

## Original Article

### Patterns of healthcare utilization among pediatric patients at a secondary care medical center in Islamabad, Pakistan

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## ABSTRACT

**Background:** Private sector healthcare utilization is significantly high in low- and middle-income countries (LMICs), such as Pakistan, where 57–80% of healthcare services are provided by private facilities. Understanding healthcare utilization patterns, especially among pediatric patients, is essential for optimizing resource allocation and improving healthcare outcomes. This study aims to determine healthcare utilization patterns among pediatric patients at the outpatient Department (OPD) of a secondary care center affiliated with Islamabad Medical Complex (IMC) in Islamabad.

**Methods:** A retrospective analysis was conducted of medical records for pediatric patients aged 0–15 years who visited the OPD of a secondary care center in Islamabad from January to December 2023. Data on demographics, presenting complaints, and healthcare utilization patterns—including visits to General Practitioners (GPs), Pediatric OPD visits, and follow-ups were collected. Descriptive statistics were used to summarize the study findings.

**Results:** A total of 1,920 pediatric patients were included in the study. The mean age was 8.64 years, with the majority (36.9%) in the 1–5-year age group. Males comprised 54.4% of the sample. Respiratory tract infections (31.9%) and diarrheal diseases (25.8%) were the most common presenting complaints at registration. Approximately 79.7% of patients visited General Practitioners (GPs) at least 1–2 times, while OPD follow-up visits accounted for 10.3% of all visits.

**Conclusion:** This study highlights pediatric healthcare utilization patterns in a secondary care medical center. Respiratory and diarrheal diseases were the primary presenting complaints. Findings from this study may help devise strategies to improve healthcare delivery, resource allocation, and preventive care interventions in healthcare settings across Pakistan.

**Keywords:** Healthcare utilization, pediatric patients, secondary care medical center, Islamabad

## INTRODUCTION

The World Health Organization (WHO) defines healthcare utilization as the use of healthcare services by a population. Health status and healthcare utilization patterns are key indicators to determine how efficiently a healthcare system

provides services to the people [1]. Studies on the utilization of healthcare services have shown that private sector utilization is significantly higher in low- and middle-income countries (LMICs) compared to high-income countries, with more than

50% of healthcare services in LMICs occurring at private healthcare facilities.

In Pakistan, approximately 57–80% of healthcare utilization occurs in the private sector. Factors influencing this pattern include the limited availability of quality healthcare in rural areas, better socioeconomic status, and smaller household sizes, among others [2]. Secondary-level medical centers provide a cost-effective alternative by enhancing access to quality healthcare and contributing significantly to achieving Universal Health Coverage (UHC) goals. Moreover, in a lower-income country like Pakistan, reliance on private healthcare facilities can significantly add to the economic burden on families, potentially delaying medical care for serious health issues.

The outpatient department (OPD) is a critical component of the healthcare system, serving as the first point of contact for many patients and accounting for a substantial portion of healthcare visits. Data collected in OPD settings serves as a valuable resource for understanding the socioeconomic backgrounds of patients and identifying the endemic nature of particular diseases [3]. In pediatric healthcare, OPDs play an essential role in diagnosing and treating common childhood illnesses, such as diarrheal diseases, respiratory tract infections, and vaccine-preventable diseases. They also manage chronic conditions, including allergies, asthma, neurodevelopmental disorders, chronic pain, and various other pediatric health concerns [4].

Healthcare utilization studies are effective in assessing the healthcare needs of the community. Understanding the pattern of healthcare utilization in pediatric medical OPDs at a secondary care medical center is essential for optimizing resource allocation, improving service delivery, and ensuring proper healthcare for children. As children grow and develop, providing appropriate and timely medical care becomes crucial [5]. Moreover, such studies can provide vital insights into patients' approaches to the healthcare system and aid in the further improvement of medical facilities.

There is an evident gap between the need for and availability of low-cost medical facilities for the general public in Pakistan, which often results in inequitable resource utilization. Therefore, this study was conducted to determine the demographic characteristics, clinical presentations,

and patterns of healthcare utilization among pediatric patients at the OPD of a secondary care center in Islamabad. The findings from this study will provide valuable insights to inform public health interventionists on optimizing resource allocation, improving service delivery, and enhancing preventive healthcare measures for children in Pakistan.

## METHODS

This retrospective database study was conducted to analyze both electronic and paper-based medical records of pediatric patients who attended the OPD of a secondary healthcare center affiliated with Islamabad Medical Center (IMC) in Islamabad over a one-year period, from January to December 2023. Generally, patients are examined by General Practitioners (GPs); however, in OPD visits, patients are either referred by the GP or are those who are not satisfied with the treatment provided by the GPs. This secondary healthcare center offers a range of healthcare services, including outpatient care, emergency services, and inpatient facilities. Operated by the welfare fund of the organization, the medical center provides free healthcare services to employees and their families.

The OPD of this hospital serves as the primary point of contact for children seeking medical care for common pediatric conditions. Pediatric patients aged 0–15 years who visited the OPD during the defined study period were included in the study. Only patients with complete and accessible medical records were eligible for inclusion, while patients not registered within the study period or with incomplete records were excluded.

Medical records were systematically reviewed to collect relevant information. Eligible patients were identified through hospital registration records and by accessing both electronic and paper-based medical records. Standardized forms were used to extract data. Demographic information, including age, gender, and place of residence, was recorded. The primary presenting complaints at registration were categorized into respiratory tract infections, diarrheal diseases, allergies, chronic pain, and various other conditions. Patterns of healthcare utilization were also examined, including the number of initial visits to General Practitioners, Pediatricians, and OPD follow-ups after completing the advised treatment.

**Ethical Approval:** Approval was obtained from the Institutional Review Board (IRB) of the medical center, ensuring that patient confidentiality and data security were maintained throughout the study. (NESCOM-44(33)/2024-IMC).

Data were analyzed using SPSS version 21.0. Continuous variables, such as age and the number of visits, were presented as means and standard deviations (SD). Categorical variables, such as gender, place of residence, and primary presenting complaints, were reported as frequencies and percentages.

## RESULTS

We included 1,920 patients aged 0–15 years who were registered at the OPD of a secondary care medical center in Islamabad from January to December 2023. The mean age of the patients was 8.64 years, with the majority (36.9%) in the 1–5 years age group, followed by 31.1% in the <1-year age group. Females accounted for 54.4% of the patients, while males comprised 45.6%. Approximately 51.7% of the patients resided in Islamabad, while 48.3% were from outside the city (Table I).

Table I: Demographic characteristics of pediatric patients (n=1920)

Demographic characteristics	Categories	Frequency	Percentage
Age	< 1 year	598	31.1
	1-5 years	708	36.9
	6-10 years	397	20.7
	11-15 years	217	11.3
Gender	Male	1045	54.4
	Female	875	45.6
Place of residence	Within Islamabad	992	51.7
	Outside of Islamabad	928	48.3

Mean age = 8.64 year

Of the 1,920 patients who utilized OPD services, the most common presenting complaints at recruitment were respiratory tract infections (31.9%) and diarrheal diseases (25.8%). Approximately 13.1% of patients attended follow-up visits. Other reasons for visits included allergies (7.2%), chronic pain (7.4%), and various other conditions (8.4%).

Moreover, the distribution of patients with respect to pay scales was also analyzed. More than 75% (75.45%) were the private and children of staff, while 24.54% were the children of officers of the organization.

## DISCUSSION

This study examined the diagnoses and patterns of healthcare utilization among 1,920 pediatric patients registered at the OPD of a secondary care medical center. The mean age of the patients was 8.64 years, with the majority (36.9%) aged

1–5 years, followed by 31.1% in the <1-year age group. This finding is significant because younger children are generally more susceptible to infections due to their developing immune systems, aligning with previous studies that reported a high disease burden in younger pediatric patients [6][7].

This trend could also be attributed to the healthcare-seeking behavior of parents, who tend to prioritize medical visits for younger children when they fall ill due to perceived vulnerability. Healthcare interventions targeting early childhood health should emphasize nutritional support, immunization, and infection prevention for the youngest patients.

The findings revealed that males accounted for 54.4% of the patients, while females comprised 45.6%. This observation is notable as it aligns with the male predominance reported in many

healthcare utilization studies. Cultural or social dynamics in the country may result in more boys being brought to healthcare centers [8].

Continuous efforts are required to promote gender equity in healthcare access.

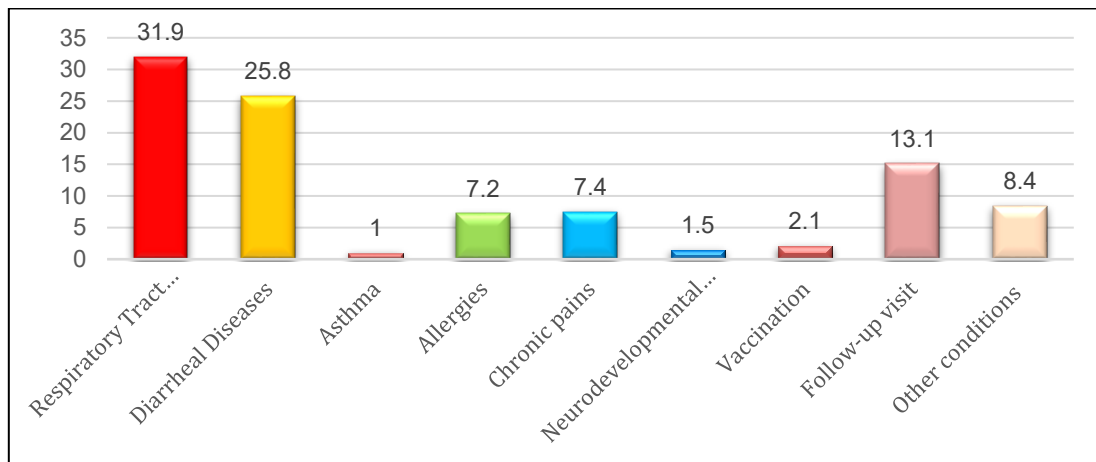


Figure I: Presenting complaints at recruitment for all 1920 patients

Table II: Healthcare utilization from January to December 2023

Healthcare utilization	1-2		3-5		Mean ± SD
	N	%	N	%	
GPs visits	1530	79.7	0	0	2.7 ± 3.9
OPD visits	0	0	390	20.3	0.4 ± 1.8

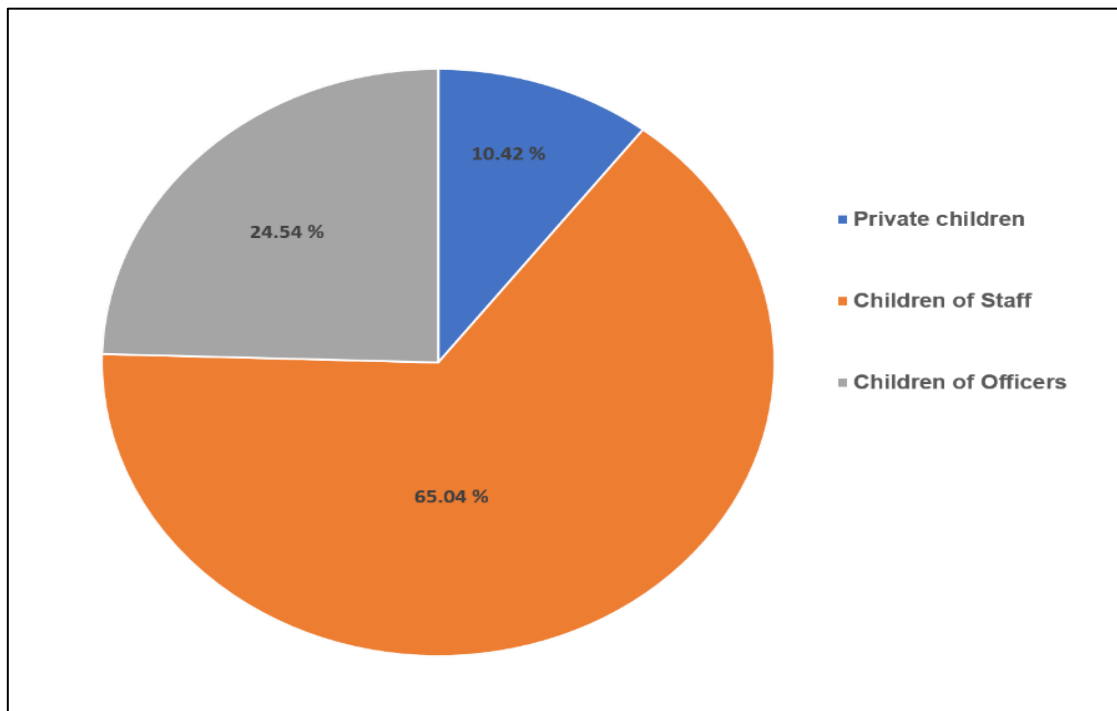


Figure II: Presenting the distribution of patients for all 1920 patients with respect to pay scale

Approximately 51.7% of the patients resided within Islamabad, while 48.3% were from outside the city. This finding aligns with healthcare utilization trends observed in low- and middle-income countries (LMICs), where rural healthcare infrastructure is often underdeveloped [9]. Strengthening rural healthcare infrastructure and implementing outreach programs can help improve access to healthcare services.

The presenting complaints at registration were respiratory tract infections (31.9%) and diarrheal diseases (25.8%). This highlights the high burden of infectious diseases among children in LMICs like Pakistan, where poor living conditions, inadequate sanitation, and overcrowding are common contributors to respiratory and gastrointestinal infections [10]. Similar findings have been reported in studies from other LMICs, particularly in areas with low socioeconomic status [11].

In contrast, non-communicable diseases and injuries are more prevalent causes of OPD visits in developed countries [12]. Preventive measures, such as immunization campaigns, improvements in water, sanitation, and hygiene, and health education, should be prioritized to reduce the prevalence of common childhood infections.

The majority of patients (79.7%) visited the GP at least 1–2 times during the study period, with a mean of 2.7 visits per year. This shows the important role of primary care providers in managing pediatric conditions, helping to prevent unnecessary hospitalizations or visits to emergency services [13]. Similar patterns of healthcare utilization were observed in both LMICs and developed countries, where GPs served as the first point of contact [14][15]. Strengthening primary care services, including equipping GPs with better diagnostic tools and enhancing their capacity to manage pediatric conditions, could further improve healthcare outcomes and reduce the burden on secondary and tertiary healthcare facilities [16].

The study provided valuable information for better understanding access to healthcare services in Pakistan. By focusing on pediatric patients—an often-vulnerable group in LMICs—it addresses an important demographic, especially in regions where childhood diseases are

prevalent. The findings provide valuable information that could inform public health interventions, especially regarding prevalent pediatric conditions like respiratory tract infections and diarrheal diseases. However, the study is limited to a single healthcare facility, reducing the generalizability of the findings to other settings within Pakistan. The absence of socio-economic data also limits the depth of analysis, as factors like household income and parental education may influence healthcare access. Furthermore, the study does not explore health outcomes, preventing a link between healthcare utilization and patient recovery or effectiveness.

## CONCLUSION

Our findings revealed respiratory tract infections (31.9%) and diarrheal diseases (25.8%) as the most common complaints. Most of the patients (79.7%) visited GPs 1–2 times annually. This study highlights the key role of primary healthcare providers in managing pediatric infectious diseases, particularly respiratory and diarrheal conditions. Strengthening primary healthcare services, especially in rural Pakistan, and prioritizing preventive measures such as immunization campaigns, sanitation, and health education are essential for improving pediatric health outcomes. Measures at the national level to improve the nutritional status of children are imperative to lessen the burden on primary healthcare due to the resultant decrease in the rate of infectious diseases.

**Consent to Publication:** Author(s) declared taking informed written consent for the publication of clinical photographs/material (if any used), from the legal guardian of the patient with an understanding that every effort will be made to conceal the identity of the patient, however it cannot be guaranteed.

**Authors Contribution:** The authors confirm contribution to the paper as follows. **ZP:** Conceptualization, Data acquisition, final drafting, Results interpretation, approving final manuscript **NM:** Data acquisition, Supervision, Results interpretation, Final submission, Data analysis, approving final manuscript **RM,HS,MM:** Results interpretation, approving final manuscript.

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