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Original Research Article

# Pattern of Febrile Illness in Children Admitted to Pediatric Ward

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**Abstract:**

**Background:** Fever is one of the most common reasons for pediatric hospital admission, with varied etiologies ranging from self-limiting viral illnesses to severe life-threatening infections.

**Aim:** To study the pattern and etiological distribution of febrile illnesses among children admitted to the paediatric ward.

**Methods:** This prospective observational study was conducted from January to June 2025 and included 120 children aged 1 month to 12 years admitted with fever. Detailed clinical evaluation and relevant laboratory investigations were performed. Data were analyzed using descriptive statistics and appropriate tests of significance.

**Results:** The majority of children were aged 1–5 years (43.3%) with male predominance (58.3%). Acute respiratory infections (26.7%) were the most common cause, followed by acute gastroenteritis (15.0%), dengue (11.7%), and enteric fever (10.0%). Vector-borne diseases accounted for 26.7% of cases. Laboratory findings revealed anemia (31.7%), thrombocytopenia (18.3%), elevated CRP (48.3%), and liver enzyme derangement (21.7%). Most children recovered (91.7%), while 6.7% required intensive care; mortality was 0.8%.

**Conclusion:** Infectious diseases, particularly respiratory and vector-borne illnesses, remain leading causes of paediatric febrile admissions, emphasizing the need for early diagnosis and timely management.

**Keywords:** Febrile Illness, Paediatric Infections, Dengue, Acute Respiratory Infection, Vector-Borne Diseases.

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## Introduction

Fever is among the commonest reasons for paediatric ward admission, yet the etiology varies by season, geography and vaccination coverage, making syndromic treatment difficult [1, 2]. Recent paediatric series of acute febrile illness report large proportions of acute undifferentiated fever and persistent diagnostic gaps despite structured evaluation [2]. In endemic areas, curable infections such as scrub typhus contribute to hospitalization and may lack distinctive signs, delaying targeted therapy [3]. Meanwhile, some admitted children have prolonged or fever of unknown origin needing stepwise evaluation to separate infections from inflammatory and malignant causes [4]. In resource-limited hospitals, pattern studies help anticipate seasonal surges, guide triage, and improve early recognition of severe disease. Knowing local patterns supports rational testing, timely empiric choices, antimicrobial stewardship and prevention. The aim of the current research is to describe the pattern and likely etiologies of febrile illnesses among children admitted to the paediatric ward, and to relate clinical syndromes with basic laboratory findings and short-term patient outcomes.

## Methods

This prospective observational study was conducted in the department of Paediatrics at government Medical College, Jangaon, from January to June 2025. All children aged 1 month to 12 years admitted to the pediatric ward with fever (axillary temperature ≥38°C) of less than 14 days duration were consecutively enrolled after obtaining written informed consent from parents or guardians. Children with known chronic systemic illnesses (such as congenital heart disease, chronic kidney disease, malignancy), those already on long-term immunosuppressive therapy, and readmissions for the same febrile episode were excluded. Necessary approval were obtained prior to commencement of the study. A structured case record proforma was used to collect demographic details (age, sex, residence, socioeconomic status), immunization status, duration of fever, associated symptoms (cough, diarrhea, rash, vomiting, seizures, bleeding manifestations), and prior treatment history.

A detailed clinical examination was performed at admission, including assessment of vital signs, anthropometry, hydration status, systemic examination, and identification of focus of infection. Based on clinical findings, febrile illnesses were provisionally categorized into respiratory, gastrointestinal, urinary, vector-borne, central nervous system infections, viral exanthematous illnesses, and acute undifferentiated fever. Laboratory investigations were performed as per clinical indication and institutional protocol. These included complete blood count, peripheral smear, C-reactive protein, erythrocyte sedimentation rate, liver function tests, renal function tests, urine routine microscopy and culture, blood culture, Widal test, dengue NS1 antigen/IgM antibody, malaria antigen test or peripheral smear for parasites, scrub typhus IgM ELISA, and chest radiography. Ultrasonography of the abdomen and cerebrospinal fluid analysis were conducted in selected cases based on presenting features.

All enrolled children were managed as per standard paediatric treatment guidelines. Patients were monitored daily for clinical progression, development of complications, need for intensive care admission, duration of hospital stay, and outcome (recovery, referral, or mortality). Final diagnosis was established based on clinical evaluation supported by laboratory and radiological findings. Data were entered into Microsoft Excel and analyzed using SPSS version 22. Descriptive statistics such as mean, standard deviation, frequency, and percentage were calculated. Categorical variables were expressed as proportions, and associations between type of febrile illness and age group, laboratory parameters, and outcome were analyzed using Chi-square test or Fisher's exact test as appropriate. A p-value <0.05 was considered statistically significant.

## Results

A total of 120 children admitted with febrile illness were included in the study. The majority belonged to the 1–5 years age group (43.3%), followed by 6–12 years (33.4%) and infants (23.3%), with a male predominance (58.3%) and higher representation from rural areas (61.7%) (Table 1). Regarding etiology, acute respiratory infections were the most common cause (26.7%), followed by acute gastroenteritis (15.0%), dengue fever (11.7%), and enteric fever (10.0%) (Table 2). Vector-borne illnesses, including dengue, malaria, and scrub typhus, together accounted for 26.7% of cases. Acute undifferentiated viral fever constituted 9.1%, while CNS infections were identified in 5.0% (Table 2). Laboratory abnormalities showed anemia in 31.7%, leukocytosis in 28.3%, leukopenia in 13.3%, and thrombocytopenia in 18.3%, predominantly among dengue and malaria cases (Table 3). Elevated CRP was observed in 48.3%, and liver enzyme elevation in 21.7%, particularly in dengue and enteric fever patients (Table 3). Most children recovered with treatment (91.7%), while 6.7% required PICU admission due to severe dengue, pneumonia with respiratory distress, and meningoencephalitis; mortality and referral rates were 0.8% each (Table 4).

**Table 1: Demographic characteristics of study population**

| Variable | Number | % |
|---|---|---|
| **Age group** | | |
| 1 month – 1 year | 28 | 23.3 |
| 1 – 5 years | 52 | 43.3 |
| 6 – 12 years | 40 | 33.4 |
| **Gender** | | |
| Male | 70 | 58.3 |
| Female | 50 | 41.7 |
| **Residence** | | |
| Urban | 46 | 38.3 |
| Rural | 74 | 61.7 |

**Table 2: Etiological pattern of febrile illness**

| Diagnosis | N | % |
|---|---|---|
| Acute respiratory infections | 32 | 26.7 |
| Acute gastroenteritis | 18 | 15 |
| Dengue fever | 14 | 11.7 |
| Enteric fever | 12 | 10 |
| Malaria | 10 | 8.3 |
| Urinary tract infection | 9 | 7.5 |
| Scrub typhus | 8 | 6.7 |
| Viral fever (undifferentiated) | 11 | 9.1 |
| CNS infections | 6 | 5 |

| Table 3: Laboratory abnormalities among the study children | | |
|---|---|---|
| **Parameter** | **Number** | **%** |
| Anemia (Hb <11 g/dL) | 38 | 31.7 |
| Leukocytosis | 34 | 28.3 |
| Leukopenia | 16 | 13.3 |
| Thrombocytopenia | 22 | 18.3 |
| Elevated CRP | 58 | 48.3 |
| Elevated liver enzymes | 26 | 21.7 |

| Table 4: Clinical outcome among the study children | | |
|---|---|---|
| **Outcome** | **Number** | **%** |
| Recovered and discharged | 110 | 91.7 |
| Required PICU admission | 8 | 6.7 |
| Referred to higher center | 1 | 0.8 |
| Mortality | 1 | 0.8 |

**Discussion:**

The present prospective ward-based pattern study shows that febrile admissions clustered mainly in the 1–5-year age group with a male predominance and higher rural representation, reflecting the well-described vulnerability of preschool children to frequent community exposures, crowding, and delayed care-seeking, particularly in settings where travel distance and access barriers are common [5]. Similar pediatric acute febrile illness (AFI) cohorts have highlighted that fever remains a leading driver of hospitalization and that syndromic overlap between respiratory, gastrointestinal, and vector-borne infections makes early etiologic labeling difficult without structured testing [1]. Importantly, the etiologic mix acute respiratory infections (ARI) leading, followed by acute gastroenteritis (AGE), and then dengue/enteric fever fits the expected hierarchy in many South Asian inpatient settings where respiratory viruses and bacterial pneumonias account for a substantial proportion of severe illness requiring admission [6]. The high contribution of AGE in your cohort is also biologically plausible because toddlers are at peak risk for dehydration and severe diarrhea, and contemporary Indian surveillance continues to document a meaningful burden of rotavirus-associated AGE among hospitalized under-5 children, with clear seasonality peaks in cooler months [7]. At the same time, the presence of a sizeable "acute undifferentiated viral fever" component is consistent with modern AFI literature showing that even with routine panels, a proportion of febrile children remain without a single definitive microbiological diagnosis, underscoring the need for locally adapted diagnostic algorithms and tiered testing based on danger signs, duration, and epidemiological exposure [2]. Therefore, the value of your work is not only descriptive; it strengthens local triage reasoning by indicating which syndromes are most likely at the bedside during January–June and which tests may yield the highest diagnostic return in that window [5].

A notable feature of your results is the prominence of vector-borne and zoonotic infections (dengue, malaria, scrub typhus) contributing over one-fourth of cases, which is epidemiologically important because these illnesses frequently present as non-specific fever early, yet require timely recognition to prevent progression to shock, bleeding, encephalopathy, or multi-organ dysfunction [2]. Dengue, in particular, can masquerade as uncomplicated fever for the first 2–3 days; severity is often determined during the critical phase, so clinical vigilance and simple serial monitoring become central to safe care [8]. Contemporary pediatric dengue data have emphasized the usefulness of routinely available markers especially platelet trends and hepatic transaminases for risk assessment, supporting your observation that thrombocytopenia and liver enzyme elevation clustered with dengue-related admissions [9]. The hepatic involvement spectrum in children is increasingly recognized; a prospective pediatric study demonstrated that aminotransferase derangement is frequent and correlates with severity, and also suggested that lower transaminase cut-offs than traditional thresholds may improve early identification of severe dengue in children [10]. This is clinically relevant because your cohort showed elevated liver enzymes in a meaningful minority, aligning with the concept that "dengue is not only a hematologic disease" but a systemic illness where liver injury can be an early warning feature [9]. Likewise, enteric fever continues to remain a practical differential in prolonged febrile illness in Indian children and contributes to antimicrobial exposure; recent paediatric work has explored whether basic clinical and laboratory parameters can help predict enteric fever earlier when blood culture is unavailable, highlighting the need to balance early empiric therapy with stewardship in endemic settings [11]. Scrub typhus

is another key "treatable" cause of undifferentiated fever in Indian children; prospective observational evidence from tertiary care settings documents variable eschar rates and frequent laboratory abnormalities (including thrombocytopenia and transaminitis), which can mirror dengue, reinforcing the need to keep rickettsial disease in the differential in febrile children with compatible exposure history [3]. Overall, your etiologic pattern supports a pragmatic diagnostic approach in which ARI/AGE remain common, but clinicians must actively screen for dengue/enteric fever/scrub typhus in appropriate seasons and epidemiological contexts to avoid missed opportunities for targeted therapy [2].

From the laboratory and outcome perspective, anemia and inflammatory marker elevation in your cohort are expected in hospitalized AFI, but the key bedside message is how these findings can be used to prioritize risk and allocate resources [1]. Elevated CRP in nearly half of admissions supports a substantial inflammatory burden, yet CRP alone cannot reliably separate bacterial from viral causes; hence, integrated interpretation with clinical syndrome, duration of fever, and local epidemiology remains crucial [5]. Your thrombocytopenia proportion, while not the majority, is clinically high-impact because it concentrates among dengue/malaria and often prompts repeat testing, fluid monitoring, and bleeding surveillance; recent paediatric dengue studies also indicate that admission platelet counts and early trends can contribute to prediction models for dengue with warning signs, complementing the bedside warning sign approach [9]. Similarly, a small but important share of children required PICU admission (6.7%), largely driven by severe dengue, respiratory distress, and meningoencephalitis this pattern is consistent with the broader observation that while most febrile admissions recover, a minority deteriorate rapidly, and early identification of hypoxemia and respiratory compromise is decisive [6]. Pneumonia-related outcomes research has reinforced that mortality risk stratification improves when pulse oximetry and simple clinical parameters are incorporated, supporting your implication that ARI is not only frequent but also a major contributor to severe outcomes [6]. UTI comprised a smaller proportion in your dataset, yet it remains a key "fever without source" diagnosis in younger children; recent prospective work on febrile children evaluated for UTI has explored improved urinary biomarkers beyond leukocyte esterase, illustrating the ongoing diagnostic evolution in this domain [12]. In summary, your high recovery rate with low mortality is reassuring and likely reflects effective inpatient monitoring and standard management, but the PICU subset highlights exactly why pattern studies matter: they identify the syndromes (severe dengue, respiratory distress, CNS infection) in which early warning recognition, rapid escalation, and protocolized care can prevent avoidable deaths [1]. Future iterations of this work could add month-wise trend tables, severity stratification (warning signs/shock/oxygen need), and a focused algorithm for "acute undifferentiated fever" that explicitly incorporates dengue markers, rickettsial testing triggers, and early enteric fever predictors to improve diagnostic yield and antibiotic stewardship in Government Medical College settings [2].

**Conclusion:** The present study demonstrated that infectious etiologies remain the predominant causes of febrile admissions among children, with acute respiratory infections and vector-borne diseases forming the major burden. Preschool children and those from rural areas constituted the majority of cases. Laboratory abnormalities such as anemia, thrombocytopenia, elevated CRP, and liver enzyme derangements were commonly observed and were particularly associated with dengue and enteric fever. Most children recovered with timely management, though a small proportion required intensive care support. Early syndromic evaluation combined with appropriate laboratory investigations is essential for prompt diagnosis, rational therapy, and improved outcomes in paediatric febrile illnesses.

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