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Analysis of Clinical Presentation, Investigations, Admissions and Mortality Among Patients Presenting to Emergency Departments

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Abstract

Introduction: Characteristics of patients presenting to Emergency Department (ED) are important in order to plan future strategies and improve quality assurance. However, very few tertiary hospitals routinely utilize the patient data to improve the quality of health care services. In this study we aim to analyse the characteristics of patients presenting to ED in a tertiary care hospital in India.

Methods: This retrospective observational study included 1124 adult patients presenting to the Emergency department from May, 2018 to August, 2019 at a tertiary care hospital in Mumbai. Patient demographic details, laboratory investigations and clinical outcomes were assessed.

Results: Out of 1124 patients, 899 were taken up for analysis wherein 61% were males and 39% were females. Fever (13.9%) was the most common complaint noted which was followed by abdominal pain (12.6%) and chest pain (11.1%). Of the total number of patients, 58%were managed successfully in the emergency room while 30.6%patients were admitted to wards and 10%patients were shifted to the ICU. The most common investigations conducted were blood glucose (31.6%), complete blood count (31.5%) and electrocardiography (31.4%). 42.05% patients were admitted to the hospital, 18% patients left against medical advice, while more than a quarter of patients (37.05%) were discharged and 1.45% patients succumbed to death.

Conclusion: Demographic and characteristic data obtained through the hospital's information management system, provided a holistic snapshot of patients visiting the emergency department which will help us in carving out strategies in regulating the ED training programmes, planning adequate infrastructure and developing faculty resources.

Keywords: Emergency department; Healthcare services; Acute care.

Introduction

Emergency department (ED) in a hospital refers to a place that offers medical and surgical care to patients in need of immediate care. In India, the junior residents or the casualty medical officer are the referral points that cater to the patients presenting to the emergency department and provide referral services. Patients with multiple problems present to the emergency department and few of them even have severe life-threatening diseases. Identifying such cases and prompt referral to the respective speciality is a challenging task. However, once critical cases are identified, treatment can be initiated at the earliest. ED thus plays an important role to provide a portal between the emergency medical services and the hospital facility.

Present advances in data management and computer-aided data recording programs have

significantly contributed to archive the patient data. Characteristics of patients presenting to ED are important in order to plan for the future and improve quality assurance. However, very few tertiary hospitals really utilize this data to improve the quality of health care services. In this study we aim to analyse the characteristics of patients presenting to ED in a tertiary care hospital in India.

Material and Methods

This was a retrospective observational study based on patient records obtained from the hospital's data management system. The study began after receiving approval from the hospitals independent Ethics Committee. Data recorded in the hospital's information management system was utilized to get details of patients' age, gender, date of presentation to ED, clinical findings, laboratory investigations and treatment offered, admission date and date of discharge. Data of 1124 adult patients presenting to the ED between May 2018 and August 2019 was retrieved. Out of the total data, 899 consecutive patient records were taken up for analysis. The remaining patient records that had significant data missing were discarded. Patient data was recorded on a standard data collection sheet and patients were profiled based on age, gender, presenting complaints, admission required, laboratory investigations and outcome. Descriptive data were calculated as frequencies.

Statistical Analysis

Data was entered in Microsoft Excel 2007 for analysis. Charts and graphs were derived from the collected data

Results

A total of 1124 patients presented to ED during the period from May 2018 to Aug 2019. Of the total data, 899 patient data was taken up for analysis after excluding the incomplete data.

Of the 899 patients, 549 (61%) patients were males and 350 (39%) were females (Fig. 1). Mean age of the patient presenting to the ED was 39.15±16.09 years and majority of them visited the ED in the months of July and August.

Analysis of the data for chief complaints demonstrated that majority of the patients had chief complaints of fever [125 patients (13.9%)], abdominal pain [133 patients (12.6%)], chest pain [100 patients (11.1%)], road traffic accident injuries [72 patients (8%)], breathlessness [44 patients (4.9%)] and vomiting [32 patients (3.6%)]. Other patients also had multiple other symptoms [413 patients (45.9%)]including the above mentioned complaints (Table 1).

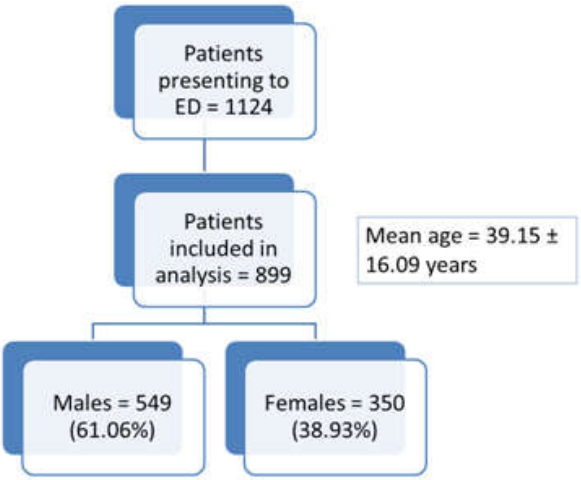

Fig. 1: Baseline demographic of patients presenting to emergency department.

Table 1: Major presenting symptoms of the patients presenting to emergency department.

Symptoms	No of patients (%)
Fever	125 (13.9)
Abdominal pain	113 (12.6)
Chest pain	100 (11.1)
Road traffic accident injuries	72 (8)
Breathlessness	44 (4.9)
Vomiting	32 (3.6)
Others	413 (45.9)

Table 2: Emergency department patient outcome.

ED outcome	No of patients (%)
Admitted to ward	275 (30.6)
Shifted to ICU	90 (10)
Shifted to catheterization laboratory	1 (0.1)
Treated in emergency room	521 (58)
Called in OPD	12 (1.3)

Table 3: Investigations advised in patients presenting to Emergency Department.

Investigations	No of patients (%)
Hemo glucose test	284 (31.6)
Complete blood count	283 (CBC, 31.5)
Electrocardiography	282 (ECG, 31.4)
Renal function test	226 (25.1)
X-ray	153 (17)
Liver function test	105 (11.7)
Peripheral smear for malarial parasite	47 (5.2)
Dengue Rapid Test	46 (5.1)
CT scan	42 (4.7)
USG	35 (3.9)

Table 4: In-hospital patient outcome.

In-hospital outcome	No of patients (%)
Patients admitted	378 (42.05)
Patients discharged	334 (37.05)
Patients left against medical advice	162 (18)
Patients died (mortality)	13 (1.45)

Analysis of data for indoor admissions demonstrated that out of 899 patients, 275 (30.6%) patients were admitted to ward for further management, 90 (10%) patients were shifted to the ICU and 1 patient (0.1%) was taken up in the catheterization laboratory. However 521 (58%) patients were managed successfully in the emergency room. Other patients 12 (1.3%) were given symptomatic treatment and called in outpatient department (Table 2).

It was observed that the most common investigations advised in these patients were blood glucose 284 (31.6%), complete blood count 283 (CBC, 31.5%), electrocardiography 282 (31.4%), renal function test 226 (25.1%) and X-ray 153 (17%). Other less common investigations advised included liver function test 105 (11.7%), peripheral smear for malarial parasite 47 (5.2%), dengue rapid test 46 (5.1%), CT scan 42 (4.7%) and USG 35 (3.9%). However it was observed that no investigations were ordered in 24.5% patients (Table 3).

Out of all the patients visiting emergency room, 42.05% patients were admitted, 37.05% patients were discharged, 18% patients left against medical advice and mortality was reported in 1.45% patients (Table 4).

Discussions

Emergency medicine is one of the fastest growing specialities and it requires trained personal with good knowledge of acute patient management. In this article we provided baseline characteristics and demographics of patients presenting to the ED. We observed few similarities and contrasts to the findings published in literature.

In our study, majority of the patients were males (61.06%). Similar finding of male predominance was reported in the recent study by Rufus YB et al who investigated clinical profile of patients presenting to emergency room in a tertiary care hospital of south India. However, observations from the studies in the US did not show any significant gender difference. Few of the reasons for the observed difference may be that women tend to neglect their health more due to other family priorities; they are more reluctant to seek healthcare services without being accompanied by their spouse or another acquaintance. These findings needs to be investigated more to understand the cause of such observation.

The most common presenting symptoms reported by the patients in our study were fever, abdominal pain, chest pain, road traffic accident injuries, breathlessness and vomiting. These findings demonstrate that more patients from India present to ED because of symptoms related to infectious diseases and road traffic accidents. Our findings differ from the most cited causes of death and disability in Indian population. In India, road traffic accidents, acute myocardial infarctions and cerebro vascular accidents are reported to be the most common causes of death and disability. Our study findings also vary slightly from another Indian study which reports breathlessness in 44.6% patients, followed by chest pain in 20% of the population as the common presenting feature.[5] Fever was the most common presenting symptom observed in our study however, it is in accordance with the findings reported by Clark EG et al in their study from south India.

In our study, majority of the patients were managed in the emergency room (58%) and few of them shifted to the wards of respective specialities for further management (30.6%) and very few patients required ICU admissions (10%) or taken up for emergency cardiac catheterization (0.1%). This finding is in accordance with the observation that Indian ED provides more procedures for acute and minor trauma care compared to US emergency departments. Placement of intravenous line was the most frequent emergency procedure in India and US, however in India other procedures like splint wraps, suturing, and nebulization were also performed in addition to placement of IV line.

Most common investigation advised to patients in our study included blood glucose that justifies India for the rising prevalence of diabetes in the country. Complete blood count, electrocardiography, renal function test and X-ray were other common investigations advised that are done routinely in Indian clinical set up. Surprisingly no investigations were advised in 24.5% patients suggesting that patients are well managed based on the presenting history and clinical signs and symptoms.

It was observed that the percentage of patients admitted were similar to those discharged, however the proportion of deaths were slightly higher (1.45%) compared to those reported by Clark EG.[9] However mortality reported in our study was less when compared to another Indian study by Rufus BY who reported 2% mortality in his study.[5]

In our study it was observed that many patients (18%) left against medical advice (LAMA) reflecting the high risk behaviour of Indian patients. These findings are in accordance with the findings reported by Paul G, who reports 25% of patients leaving against medical advice from the ED.[5] The most common reason of LAMA was a financial constraint that was opined by 80% responders in the study, however unsatisfactory care was rarely considered as a factor for LAMA. Insurance cover to the patients should address this challenge which was also expressed by 2/3rd of the patients in the study.

Adequate patient education and counselling at the time of admission should see a decline in this behaviour and further investigations are warranted to see the changing patient trends.

Limitations

Our study was a single centre experience from a tertiary hospital which may not represent the whole universe. Obtaining data from multiple other tertiary care units in India from both public and private setups will make the data more robust. There was also some missing data that had to be discarded pointing out the need for maintaining consistency in record keeping.

Conclusion

Conversion of data into valuable information not only helps to evaluate quality of health services but also aids in planning the future infrastructure and human resources. This data obtained through the hospital's information management system is expected to guide the authorities to have a better understanding of the disease burden in ED and thus contribute to further shaping up of the emergency services in India for better patient care.

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