

Epidemiological Aspects of the Health Problems Reported to Emergencies of Tertiary Care Hospitals in Rawalpindi

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¹ Conception of study

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^{2,4,5} Manuscript Writing

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Abstract

Introduction: The emergency department is concerned with providing immediate medical care to patients according to the triage system.

Objectives: To explore the clinical and epidemiological features and to measure the burden of different diseases presented in the emergency departments of tertiary care hospitals of Rawalpindi.

Materials and Methods: In this cross-sectional descriptive study, data was collected from 357 patients from 3 main hospitals of Rawalpindi, namely Holy family hospital (HFH), Benazir Bhutto Hospital (BBH), and District Headquarters Hospital (DHQ) through consecutive non-random sampling. Data was collected by using self-structured questionnaire and analyzed through SPSS version 28. Apart from descriptive statistics chi-square test was also applied. $P < 0.05$ was taken as significant.

Results: The most frequent time of presentation in ER was in the afternoon with 119 (33.33%) out of 357 and others are in the morning with 99(27.3%) and evening with 57(15.97%). Almost 256 (71.71%) patients in Emergency were non-ambulatory while 101(28.29%) were ambulatory. Most (57.7%) were males. Cases belonging to medical care were 205(57.42%) and to trauma were 105 (29.4%). The cases related to pediatric, gynecology, and cardiovascular diseases were 10.08%, 0.6% and 2.52% respectively. There was a strong association between age groups and specialty-specific patients' presentation ($P < 0.001$); trauma-related cases ($P = 0.002$); cases with medicine-related complaints ($P < 0.001$). There was a significant association between income and specialty-specific patients' presentation ($P = 0.05$); in cases with medicine-related complaints ($P = 0.02$)

Conclusion: Association of age, gender and social class with trauma-related cases and treatment of medicine-related complaints was statistically significant.

Keywords: Emergency Department, epidemiology, tertiary care hospital.

Introduction

Different types of cases are usually presented to the emergency department of any hospital on daily basis, with complaints from different systems^[1]. Some of them require immediate life intervention such as patients presenting with severe abdominal pain, chest pain or difficulty in breathing, etc.^[2]. Also, different age groups present different kinds of emergency department complaints^[3]. Among the pediatric group, the prevalent are injuries, fever, and gastrointestinal problems^[4]. Among adults, common presenting problems include shortness of breath, and trauma^[5]. The prevalence and severity of the presenting cases determine what sort of basic medical equipment should be present in a particular specialty of an emergency department^[6] since presenting problems may range from mild to severe. The emergency department is where all cases of serious nature are acutely dealt with, and immediate interventions are carried out to resuscitate and stabilize the patient^[7]. It is the cobblestone of any hospital setting^[8].

The term epidemiology is coined to rationalize the distribution and determinants of different cases presented to emergency departments^[9]. It is of paramount importance for the justifiable and equitable allocation of resources to other domains, especially in a low-income country like Pakistan where resources are already low^[10]. And due to more burden on the tertiary healthcare facilities of our hospitals & because of non-availabilities of resources at the lower level, this wise allocation of resources becomes even more important so that all areas of the country get the due healthcare facilities they require. And to achieve this, data from every part of the country is extremely necessary so that authorities can get an idea about the

leading problems presented in emergency departments of every city and village.

For this purpose, we carried out a 6-month cross-sectional study in the allied hospitals of Rawalpindi to rank all different problems presented to emergency departments according to the number of cases. The study was carried out from April 2022 to September 2022 in the Allied Hospitals of RMU. Cases presented to Emergency Departments of different specialties were assessed according to different presenting complaints. This study would enable Hospitals and administrators to plan measures for managing the visiting patients accordingly.

Materials and Methods

This descriptive cross-sectional study was conducted at three main Allied hospitals of Rawalpindi, namely, Holy Family Hospital, Benazir Bhutto Hospital, and District Head Quarter Hospital. Data was collected from 357 patients who had visited the Emergency Department through consecutive non-random sampling within six months from April-September 2022. The study excluded patients who were received dead, those who were reported to OPD, and those who were pre-booked for treatment in respective departments. A self-structured Questionnaire was used to collect the data that was analyzed SPSS version 28. The Chi-square test was applied to measure the association between different categorical variables and $P < 0.05$ was considered significant.

Results

A total of 357 patients visited Allied Hospitals affiliated with Rawalpindi Medical University participated in our research. Descriptive statistics showed that the highest frequency of patients landing in Emergency belonged to under 18 categories (N=93,26.1%) followed by category above 54 (N=73,20.4%). 206 (57.7 %) out of 357 patients were **males** and **150** (42%) were **females**. Most of the patients came from Rawalpindi (i.e.,282 out of 357). The frequencies

of married and unmarried patients were 202(56.6%) and 141 (39.5%) respectively. 26 % of the patients were housewives, 19.3% were students and 17.6 % were unemployed. The income of 188 (52.7%) of the total patients was below 25,000 while that of 114 (31.9%) patients was between 25,000-50,000.

Table 4.1 describes the demographic details of participants, including their age, gender, residence, their marital status, employment status along with their monthly income.

Table-1: Demographics

Sr. No	Variable	Categories	Frequency	Percentages
1.	Age	Under 18	93	26.1%
		18-24	47	13.2%
		25-34	49	13.7%
		35-44	49	13.7%
		45-54	46	12.9%
		Above 54	73	20.4%
2	Residence	Rawalpindi/Islamabad Attock	282	79%
		Chakwal	13	3.6%
		Kashmir	13	3.6%
		Abbottabad	17	4.8%
		South Punjab	2	.6%
		Sargodha	7	2%
		Murree	7	2%
		Taxila	2	.6%
		KPK	5	1.4%
			5	1.4%
	3	8%		

Sr. No	Variable	Categories	Frequency	Percentages
3	Marital Status	Married	202	56.6%
		Unmarried	141	39.5%
		Separated	2	6%
		Divorced	1	3%
		Widow	10	2.8%
4	Employment Status	Govt Employee	11	3.1%
		Private Employee	37	10.4%
		Unemployed	63	17.6%
		Self-employed	61	17.1%
		Housewife	93	26.1%
		Student	69	19.3%
		Retired	23	6.4%
5	Income	Less than 25,000	188	52.7%
		25,000-50,000	114	31.9%
		51,000-75,000	39	10.9%
		76,000-100,000	11	3.1%
		Above 100,000	2	6%

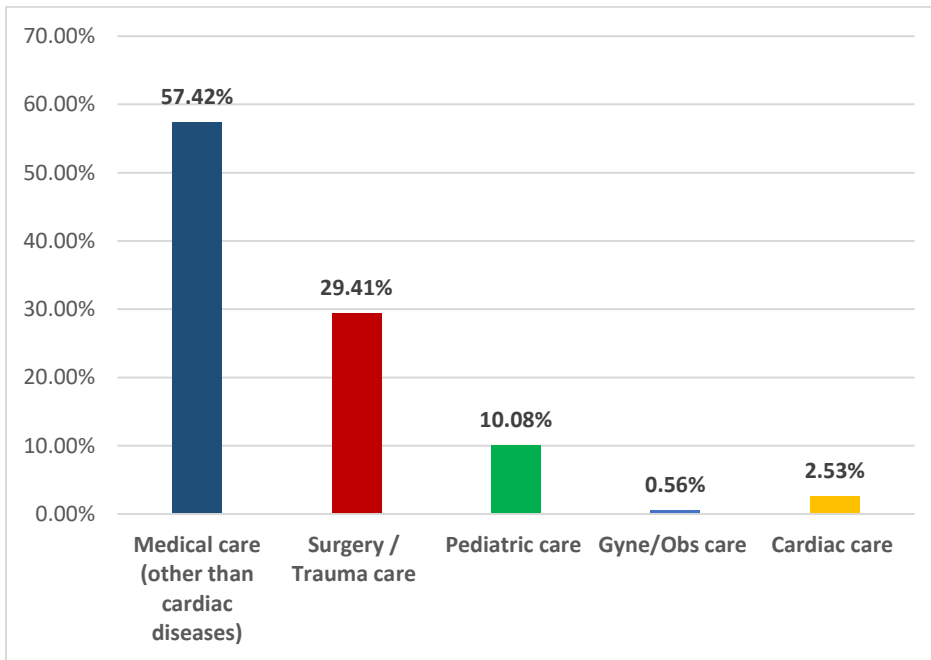
Upon running descriptive statistics, it was found that the most frequent time of presentation of emergency cases was in the afternoon with 119 (33.33%) out of 357 landing in the emergency department during this time, 99(27.3%) of the patients presented in morning while 57(15.97%) patients presented in the evening.

256 (71.71%) of the patients landing in ER were non-ambulatory while 101 (28.29%) were ambulatory. Moreover, 303 (84.87%) of the patients landing in the emergency were brought to the hospital by their family members, 28 (7.84%) presented by themselves, 17 (4.76%) were brought by rescue team while 9 (2.52%) were brought by unknown by-passers.

205 (57.42%) out of 357 cases belonged to medical care. Trauma presentations accounted for 105 (29.4%) out of all presentations. The cases related to pediatric, gynecology, and cardiovascular diseases were 10.08%, 0.6 %, and

2.52 % respectively. Most (57.42%) of the cases presented to Emergency department for medical treatment as depicted below in Figure 1.

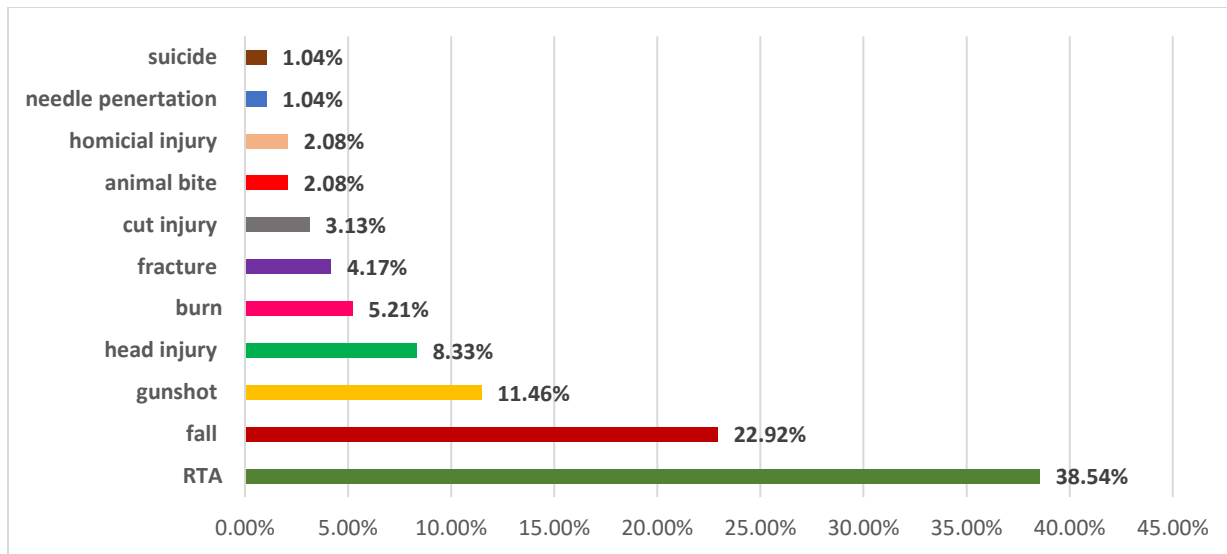
Fig 1: Categories of the cases presenting to emergency department



38.5 % of the trauma-related cases were due to Road Traffic Accidents. Injuries followed by falls accounted for 22.92 % of trauma-related cases while those followed by a gunshot and burns

were 11.5% and 5.2 % respectively. Majority (38.54%) of the trauma cases were of Road Traffic Accident (RTA) as shown below in Figure 2.

Fig 2: Trauma related cases

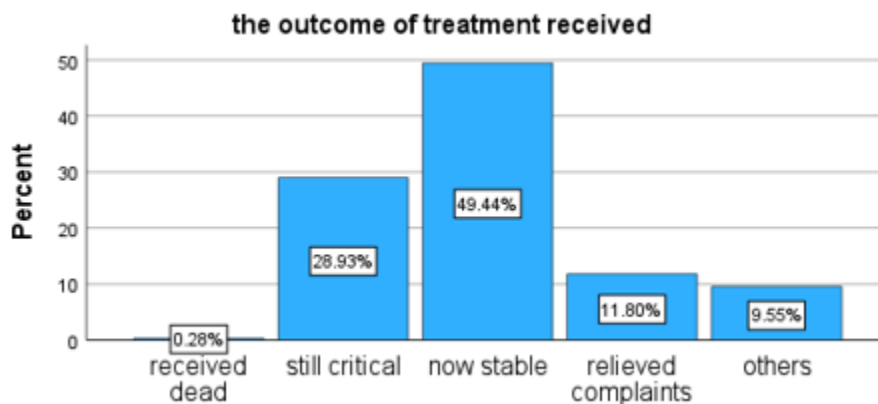


Gastrointestinal-related cases accounted for the highest percentage i.e., 32.71 % out of 266 cases presenting with medical complaints. The second most frequent presentation was due to renal disorders with a percentage of 12.4 %. Diabetes-related complaints were seen in 7.9 % of the cases while complaints belonging to central nervous, cardiovascular and respiratory systems were 6%,6.8% and 5.6 %

respectively. Minimal cases belonged to dermatological, ophthalmologic and musculoskeletal disorders.

49.44 % of the patients reaching the casualty department of Allied Hospitals were stable after receiving treatment while 28.93 % of the patients were still in critical condition as illustrated below in Figure 3.

Fig 3: Outcome of treatment among emergency cases



Upon application of the chi-square test, no significant association was observed between the **time of arrival of patients to casualty** and specialty-specific patients' presentations (P= 0.49); trauma-related cases (P= 0.495); and cases belonging to medicine-related complaints (P= 0.693). There was a strong association between **age** and specialty-specific patients' presentation (p-value <0.001); trauma-related cases (p-value 0.002); cases with medicine-related complaints (p-value<0.001). A strong association was also observed between **gender** and trauma-related

Discussion

Our study aimed to measure the burden of different diseases presented in the emergency department and to explore the clinical and epidemiological features of diseases found in patients presenting in the ED of tertiary care Hospitals of Rawalpindi. A tertiary care hospital is a hospital that provides various specialties and sub-specialties in medical and surgical treatment and nursing care for ill and injured people^[11] that are referred from primary or secondary care emergency^[12]. Emergency medical care can help reduce mortality and morbidity due to acute illnesses and injuries ^[13] if its services are adjusted according to disease-specific burden ^[14].

We collected data from 357 patients who presented in emergencies at three Allied hospitals of Rawalpindi Medical University by structured questionnaire. According to the results, most of the patients belonging to the age group under 20 were children and teenagers while in a similar study conducted in a South African Urban emergency center; the most common presentations were among the 20- 40 years old people ^[15]. This may be because in Pakistan majority of teenagers are untrained

cases (P=0.05). There was a significant association between **income** and specialty-specific patients' presentation (P=0.05); in cases with medicine-related complaints (P=0.02). No significant association was observed between the **mode of arrival of patients** and specialty-specific patients' presentations (P= 0.168) and trauma-related cases (P=0.09).

bikers and lack skills in sports and get injured. Another finding of our study was that more males than females landed in emergencies and this was because males are usually more involved in outdoor activities, difficult jobs, labour & driving etc.

Most of the patients who participated in our study were from Rawalpindi because Allied Hospitals' emergencies are easily approachable and hospitals are well-equipped with all specialized healthcare services. Most people were from low socio-economic status and the reason was that public sector hospitals provide free healthcare facilities, and the general public can easily avail themselves of these services ^[16]. Most people particularly poor ones are dependent on public hospitals but in many cases, these hospitals lack basic facilities which are of utmost importance for diagnosis and patient care; this aspect adversely affects the health of the patients. This results in lower satisfaction levels among patients visiting public sector hospitals of Pakistan^[17]. However, proper planning and administrative workup to deal with the emergency situation can be of great help to deal with calamities and timely management of the receiving casualties.

The most frequent time of presentation in emergency department was afternoon followed by morning when most of the people engaged in daily activities meet a variety of accidents. The minimal number of emergency cases are reported early morning and late night which shows this time is least associated with those outdoor activities that provoke any accident. About two-thirds of people in our research presented in casualty were non-ambulatory and the remaining 28.29% of people were ambulatory. While according to a study conducted in the South African Urban Center, most of the emergency cases were ambulatory^[18]. This illustrates that most of the accidents occurring in Pakistan are intensely injured or diseased that's why the people reaching the hospitals are non-ambulatory. Moreover, people in Pakistan also seemed to have delayed health-care-seeking behavior^[19] which is also one of the attributes for their landing in emergencies.

In current study, more than half of the emergency cases were related to the medical department while according to a study held in emergency medicine in Paarl, South Africa, the most common presentations were due to trauma^[20]. This might be because of the larger sample size in that study. The second most common presentations according to our study were due to trauma. Road traffic accidents (RTAs) were the most common cause of trauma among those who presented to the emergency department of Lady Reading Hospital Peshawar^[21]. This might be due lack of driving skills, speeding, poor road conditions and lack of knowledge about traffic rules in Pakistan. Among other causes of trauma, fall is most commonly prevalent in children. Firearm injuries are also determined as a cause of

leading trauma-related issues due to the easy availability of weapons and lack of tolerance in society. Among medical-related issues, gastrointestinal tract-related disorders are most common like gastritis, gastroesophageal reflux diseases, or tumors of the GI tract due to dietary habits and lifestyle^[22]. Kidney-related issues were the other important cause due to the increasing prevalence of hypertension and diabetes in Pakistan^[23]. Diabetes mellitus is becoming one of the most alarming diseases that progressively causes most other chronic disorders^[24]. It is a silent killer, and its prevalence is increasing day by day due to a lack of physical activity and a sedentary lifestyle. The frequency of such silent epidemics should intelligently be dealt with awareness campaigns about taking prudent diet and changing lifestyles.

Conclusion

A strong association was seen between age and trauma-related cases, age and medicine-related complaints, and age and specialty-specific patients. There was also significant association of gender with trauma & low socioeconomic status of patients presenting in emergency departments of all specialties. Most of the emergency cases were due to trauma, who reported mostly in the afternoon.

There is need for targeted education about such concerns as road safety among the vulnerable population group such as teenagers. There should be a proper check & balance system regarding the license for driving.

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