

Prevalence and Patterns of the Emergency Department Utilization at Iringa Regional Referral Hospital: A Retrospective Study of Cases Managed from July, 2024 to June, 2025

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Abstract:

➤ Background

Emergency Departments (EDs) serve as critical entry points for patients requiring urgent medical attention such as; acute illness, injuries, and life threaten conditions. However, many health facilities continue to face increasing patient loads, diverse case presentations, and limited resources. Therefore, this study aimed to assess the prevalence and patterns of cases attended at the Emergency Department at Iringa Regional Referral Hospital (IRRH) from July 2024 to June 2025. Understanding the nature, and distribution of cases presenting to the ED is therefore essential for improving service delivery and planning.

➤ Methodology

A retrospective cross sectional study reviews about 8,449 Emergency Department patient records admitted at Iringa Regional Referral Hospital from July 2024 to June 2025. The demographic data, complaints and diagnosis was collected using a structured data extraction sheet. Descriptive statistics were used to analyze the data using excel to summarize patients characteristics and disease patterns, frequencies, Mean, percentages and standard deviation were presented in tables and figures.

➤ Results

Between July 2024 and June 2025, 106,205 people were admitted to the hospital, with 8,449 (8%) being Emergency Department patients and 4,248 (50.3%) being males. The typical top ten diagnoses were; however, these vary by age group. Septicaemia, acute tonsillitis, allergic rhinitis, urinary tract infections, peptic ulcers, acute upper respiratory infections, bacterial pneumonia, and asthma were the most common diagnoses overall. Both communicable and non-communicable affects both age groups though the older population is mostly affected with non-communicable diseases, Children and adults affected mostly by infectious disease, and the diagnosis varies by gender and age group, with children between 0 to 14 years being the most afflicted.

➤ Conclusion

The research hospital's emergency department had substantial morbidity from July 2024 to June 2025, with an 8% admission rate and a balanced gender distribution. Infectious illnesses primarily affected children and young people, whereas no communicable diseases such as cardiovascular disease and diabetes afflicted the elderly. Females were more afflicted by urinary tract infections and reproductive health issues, whereas men were more traumatized. Improved illness diagnosis and management, infection control, chronic condition screening, reproductive health care for women, and male-specific condition prevention is among the recommendations to improve health outcomes.

Keywords: *Emergency Department, Prevalence, and Patterns.*

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I. INTRODUCTION

Globally, Emergency Departments (EDs) are burdened with high volume of patients driven by factors such as increased prevalence of chronic diseases, trauma, infectious diseases, and non-urgent conditions that could have been managed in primary care settings. The overcrowding of the patients leads to delayed services provision and had negative outcome on patients (1)

Overcrowding in emergency units has become a common challenge, often leading to prolonged waiting times, compromised quality of care, decreased patient satisfaction, and increased risk of adverse outcomes. Other factors affecting the services provision in the Emergency Departments are inadequate bed capacity, senior clinician decisions in investigation results, and lack of medical equipment which leads to delay in services provision (2).

Despite the critical role of EDs, many health facilities lack comprehensive data on the types of cases received, their prevalence, and temporal trends. This information gap makes it difficult for health administrators to allocate resources efficiently, deploy adequate staffing, and strengthen emergency care capacity. At the study facility, it has been observed that the ED frequently experiences high patient turnover and diverse case presentations; however, there is limited documented evidence on the actual burden and characteristics of these cases. Consistently with other studies found that the burden of frequent attendance of single patients multiple time in the EDs was highly affected by patients with co-morbidities (3).

A systematic assessment of the prevalence and patterns of ED cases is needed to provide an evidence-based understanding of emergency care needs within the facility's catchment area. There has been evidence of the disparities in utilization of the Emergency Department across the gender and age groups and has been increased as fact of the population increase (4). Findings from such research can help inform health planning, improve triage systems, optimize resource utilization, and guide interventions aimed at enhancing the quality and efficiency of emergency services.

The current is significant since it provides essential data that can support evidence-based decision-making in emergency healthcare service delivery. By determining the prevalence and patterns of cases attended at the Emergency Department (ED), the research enables the health facility to better understand the burden placed on its emergency services and identify gaps that

may hinder effective patient care. As Identified in previous studies the health facilities should improve the system and capacity to manage changes needed in the particular population so as to have strong healthcare system which can respond promptly in the emergency situations or outbreak (5).

Despite the essential role of the ED, there is often insufficient data on the prevalence and types of cases attended their patterns over time, and the factors influencing ED utilization. This lack of accurate and up-to-date information hinders effective planning, allocation of resources, and improvement of emergency care services. The patients inter-hospital transfer request and unavailability of medical resources may affect the provision of emergency services at EDs in a certain health facilities (6).

At the study health facility, anecdotal reports suggest a rising number of emergency visits, but the true burden, distribution of cases, and trends remain unclear. In previous studies was found that most injure/trauma patients are getting life serving intervention at the EDs (7). Without systematic assessment, it is difficult for administrators and healthcare providers to address potential problems such as overcrowding, delays in care, shortages of staff or supplies, and preventable mortality and morbidity.

Therefore, there is a need to investigate the prevalence, patterns, and characteristics of cases attended at the Emergency Department to provide evidence that can guide policy development, resource allocation, and quality improvement initiatives within the facility.

II. METHODOLOGY

➤ Study Design.

Retrospective cross-sectional study review of patient routinely collected data from the Emergency Department of the Iringa Regional Referral Hospital (IRRH). This involves reviewing of the medical records of patients who attended Emergency Department from July 2024 to June 2025.

➤ Study area.

The study was conducted at Iringa Regional Referral Hospital, which is the referral point of the six district hospitals and provide wide range of emergency services in twenty four hours. Emergency services provided covered medical, surgical, traumas, pediatric, obstetric/gynecological emergencies.

➤ *Study Population.*

The study population include all patients attended ED from July 2024 to June 2025. All patients presenting at the Emergency Medicine Department during the study period were included while Patients referred to another department immediately Patients discharged without assessment. Patients with missing information or duplicated records.

➤ *Sample Size.*

The sample size was all patients attended Emergency Department from July 2024 to June 2025.

➤ *Data Sources and Data Collection.*

The demographic data and diagnosis was collected using a structured data extraction sheet from the ED register, Data collected includes Age, sex, presenting complaints, diagnosis. Referral status and patient's outcomes such as discharged, admitted, referred, and died.

➤ *Data Management and Analysis.*

Descriptive data analysis was done using extracted excel sheet whereby frequencies, percentages tables, mean age and standard deviation were presented. Continuously data were summarized used mean and standard deviation while the categorical data were summarized using frequencies and percentages. Results presented in tables, charts, and graphs presenting the prevalence and patterns of Emergence Department cases.

➤ *Ethical Approval, Confidentiality and Privacy.*

Prior to data collection, ethical clearance was obtained from the Institutional Review Board (IRB) or Ethics Committee. Since the study involved record review (retrospective data), direct patient contact did not occur. However, a waiver of informed consent was requested from the ethics committee because data were extracted solely from existing records. No intervention was performed on any patient. No names, phone numbers, or personally identifiable information that was collected. All extracted information was used solely for research purposes. This study posed minimal to no risk to participants because: It used secondary data (records review), there was no direct interaction or intervention with patients, and No harm, discomfort, or disturbance was expected.

III. FINDINGS

➤ *Gender Distribution of Emergency Department Patients*

Total hospital admissions from July 2024 to June 2025 totaled 106,205, including 8,449 emergency department admissions, resulting in a male-to-female ratio of 4,248:4,201 (1.01:1). The overall emergency department admission rate was 8%, primarily affecting children aged 0-14 years, followed by individuals aged 25 to 44 years, with fewer cases in the 45 to 64 age group.

$$\text{EMD Admission Rate} = \frac{\text{Total patients admitted in EMD in July 2024 to June 2025} \times (100)}{\text{Total patients seen in Hospital in July 2024 to June 2025}}$$

$$=(8449/106,205) \times 100 = 8\%$$

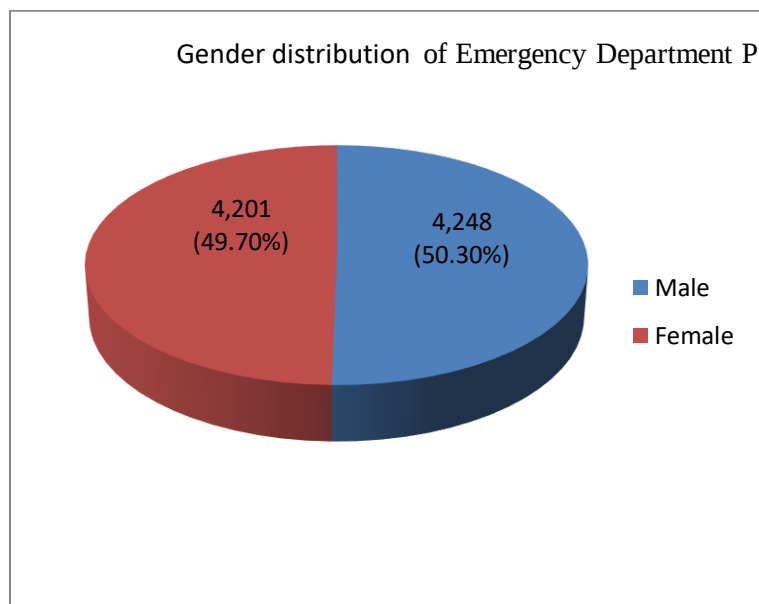


Fig 1: Gender Distribution of Emergency Department Patients (n=8,449)

➤ *The Top 10 Leading Diagnosis for the Year July 2024 to June 2025*

From July 2024 to June 2025, the emergency department documented the following top diagnoses: Other septicaemia was the most prevalent (598 cases, 304 men, 294 females), followed by acute tonsillitis (339 cases, 170 males, 169 females) and allergic rhinitis (268 cases, 137 boys, 131 females). Urinary tract infections (239 cases, 67 men, 172 females) and peptic ulcers (174 cases, 62 males, and 112 females) were common, with females having a greater incidence. Acute upper respiratory infections (170 cases, 100 males, 70 females) and bacterial pneumonia (157 cases, 90 men, and 67 females) were among the respiratory diseases seen. The main diagnoses were primarily infectious disorders, with significant gender differences in urinary tract infections and upper respiratory infections. Refer to table 1

Table 1: Top 10 leading diagnosis for the year July 2024 to June 2025

Diagnosis	M	F	T
Other septicaemia	304	294	598
Acute tonsillitis	170	169	339
Other allergic rhinitis	137	131	268
Urinary tract infection, site not specified	67	172	239
Peptic ulcer, site unspecified	62	112	174
Acute upper respiratory infection, unspecified	100	70	170
Bacterial pneumonia, NEC	90	67	157
Allergic rhinitis, unspecified	74	68	142
Septicaemia, unspecified	66	72	138
Asthma	26	75	101

➤ *Top 10 Diagnoses for the Age Group 0 to 14 Years by Gender*

Infectious and respiratory diseases are the most prevalent diagnoses for children aged 0 to 14 years, with septicaemia being the most common condition, followed by acute tonsillitis and allergic rhinitis. There is a slight male predominance in cases of septicaemia and respiratory infections, while urinary tract infections are significantly more common in females. This age group shows a high prevalence of communicable illnesses, particularly sepsis and upper respiratory tract infections. Refer to table 2

Table 2: Top 10 Leading Diagnoses Among Patients Aged 0-14 Years by Gender (July 2024–June 2025).

Diagnosis	M	F	T
Other septicaemia	274	248	522
Acute tonsillitis	154	148	302
Other allergic rhinitis	131	118	249
Acute upper respiratory infection, unspecified	96	64	160
Bacterial pneumonia, NEC	87	59	146
Urinary tract infection, site not specified	51	89	140
Allergic rhinitis, unspecified	71	63	134
Septicaemia, unspecified	58	55	113
Acute nasopharyngitis [common cold]	56	40	96
Cough	50	37	87

➤ *Top 10 Leading Diagnoses among Patients Aged 15-24 Years by Gender*

This group's main diagnoses included gastrointestinal, infectious, and reproductive health issues, with peptic ulcers as the most prevalent, followed by urinary tract infections and septicaemia. There was a female predominance in urinary tract infections, asthma, and pelvic inflammatory diseases, reflecting gender-specific morbidity. In contrast, intracranial injuries were more common in males, while septicaemia and headaches were evenly distributed. The findings highlight a mixed burden of infectious and non-communicable diseases, with notable gender disparities, particularly in urinary and reproductive health. Refer to table 3

Table 3: Top 10 Leading Diagnoses Among Patients Aged 15-24 Years by Gender (July 2024–June 2025).

Diagnosis	M	F	T
Peptic ulcer, site unspecified	31	81	112
Urinary tract infection, site not specified	14	73	87
Other septicaemia	27	44	71
Asthma	7	57	64
Headache	13	23	36
Acute tonsillitis	14	19	33
Other female pelvic inflammatory diseases	1	26	27
Iron deficiency anaemia	1	22	23
Septicaemia, unspecified	7	16	23
Intracranial injury	21	2	23

➤ *Top 10 Leading Diagnoses among Patients Aged 25-44 Years by Gender*

Among patients aged 25–44 years, the predominant diagnoses included peptic ulcer disease, infections, and reproductive health conditions. Peptic ulcer (site unspecified) was the most common, followed by other septicaemia and urinary tract infection. There was a notable female predominance in urinary tract infections, iron deficiency anaemia, hypertension, and pregnancy supervision, while other septicaemia affected more males.

The findings highlight a mixed burden of communicable and non-communicable diseases, with significant gender differences primarily influenced by reproductive health issues. Refer table 4.

Table 4: Top 10 Leading Diagnoses Among Patients Aged 25-44 Years by Gender (July 2024–June 2025).

Diagnosis	M	F	T
Peptic ulcer, site unspecified	82	119	201
Other septicaemia	72	53	125
Urinary tract infection, site not specified	35	80	115
Acute tonsillitis	32	37	69
Headache	22	31	53
Other allergic rhinitis	23	28	51
Essential (primary) hypertension	13	35	48
Iron deficiency anaemia	9	37	46
Allergic rhinitis, unspecified	15	30	45
Supervision of normal pregnancy	1	44	45

➤ *Top 10 Leading Diagnoses among Patients Aged 45-64 Years by Gender*

The primary diagnoses for individuals aged 45 to 64 are non-communicable diseases (NCDs), particularly cardiovascular and metabolic conditions. The most common diagnosis is peptic ulcer (location unspecified), followed by hypertensive heart disease and urinary tract infections. There is a notable prevalence of hypertension-related disorders, such as essential hypertension and hypertensive heart disease with or without heart failure. Type 2 diabetes mellitus and unspecified strokes are also frequently diagnosed, indicating an increase in NCD morbidity in this age group. Females tend to have higher incidences of hypertensive heart disease and urinary tract infections, while males report more peptic ulcer disease and strokes, reflecting a trend towards chronic NCDs among middle-aged individuals. Refer to table 5

Table 5: Top 10 Leading Diagnoses Among Patients Aged 45-64 Years by Gender (July 2024–June 2025).

Diagnosis	M	F	T
Peptic ulcer, site unspecified	2	7	9
	2	0	2
Hypertensive heart disease	1	6	8
	9	8	7

Urinary tract infection, site not specified	2	5	7
	2	4	6
Essential (primary) hypertension	2	5	7
	2	3	5
Type 2 diabetes mellitus	2	3	5
	0	8	8
Other septicaemia	2	3	5
	3	1	4
Stroke, not specified as hemorrhage or infarction	2	2	5
	5	7	2
Hypertensive heart disease without (congestive) heart failure	1	3	4
	0	9	9
Low back pain	8	2	3
		2	0
Hypertensive heart disease with (congestive) heart failure	6	2	2
		0	6

➤ *Top 10 Leading Diagnoses among Patients Aged ≥65 Years by Gender*

Non-communicable diseases were the leading diagnoses in individuals aged 65 and over, with hypertensive heart disease being the most common, followed by essential hypertension and stroke. Other notable conditions included urinary tract infections, peptic ulcer disease, and type 2 diabetes mellitus. While females had higher rates of cardiovascular diseases and urinary tract infections, males were more affected by strokes and diabetes. Refer to table 6

Table 6: Top 10 Leading Diagnoses among Patients Aged ≥65 Years by Gender (July 2024–June 2025).

Diagnosis	M	F	T
Hypertensive heart disease	2	8	10
	6	1	7
Essential (primary) hypertension	3	6	97
	3	4	
Stroke, not specified as hemorrhage or infarction	3	4	86
	7	9	
Urinary tract infection, site not specified	2	4	68
	4	4	
Peptic ulcer, site unspecified	1	4	62
	6	6	
Hypertensive heart disease without (congestive) heart failure	2	3	54
	2	2	
Type 2 diabetes mellitus	2	1	40
	3	7	
Bacterial pneumonia, NEC	1	2	37
	7	0	
Other septicaemia	1	2	34
	0	4	
Hyperplasia of prostate	3	0	33
	3		

IV. DISCUSSION

The current study found that the majority of admissions were children aged 0 to 14 years followed by the middle adult of 25 to 44 years old while the Male to female ratio were 1.01:1 hence the mostly affected/diseased age group were the children of 0 to 14 years. Unlike studies found that male to female ratio of death to be 1:2 and mainly these deaths were due to shock, pneumonia and poisoning (2).

The current study among the patients attending the Emergency Department at Iringa Regional Referral Hospital found that the overall most leading diagnosis for the fiscal year July 2024 to June 2025 were; Septicaemia, acute tonsillitis, allergic rhinitis, urinary tract infections, peptic ulcers, Bacteria pneumonia, and asthma. Unlike a study conducted in Ifakara Morogoro Tanzania among thirty five thousand patients attending the Emergency Departments found that the leading diagnosis was respiratory infections, followed by urinary tract infection, trauma, undifferentiated febrile illness, and malaria (8). Differences between the two studies which were both conducted in Tanzania might be due to geographical location which affected with weather condition, social economic activities and cultural practices.

Other studies found that the most leading admission at the EDs were medical emergencies, traumatic emergencies, respiratory distress, extremity fractures and the hypertensive emergencies respectively (9). Unlike study conducted in Mozambique found that one quarter of all injuries presented at EDs were due to fall, physical violence and road traffic accidents which were varies according to gender and age group (10).

Children aged 0 to 14 years commonly face infectious or respiratory disorders, with septicaemia being the most frequent diagnosis, followed by acute tonsillitis and allergic rhinitis. A slight male preponderance exists in cases of septicaemia and lung infections, whereas urinary tract infections are significantly more common in females. A retrospective study conducted in China among children aged 0 to 14 years found that the most leading cause was neonatal disorders for under 5 years and the top risk factors was low birth weight while the most leading cause of death for the children aged 5 to 14 years were unintentional injuries, and mental disorders and the top risk factors were alcohol use and short gestation respectively (11).

In the study, individuals aged 15 to 24 were diagnosed with various health concerns including gastrointestinal, infectious, and reproductive issues. Peptic ulcers were the most common diagnosis, followed by urinary tract infections and septicemia. Females exhibited higher rates of urinary tract infections, asthma, and pelvic inflammatory disorders, while males were more prone to intracranial injuries, with septicemia and headaches being equally distributed across genders.

Similarly a study conducted in America found that the adolescent of 15 to 24 years old are in risk of increased infectious diseases particularly the Sexual Transmitted Infections (STIs) (12).

In patients aged 25–44 years, the main diagnoses were peptic ulcer disease, infections, and reproductive health issues. Peptic ulcers were most common, followed by septicaemia and urinary tract infections. Notably, urinary tract infections, iron deficiency anaemia, hypertension, and pregnancy supervision were more prevalent in females, while other septicaemia affected more males. Unlike a study conducted in America found that sudden cardiac death among individuals aged 25 to 44 years were linkage with myocardial infarction, heart failure and stroke both which are non-communicable diseases unlike the developing countries like Tanzania whereby this particular group is burdened with the infectious diseases (13).

Non-communicable diseases (NCDs), particularly cardiovascular and metabolic illnesses, are the most common diagnosis among those aged 45 to 64. Peptic ulcers, hypertensive heart disease, and urinary tract infections are common diagnoses, with hypertension-related illnesses being especially prevalent. Type 2 diabetes and unexplained strokes are also common, indicating a rise in NCD morbidity. Females had greater rates of hypertensive heart disease and urinary tract infections, whereas males have higher rates of peptic ulcers and strokes, indicating a shift toward chronic NCDs in middle-aged adults. In previous study in Tanzania found an increase of the incident rate of critical ill patient in three years consecutively and the most leading diagnosis for critical ill patients were respiratory, cardiovascular, infectious diseases and trauma (14).

Non-communicable diseases were the leading diagnoses in individuals aged 65 and over, with hypertensive heart disease being the most common, followed by essential hypertension and stroke. Other notable conditions included urinary tract infections, peptic ulcer disease, and type 2 diabetes mellitus. While females had higher rates of cardiovascular diseases and urinary tract infections, males were more affected by strokes and diabetes. Similarly a review study done in American old individuals predicted that by the year 2050 the aging population will increase with the increase of non-communicable diseases such as cardiovascular disease, arthritis, hearing and vision loss, diabetes type 2 and memory loss and this will become critical public health issues which will need intervention (15).

V. CONCLUSION AND RECOMMENDATION

The research hospital's emergency department saw high morbidity between July 2024 and June 2025, with an 8% admission rate and roughly equal gender distribution. Children and young adults were more likely to suffer from infectious diseases, whereas older people were more likely to suffer from no communicable diseases such as cardiovascular disease, diabetes, and stroke. Notably, females had more urinary tract

infections and reproductive health difficulties than men, who were more affected by trauma and certain illnesses. To reduce emergency department visits and improve health outcomes, recommendations include strengthening early detection and management of both disease types, improving infection control, and improving screening and health education for chronic conditions, as well as reinforcing reproductive health services for women and preventive measures for male-specific conditions.

STRENGTH AND LIMITATION OF THE STUDY

- *Strength: The study uses the large sample sizes of the existing data, and was useful for rare diseases and generated the ground for the future research*
- *Limitation: The study did not capture the patient's detailed information since some of them were present in coma condition or were not able to express them*
- *Ethical issues: Since the study involved record review (retrospective data), direct patient contact did not occur. However a waiver of informed consent was requested from the ethics committee because data were extracted solely from existing records.*
- *Acknowledgement: Authors would like to acknowledge the hospital administrative for their cooperation in obtain the data*
- *Funding statement: The study had no specific funding or sponsorship*
- *Competing interest: Authors declared that there is no conflict of interest*
- *Authors Contribution: EGL; Make a substantial contribution in data collection, data analysis, and participate in preparation of the manuscripts while ALM & OGG; participate in designing the study, providing guidance, data interpretation, and reviewing the final manuscripts*

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