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ORIGINAL RESEARCH

Clinical profile of geriatric patients seeking emergency care- A hospital based study

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ABSTRACT:
Background: Geriatric population present a formidable challenge to the health care team, because their illnesses rarely allow a straightforward reductionist type of analysis. The physiology of ageing, altered pharmacodynamics and decreased functional reserve must be kept in mind while dealing with geriatric patients. Fast decisions making ability and round the clock service are two impeccable characteristics of emergency department which requires treating the multiple co-morbidities and complex situation associates in older patients. The above factors make it difficult to care for acutely ill older person. This hospital-based study determined the clinical profile of geriatric patients seeking emergency care.
Methods: Total of 150 patients aged more than 60 years either seeking emergency care or admitted to casualty were enrolled.
Results: In our study hypertension was the major co-morbid condition associated with 41.3% of older population. Fever was the most presented complaints observed in 38% of older population. Abnormal ECG, USG, and CT/MRI were seen in 39.3%, 60%, and 24% of older population. The admission in medical ward was required in 42.7% older patients while 12.7% older patients deceased in emergency room.
Conclusion: Surge in incidence of co-morbidities and abnormalities in laboratory estimations possess hazardous effect on elder population. The strong correlation of disease with working diagnoses proves the ability of emergency department in early detection of multiple co-morbid conditions associated with geriatric patients. As the older patients are always vulnerable to various diseases, emergency department certainly play crucial role in management and helps in improving health of geriatric patients.

Keywords: Geriatrics, Emergency care, Ageing, Co-morbidities, Hypertension.

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INTRODUCTION:

The word geriatrics come from two Greek words, "iatros", a healer and "geros", an old man. Nasher a Viennese immigrant in the US first used the word geriatrics in 1909.[1]

India has acquired the label of "an ageing nation" with 8.6% of its population being more than 60 years old. With improvement in health resources and age expectancy more than 60 is the most rapidly increasing segment of our population. The world is on the verge of a demographic change. According to the World health organization (WHO), people aged more than 65 or older is projected to rise from an estimated 524 million in 2010 to 1.5 billion in 2050 with a maximum increase in the developing countries [2] . India is seen to be in the phase of demographic transition.[3,4]

The advancing age may suffer with several consequences, but can be clustered into four domains: 1) body composition 2) balance between energy availability and energy demand 3) signalling networks that maintain the homeostasis 4) neurodegeneration.**Error! Reference source not found.**Each of these domains needed to evaluate clinically at regular interval for the maintenance of health in older population. The ageing process causes a variable decline in function in a variety of organ systems, thus making elderly persons of the same chronological age different from each other.[5]

The susceptibility of communicable diseases is increased by decline in immunity system and age-related weakness into physiological system[4.]Along with vulnerability to respiratory, urinary and digestive tract infection, non-communicable disease such type 2 diabetes, coronary heart disease, stroke, chronic obstructive pulmonary disease, Alzheimer's disease, cancer, osteoarthritis, prostatic hypertrophy etc. are also prevalent more than younger individuals.[3]

Having identified an acute illness, the task is to determine not only the presence of co-morbid diseases, but also the impact of each on the present acute problem (stroke, myocardial infarction), and finally, the impact on the functional status of the person which requires experience and training. In1881, Charcoat was the first physician to advocate a specialty of geriatric medicine, based on his observations of a poorhouse-like institution in Paris , French physicians had previously used the phrase "Gerocomie"- a term used to describe the need for a separate facility for elderly people, where they could be adequately cared for and treated. They recognised that segregation of elderly people could help in improving their health and wellbeing. One of the first publications on the subject of geriatric medicine was by George Day, whose Diseases of advanced life was published in 1849.[6,7.]

Geriatric population are much likely to admit into hospitals for longer time and likely to have more incidences of readmission in ED. Emergency department plays a very crucial role in maintenance of health and safety of older patients. These services are available to round the clock. Fast passed care and decision making ability are the two major impeccable characteristics of ED, require treating the multiple comorbidities and complex situation associated with older patients.[6]

Eventually we conclude that increase in the number of geriatric population and their vulnerability to disease poses an overwhelming challenge to Indian health care system as a whole and to emergency departments. The emergency department has a pivotal role in improving care to the geriatric population. This study was planned with the following objectives in geriatric patients admitted into the emergency department.

1. To study the clinical profile of geriatric patients.
2. To study the demographic profile of geriatric patients.
3. To study the symptoms and correlation with diagnoses in geriatric patients.
4. To study the prevalence of co-morbid condition in geriatric patients.
5. To study the short-term outcome of patients received OPD treatment, admissions, and death.

METHODS:

STUDY DESIGN: This was a Prospective Observational study, held in a tertiary hospital, Navi Mumbai, Maharashtra, India.

INCLUSION CRITERIA:

1. Patients of either sex > 60 years.
2. Patients who needed emergency care.
3. Patients who presented to causalty.
4. Patients who were willing to give informed consent and ready to comply with study related procedures were considered for enrolment in the study.

EXCLUSION CRITERIA:

1. Patients of either sex < 60 years.
2. Patients who come to routine follow up to OPD.
3. Patients who were unable to provide informed consent.

STUDY DURATION: Two years.

SAMPLE SIZE: 150

STUDY PROCEDURE: Following information was collected from each patient enrolled in the study, and was recorded on a Case Record Form (CRF). The patients were attended by the physician, a detailed present and past history were taken either by patients or the accomplice. A thorough physical examination, treatment and intervention were performed on the basis of diagnosis. All the urgent investigation was carried out and treatment tailored accordingly. Patients were asked to follow up or admitted once stabilized.

MEASUREMENT OF STUDY VARIABLE:
Demographics: Name /Age/Sex/Pt. ID.
Symptoms.
Co Morbid Conditions:
HTN/DM/IHD/Depression/Fall/Others.
Clinical Features /Pulse/BP /Rr/Temp.
Pallor/Icterus/Cyanosis/Clubbing /Lymphadenopathy/Oedema.
Investigations:
Hgt/Hb/TC/Plt/Na/K/Creatinine/Bilirubin/Dengue/Malaria.
ECG /X-Ray/USG/CT/MRI.
Diagnosis & Outcome.

RESULTS:
An increase in incidence of co-morbidities, abnormalities in laboratory estimations shows a lethal impact on the health of their elderly population. The stronger correlation of disease with working diagnosis proves the ability of emergency department in earlier detection of multiple morbid conditions associated with geriatric patients. As the geriatric patients are vulnerable to various diseases, emergency department may play crucial role in the maintenance of geriatric health. In conclusion, health professionals may need to be alert to the fact that older adults are more prone to co-morbid conditions associated with increase in age.

In our study following observations were made:

1. Common **presenting symptoms** were fever, shortness of breath, and chest pain were observed in 38% (57), 34.7% (52), and 18% (27) of patients. 13.3% (20), 16.7% (25), 18% (27), 11.3% (17), and 19.3% (29) patients were afflicted with nausea and vomiting, cough, headache, stroke/TIA, and altered sensorium respectively. Seizures, trauma, and diarrhoea were seen in 6% (9), 6.7% (10), and 8% (12) patients respectively.

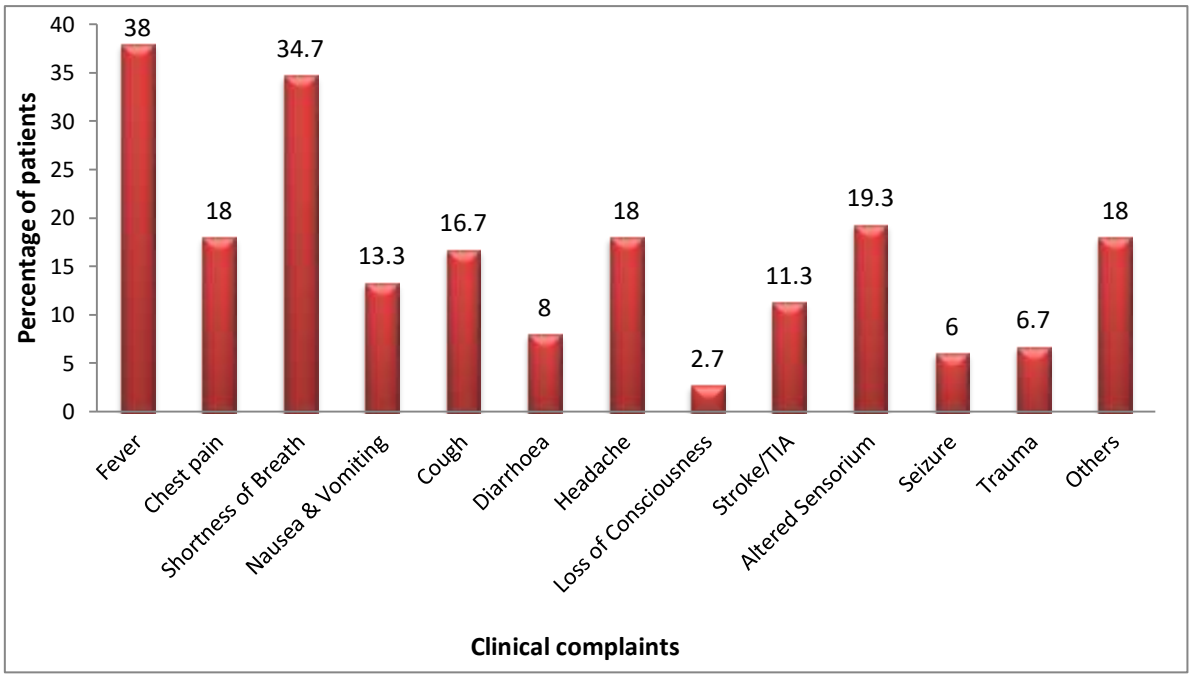

Figure 1: Clinical complaints.

2. Slightly lower level of Haemoglobin, and higher level of random blood sugar. Abnormal ECG (LVH, IHD), X-ray (Consolidation, emphysema), CT/MRI (Infarct, Intracranial bleed) were found.

3.Most common **system involved** was central nervous system (17.33%) followed by cardiovascular system (12.00%).

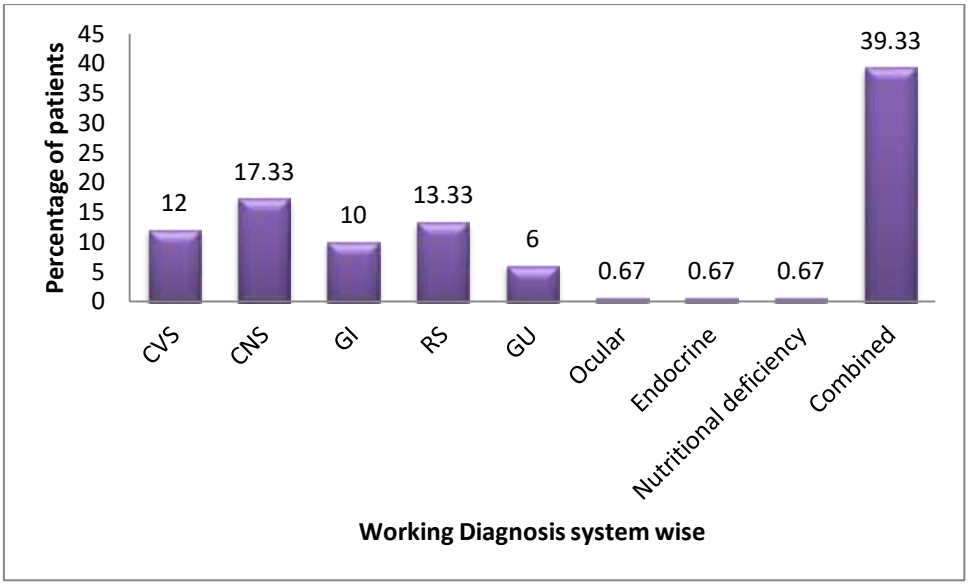

Figure 2: Working Diagnosis system wise

4.Non-Communicable diseases were found in more than half of the patients (60%) versus Communicable (36.67%) and with both (3.33%) at the time of diagnosis.

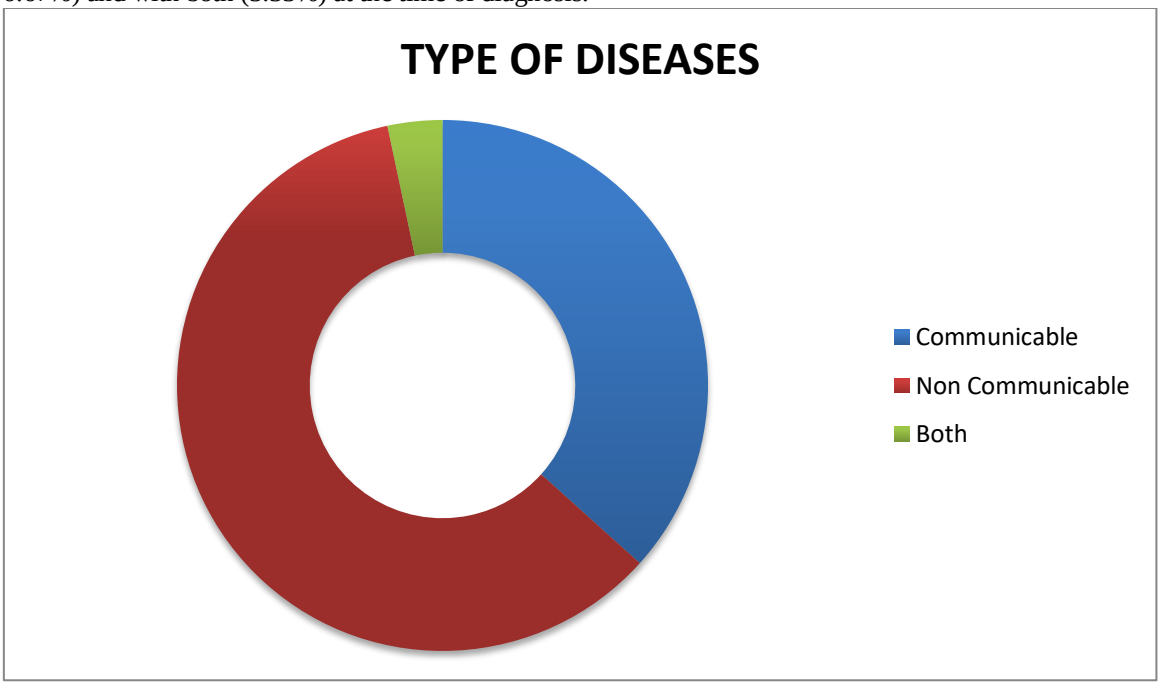

Figure 3: Working diagnosis type of disease.

5. Most common cause of infection was found to be malaria (18.18%), dengue (18.18%) followed by pneumonia (16.36%).

6**. In Cardiovascular system**: most patients suffered from myocardial infarction (5.33%) and most common abnormal ECG finding was left ventricular hypertrophy (18.67%).

Table 1: Working diagnosis: Cardiovascular System

Cardiovascular system	Number of Patients	Percentage
Hypertension	1	0.67
Myocardial Infarction	8	5.33
Aortic thrombosis	1	0.67
Arrhythmia	1	0.67
Deep Venous thrombosis	1	0.67
Multiple Cardiovascular conditions	6	4.00

7. **In Respiratory system**: patients suffered from lower respiratory tract infection (7.33%) and most common abnormal x-ray finding being consolidation (8.67%).

Table 2: Working diagnosis: Respiratory system		
Respiratory system	Number of Patients	Percentage
Infection	11	7.33
Malignancy	1	0.67
Asthma	1	0.67
COPD	1	0.67
Multiple respiratory system conditions	6	4.00

8. **In Central nervous system**: patients came with stroke (10%) and most common abnormal finding being infarct (11.33%).

Table 3: Working diagnosis: Central Nervous system (Including psychiatric conditions)		
Central Nervous system	Number of Patients	Percentage
Intracranial haemorrhage or stroke	15	10.00
Epilepsy/ seizure disorders	2	1.33
Infection	3	2.00
Multiple central nervous system conditions	7	4.67

9. Patients were mostly admitted in ward (42%), in ICU (28.7%) and discharged (16.7%); deaths occurred (12.7%).

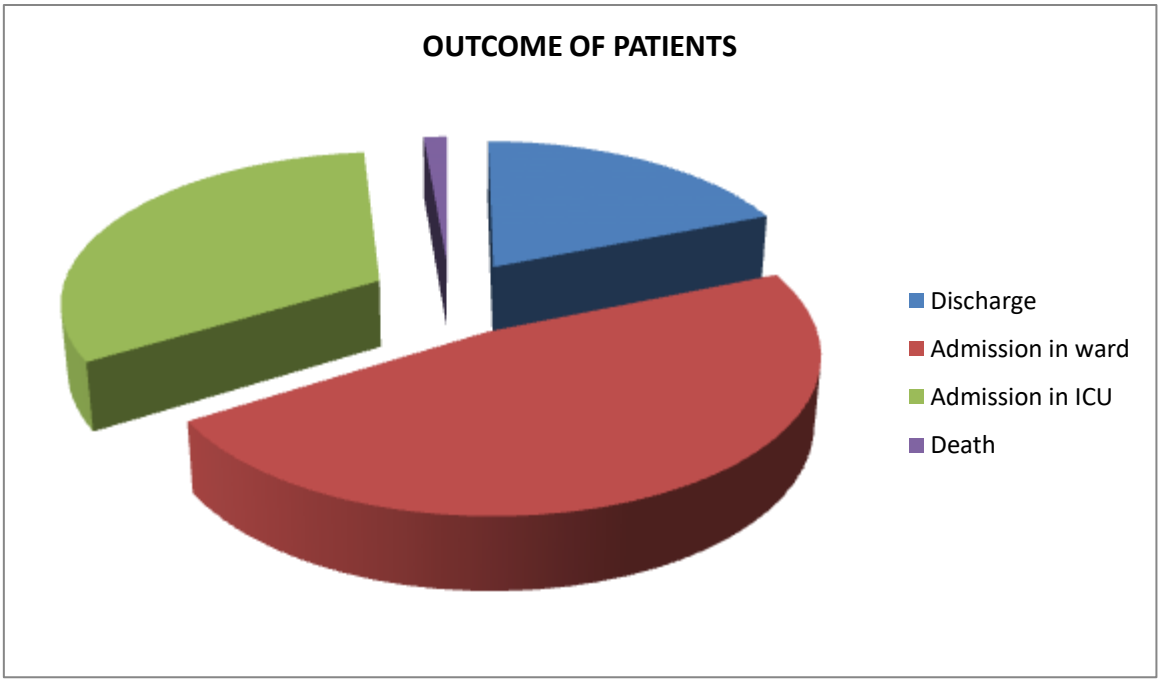

Figure 4: Outcome of patients.

DISCUSSION & CONCLUSION:

Currently, 600 million people are living of age 60 years or above around the globe. This summation will double by 2025 and will reach virtually two billion by 2050. Most of the people living in developing countries that are often the least prepared to confront the challenges of rapidly ageing societies[2]. Amongst elder population assessment of the morbidity profile and effect of chronic conditions and co-morbidity on functional disability are required for better understanding of relation between perceived health and unhealthy conditions[8]. The difficulty is made worse by the paucity of data on acute illness in the elderly in the Indian context.

This prospective study included 150 patients with age ranging 60-90 years.

- The **mean age** of study population was 68.36 ± 6.16 years. Out of 150 patients, 53.34% (80) male and 46.66% (70) female subjects were included in this study. A majority of

59.34% (89) patients belonged to the age group 60-69, 35.54% (53) patients were between and 70-79 years and 5.32% (8) patients were in age group of 80-89 years.

A study performed by Cagatay AA et al included 185 elderly patients with mean age 69.7 ±7.5 years. In this study they found that cause of fever was infectious disease in 72.9% and non-infectious disease in 17.2% patients. Out of 135, the 46(24.8%) had lower respiratory tract infection ,41 community acquired pneumonia, 5 pulmonary tuberculosis, 14% had UTI, 12.4% had skin and soft tissue infection, 3 1.6% had orthopaedic infection, 3.7% had intra-abdominal infection, 5.4% had central nervous system infection, 0.5% had acute osteomyelitis,2.7% had cardiovascular system infection. Non-infectious disease includes had rheumatologic disease (4.3%), solid tumour (3.7%), haematological disease (3.7%)[9.]

- In this study we found that, cause of **fever** was infectious disease in (72.9%) and non-infectious disease in (17.2%) patients.
- Prevalence of **co-morbid conditions** in our study suggested that hypertension, depression, and diabetes mellitus were diagnosed in 41.3% (62), 24% (36), and 30% (45) patients respectively. History of fall and other co-morbid conditions were observed in 16.7% (25) and 32% (48) patients. In the study of Footit et al, diabetes, heart disease and hypertension were associated with 13.6%, 26.4% and 39.6% of study population[10.]
- Moreover, we evaluated **vital parameters** on general examination. It demonstrated that the mean Glasgow coma scale was 13.77 ± 2.27. The mean pulse rate, systolic blood pressure, diastolic blood pressure, and respiratory rate was 96.07 ± 18.86bpm, 102.97 ± 10.31mmHg, 80.39 ± 12.62 mmHg and 22.6 ± 5.71 pm respectively.

Chen RL et al suggested that 75–89% of strokes occur in individuals aged >65 years [11]. In our study, **central nervous system** complication patients were having range of age was 60-90 years. Stroke, loss of consciousness, altered sensorium, headache and seizure were observed in 11.3%, 2.7%, 19.3%, 18% and 6% respectively in this prospective study.

- An abnormal **ECG** is a predictor of cardiac syncope and increased mortality. In our study, ECG findings were abnormal in 39.3% of study population.62,63. ECG findings were Left ventricular hypertrophy (18.67 %), Ischemic heart disease (6.00%), Atrial fibrillation (4.67%),Right ventricular hypertrophy (3.33%),Supraventricular tachycardia (0.67%), Complete heart block (0.67%).
- Different **blood parameters** were evaluated. The estimated random blood sugar, haemoglobin, total leukocytes count, and platelet count were 165.65 ± 70.67(mg/dL), 11.55 ± 2.49 (g/dL), 10493.33 ± 6253.50 (mcL), and 218214.77 ± 102363.26 (mcL) respectively. Sodium, potassium, creatinine, and total bilirubin levels were 133.20 ± 11.70 (mEq/L), 3.93 ± 0.72 (mEq/L), 1.69 ± 1.88(mg/dL), and 1.66 ± 2.24(mg/dL) respectively. Laboratory assessment demonstrated that 5.3% subjects were positive for malaria parasite on peripheral smear and abnormal DRT were found in 9.3% of study population respectively.

A study by Jabeen Fayyaz et al, reported the pattern of emergency department visits by elderly patients in a tertiary care hospital. The data was collected retrospectively for patients aged 18 years or above visiting the ED. More than 57% of elderly patients belonged to the high priority triage category as compared to 35% in younger patients [12.]

- **Outcome** of patients of present study suggests that 16.7% (25) patients were discharge, while 42% (63) patients were admitted in ward and 28.7% (43) in ICU. 12.7% (19) of patients were succumbed to death. Outcome analysis of both the studies suggest that rate of mortality has strong association with the increase in hospitalization.
- We also analysed the proportion of patients suffering from diseases which was diagnosed as **working diagnosis**. Maximum patients were found to be suffering from non-communicable diseases (60%), maximum patients were found to be suffering with multiple system diseases (39.33%) and amongst individual system, maximum patients were suffering from stroke (10%).

The results of this study suggest that multiple co-morbidities affect most of the elderly population. Abnormality in different laboratory estimations and addiction of alcohol and tobacco showed association with increase in age. Findings of this study are important because it demonstrate various factors related to functional ability and psychological well-being of geriatric patients.

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DECLARATIONS:

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Conflict of interest: None declared.

ETHICS: The study commenced after obtaining the permission from Institutional Ethics Committee. All the patients were explained the purpose and rationale of the study as well as their role as participants in the study.