions among the elderly. The present study aimed to investigate the clinical characteristics and outcomes of elderly patients admitted due to infection in a tertiary-level hospital in Chattogram, Bangladesh.*

Materials and methods: *This prospective observational study was conducted in Chittagong Medical College Hospital (CMCH) Chattogram. Two hundred and six patients aged ≥60 admitted with a diagnosis of infectious aetiology in the medicine department were enrolled according to set inclusion criteria. Patients were followed up for in-hospital outcomes after admission.*

Results: *Age ranges from 60-90 years with a mean age of 65.82 (±5.56) years) and 51.5% were male. Pre-hospital antibiotic was received by 108 (52.4%) patients and 7.4% had antibiotic prescribed by registered physicians The most frequent infections were respiratory tract infections (47.6%) and urinary tract infections (43.2%). Sixty-four (31.1%) patients developed sepsis and 17 (8.3%) required ICU support. Eleven patients expired in-hospital, indicating a mortality rate of 5.3%. Length of hospitalization ranged from 2 to 17 days, with a median of 6 days.*

Conclusion: *This study result suggests that infection-related hospitalization and outcomes of elderly individuals were high and their health seeking behaviour was poor.*

Key words: Elderly; Infections; Outcome.

Introduction

From any other age group the proportion of the aged population is growing faster. At present Bangladesh has an about 13 million people aged 60 and above; by 2050, their number will increase to 21.9% with 36 million people aged over 60. This indicates that for every five Bangladeshis, one will be a senior citizen, which will most likely create a great burden on the health system.[1,2]

Infectious disease is associated with substantial morbidity and mortality and remains a leading cause of visits to ambulatory clinics and hospitalization.[3]The aging of the population and the increasing prevalence of elderly patients with comorbid conditions has resulted in a population that is more susceptible to infectious diseases.[4,5] Moreover, because of comorbidities, elderly subjects are more likely to visit the emergency department, a finding associated with a three-fold increased risk of acute infection.[6] Another important contributor is the widespread use of antibiotics and the emergence of highly resistant pathogens.[7]

Recent data concerning infectious disease hospitalizations among elderly is lacking in Bangladesh. This study describes the sociodemographic and clinical characteristics of the elderly patients hospitalized due to infectious diseases in a tertiary teaching hospital in Bangladesh.

Materials and methods

A prospective observational study was conducted in Chittagong Medical College Hospital, Chattogram, Bangladesh, from October 2019 to September 2020. The study protocol was approved by the Ethical Review Committee of Chittagong Medical College (Memo No.: CMC/PG/2019/583, Date: 24/10/2019). Informed

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written consent was obtained from each eligible subject or close family member in case they could not respond accurately after a full explanation of the outcome and purpose of the study.

Hospitalized elderly patients aged 60 years and above admitted to the medicine ward with infectious aetiology were included in the study. Unconscious patients and patients who required treatment in specialized units such as HDU and ICU on admission were excluded.

Data regarding age, sex, educational status, present vocational status, economic dependency and family type, smoking habit, comorbid conditions and site of infections were collected by a structured proforma. Common infections were documented as diagnosed by the respective ward's attending/treating physician, such as urinary tract infections, lower respiratory tract infections, skin and soft tissue infections, Intra-abdominal infections (Cholecystitis, choledocholithiasis, pancreatitis) and others. All study patients were monitored in-hospital until their discharge or death to observe the outcome.

Only descriptive statistics were used to present the results. Categorical data were expressed as count and percentage and quantitative data were expressed as mean (± Standard deviation) or median (Range).

Results

Two hundred and six patients were enrolled during the study period. Age range from 60 to 90 years with a mean (±SD) age of 65.82 (±5.56) years. There was almost equal representation from both sexes in this group with a male to female ratio of 1.06:1.Majority of the elderly patients lived in a joint or extended family and only 13.1% reported to live in nuclear family. Only six (2.9%) of the participants had education primary or above and majority of them were either partially or completely dependent on others. Out of 206 elderly participants, only 17 (8.2%) reported to smoke currently and 24.8% were ex-smoker (Table I).

Table I Sociodemographic characteristics of the elderly patients (n=206)

Attributes		Mean ±SD/ Frequency (%)
Age (Years)	Mean ±SD	65.82 (±5.56)
Sex	Male	106 (51.5)
	Female	100 (48.5)
Type of family	Nuclear/single	27 (13.1)
	Joint or extended	179 (86.9)
Educational level	Below primary	200 (97.1)
	Primary and above	6 (2.9)
Vocational status	Employed	66 (32.0)
	Not employed	140 (68.0)
Economic dependency	Independent	10 (4.9)
	Partly dependent	43 (20.9)
	Dependent	153 (74.3)
Smoking behavior	Never smoker	136 (67.0)
	Ex-smoker	51 (24.8)
	Current smoker	17 (8.2)

Table II Pre-hospital treatment pattern in the patients (n=108)

Received pre-hospital antibiotic		108 (52.4)
Antibiotic prescribed by	Qualified doctors	8 (7.4)
	Pharmacist	32 (29.6)
	Quack	35 (32.4)
	Self prescribed	33 (30.8)

One hundred and eight patients received antibiotic before admission in the hospital and in most of the cases, antibiotic was prescribed either by quack or pharmacist or it was self prescribed. Only, 7.4% had antibiotic prescribed by registered physicians (Table II).

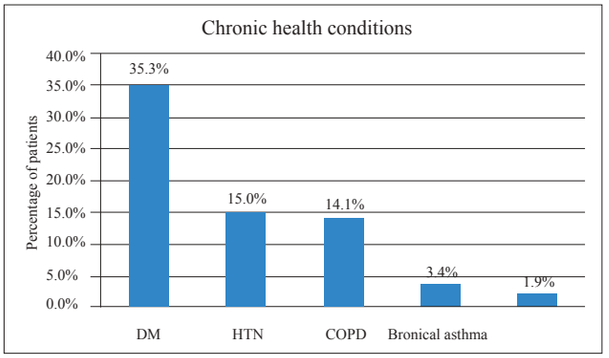

Figure 1 Distribution of the patients by their comorbid chronic health conditions

The overall prevalence of patients with any form of chronic health conditions was 54.9% and multi-morbidity (Presence of 2 or more conditions) was 12.1%. Most frequent comorbid chronic health condition in the studied population was diabetes mellitus, followed by hypertension and chronic obstructive pulmonary disease (Figure 1).

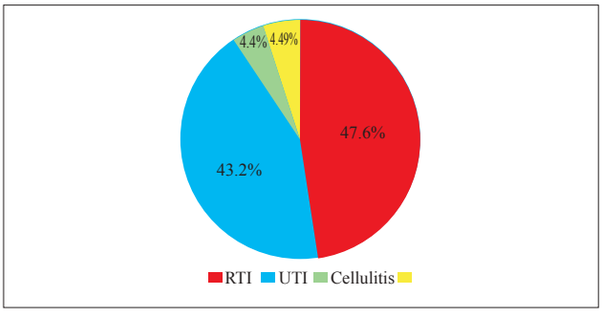

Figure 2 Type of infectious etiology among 206 hospitalized elderly with infection

In this cohort of hospitalized elderly patients with infectious etiology, most frequent infections was respiratory tract infection, detected in 98 (47.6%) patients followed by urinary tract infection in 89 (43.2%) patients. Cellulitis was present in 9 (4.4%) of the patients. Other infrequently observed infections were abdominal infection other than UTI and septic arthritis present in 10 (4.9%) patients (Figure 2).

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Table III Hospital outcome of the patients (n=98)

Differential	Frequency (%) / Median (IQR)
Developed sepsis	64 (31.1)
Required ICU transfer	17 (8.3)
Length of hospital stay, days	6 (5-7)
In-hospital mortality	11 (5.3)

(N.B. Calculated in 206)

Short term hospital outcome of the patients were presented in the Table III, which depicts that, out of 206 admitted elderly with infectious etiology, 64 (31.1%) developed sepsis and 17 (8.3%) required ICU support. Eleven patients expired in-hospital indicating mortality rate of 5.3%. Length of hospitalization ranged from 2 to 17 days with a median value of 6 days.

Discussion

The present study demonstrated that the overall socioeconomic characteristics of the hospitalized elderly were unsatisfactory. Very few of the patients had education primary or above, and the majority of them were either partially or completely dependent on others. In Bangladesh, the number of people over 60 years is increasing rapidly due to improved quality of life. This is an emerging challenge as older adults have special needs and require different caregiving services. Increases in medical costs, pressure on social security and unemployment are the main challenges the elderly face in Bangladesh.[8]

Overall, the healthcare-seeking behaviour of the low-resource community people of Bangladesh is poor, and the present study findings confirmed this.[9] One of the alarming findings of the present study was inappropriate antibiotic prescription in this elderly group. The majority of the patients received antibiotics before admission to the hospital. In most cases, the antibiotic was prescribed either by a quack or pharmacist or self-prescribed.Antimicrobial resistance is a global public health challenge, accelerated by the inappropriate use of antibiotics worldwide. Increased antimicrobial resistance is the cause of severe infections, complications, longer hospital stays and increased mortality.[10]

It was observed that, the increasing trend in the infectious disease hospitalization rate is mainly due to lower and upper respiratory tract infection hospitalizations. Lower respiratory tract infection is the most frequently diagnosed infectious disease and accounted for 37% to 46.1% of infectious disease hospitalizations.[3,5,11] In this study, the most common infections encountered were respiratory tract infection (47.6%) followed by urinary tract infection (43.2%). Other studies also reported that, respiratory tract infection and urinary tract infections were the most frequent infectious disease among elderly hospitalized patients.[12,13]

Comorbid conditions is responsible for higher susceptibility of the elderly population to infectious diseases.[4,5] The overall percentage of patients with any form of chronic health conditions was 54.9% and multi morbidity was 12.1%. Previous studies included hospitalized elderly patients in Bangladesh reported a higher prevalence of multi-morbidity.[14] Most frequent comorbid chronic health condition in the studied population was diabetes and hypertension which agreed with other studies in Bangladesh and other developing countries.[13,14]

In the present series, 31.1% patients developed sepsis, 8.3% required ICU support, and 5.3% patients expired in-hospital. Length of hospitalization ranged from 2 to 17 days with a median value of 6 days.Developed countries observed a substantial number of deaths each year associated with substantial cost due to antibiotic-resistant pathogens among hospitalized elderly patients.[15] Efforts to prevent these infections could save a significant number of lives and healthcare resources.

Limitations

The data from this study come from a single medical center, which may affect the external validity of the results. As it included only patients admitted to medicine wards, results may not be extrapolated to the other discipline and surgical patients.

Conclusions

The burden of hospitalizations attributable to infectious diseases has increased among the elderly in the last decade. As observed in this study, the burden of infectious disease hospitalizations is further exaggerated by the longer duration of hospitalizations. Hence, efforts should be made to implement stricter guidelines for hospitalization together with developing novel antimicrobial agents and a wiser use of antibiotics concordant with guidelines. Moreover, because the increasing trend in the proportion of hospitalizations attributable to infectious diseases resulted mainly from the respiratory tract infection, More extensive public health preventive interventions like pneumococcal vaccination coverage increase should be implemented.

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Disclosure

All the authors declared no conflicts of interest.

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