

Prospective Study of Pyrexia in Pregnancy

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Abstract

Background: Pyrexia during pregnancy is a common clinical condition that can significantly affect both maternal and fetal outcomes. Across India, tertiary-care data indicate that 6–11% of pregnant women may experience pyrexia during antenatal admission. Early identification and appropriate management are critical to reducing associated complications. This study aimed to evaluate the clinical profile, etiologies, and fetomaternal outcomes in antenatal patients admitted with pyrexia

Materials and Methods: A prospective observational study was conducted over a period of 1 year in a tertiary care hospital. A total of 168 antenatal patients with documented fever were included. Out of these, 120 cases were followed through the postnatal period, while 48 were lost to follow-up. Data were collected regarding clinical presentation, causative factors, laboratory findings, maternal complications, and fetal outcomes.

Results: The admission rate for pyrexia among antenatal patients was 7.4% The majority of patients were from middle and lower-middle socioeconomic backgrounds. The most common causes of pyrexia were urinary tract infections (36%) and respiratory tract infections (33%), followed by malaria (4%), dengue (11%), and acute gastroenteritis (11%). Anemia was the most frequently observed maternal complication. Severe maternal complications were more prevalent in cases of tuberculosis, lower respiratory tract infections, malaria, and dengue. Fetal complications, including preterm birth, low birth weight, neonatal death, abortions were more frequent than maternal complications. Maternal mortality was recorded in 1.1 % of cases of the cause dengue & influenza

Conclusion: Pyrexia in pregnancy is associated with considerable maternal and fetal morbidity. The study highlights the need for prompt diagnosis, effective treatment protocols, and preventive public health

measures. Enhanced antenatal surveillance and infection control strategies can significantly improve outcomes.

Keywords: Pyrexia in pregnancy, maternal morbidity, fetal outcome, urinary tract infection, respiratory tract infection, malaria, dengue, anemia

Introduction

Pyrexia in pregnancy is a significant clinical condition associated with both maternal and fetal morbidity and mortality. Pyrexia in pregnancy is defined as a sustained elevation in body temperature above 38°C, fever during pregnancy may result from a variety of infectious and non-infectious etiologies, including urinary tract infections, malaria, dengue, viral fevers, and systemic inflammatory disorders. The physiological and immunological changes of pregnancy not only alter the disease presentation but also influence the maternal response to infection and its subsequent impact on the fetus.¹

The prevalence of pyrexia among pregnant women varies across regions, depending on the endemicity of infections, healthcare access, and socio-environmental factors. In developing countries, infections such as malaria and urinary tract infections remain the predominant causes of fever in pregnancy, while viral infections such as dengue and influenza are increasingly contributing to the disease burden¹.

Pyrexia, especially in the first trimester, has been associated with teratogenic effects, including neural tube defects and miscarriage, while fever in later trimesters can result in complications such as preterm labor, intrauterine growth restriction, and intrauterine fetal demise^{2,3}. Prompt identification and appropriate management of the underlying cause are therefore essential to minimize adverse outcomes.

Despite its clinical significance, there is limited region-specific data on the incidence, etiology, and outcome of

pyrexia in pregnancy. This prospective study aims to evaluate the clinical profile, causative factors, and fetal-maternal outcomes of pyrexia among pregnant women presenting to a tertiary care hospital, thereby contributing to better evidence-based management protocols.

Aim

To study the effect of pyrexia on maternal and fetal outcomes during pregnancy.

Objectives

1. To assess the variation in the incidence and severity of pyrexia across different socioeconomic and demographic groups.
2. To evaluate the rate of hospital admissions among pregnant women presenting with pyrexia.
3. To determine the magnitude and nature of infections causing pyrexia in pregnancy through laboratory diagnosis.
4. To identify and classify the various etiological factors responsible for pyrexia during pregnancy.
5. To evaluate the influence of pregnancy on the clinical presentation and progression of pyrexia. and influence of pyrexia on maternal and fetal outcome.

Methodology

A prospective observational study was conducted in the Department of Obstetrics and Gynaecology at a tertiary care center, Smt. Kashibai Navale Medical College and General Hospital, over a period of 12 months, from July 2024 to June 2025.

Prior to the commencement of the study, approval was obtained from the Institutional Ethics Committee, and a structured proforma was developed for standardized data collection. Pregnant women attending the antenatal outpatient department (ANC OPD) with complaints of fever and meeting the inclusion criteria were enrolled in the study after obtaining informed consent.

Sample Size: The study included 168 pregnant women who satisfied the inclusion criteria and consented to participate.

Inclusion Criteria

- Pregnant women of any gestational age (first, second, or third trimester)
- Documented fever with a body temperature $\geq 38^{\circ}\text{C}$ (100.4°F)

Exclusion Criteria

- Fever attributed to non-infectious causes (e.g., physical exertion, drug-induced hyperthermia, or environmental heat exposure)
- Immediate postpartum period
- Patients in labor
- Patients unwilling or unable to provide informed consent

Duration of Study: 1 Year (July 2024 – June 2025)

Study Approach and Data Collection

A comprehensive and systematic approach was adopted using three core methods:

1. **Structured Questionnaire** – To gather detailed patient history, symptoms, and relevant sociodemographic information.
2. **Clinical Examination** – Thorough general and obstetric examination to assess maternal condition.

Table 1: Admission rate of patients with pyrexia during pregnancy

Admission	No. of patients
Total no. of indoor patients	2244
Total no. of patients with pyrexia during pregnancy	168 (7.4%)

Table no .1 shows admission rate of patients with pyrexia during pregnancy, total 2244 patients were admitted in antenatal ward during study period. Out of that 168 patients were admitted with pyrexia. So admission rate of pyrexia with pregnancy was 7.4%

Laboratory Investigations – Performed to determine the underlying etiology of fever and guide management. Investigations included complete blood count, urine routine and microscopy, urine culture, blood culture, malarial antigen test, dengue serology, and other relevant diagnostics based on clinical suspicion.

Data Handling and Analysis

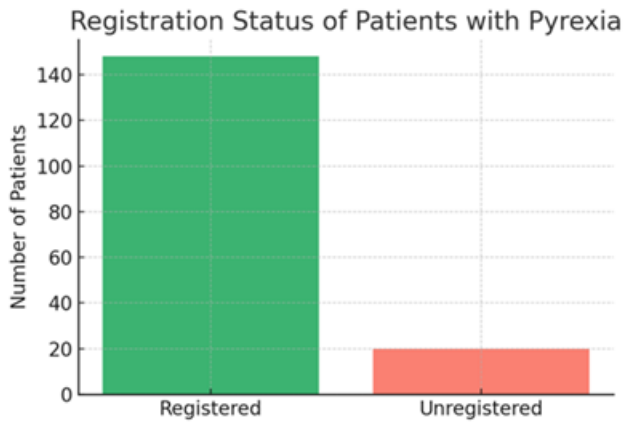
Data was entered into a semi-structured, pre-designed case record form for each participant. Statistical analysis was performed using Microsoft Excel and WordPad, with results expressed in terms of descriptive statistics such as frequencies and percentages.

Observation & Results

This was a prospective observational study conducted to assess the clinical profile and fetomaternal outcomes in pregnant women presenting with pyrexia.

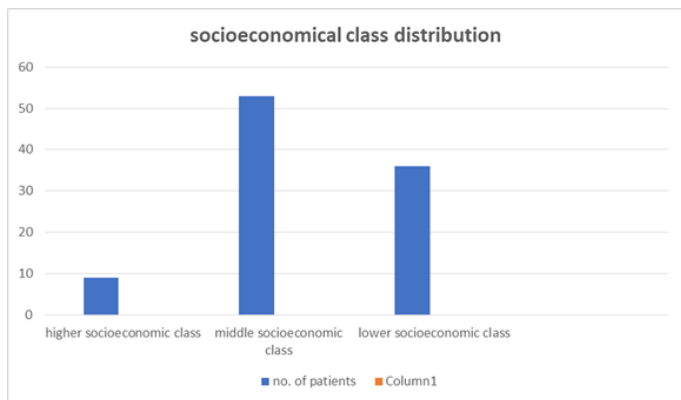
A total of 168 antenatal patients with documented fever were enrolled in the study. Out of these, 48 patients were lost to follow-up due to delivery at external healthcare facilities, and their fetal outcomes could not be assessed. Therefore, 120 patients were included in the final analysis with both antenatal and postnatal data available. Detailed evaluation was conducted regarding the etiology of pyrexia, associated maternal complications, and fetal outcomes.

Figure 1: Registration wise distribution of pyrexia with pregnancy



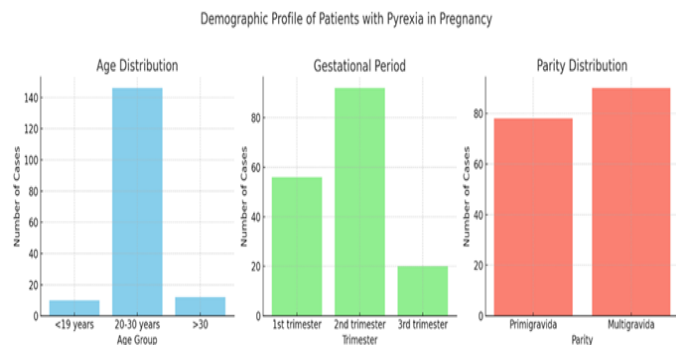
Registration wise distribution of presence of pyrexia with pregnancy According to figure 88% (148 patients) are registered and 12% (20 patients) were unregistered

Figure 2: Socio- economical class wise distribution of pyrexia of pregnancy



Above chart shows class wise distribution of presence of pyrexia with pregnancy showing 53% from middle socio-economical class followed by 36% from lower socioeconomic class higher class 9%

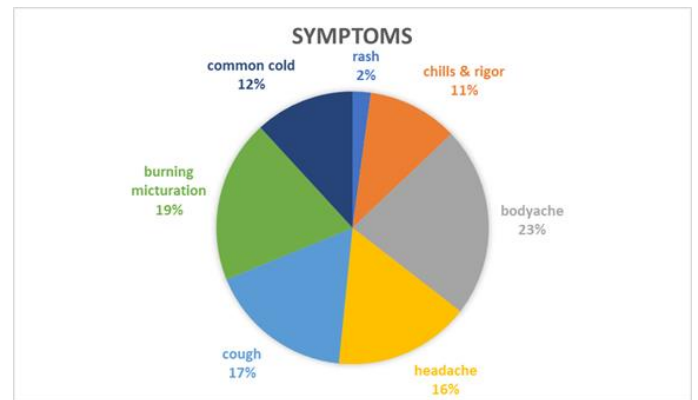
Figure 3: Demographic Profile



By age distribution 146 ANC patients were in the age group of 20-30years which was the most common. >30 years included 12 ANC patients followed by 10 ANC patients in age group <19 years.

Pyrexia in pregnancy was observed more in second trimester with 92 ANC patients and observed more in multigravidas with 90 ANC patients.

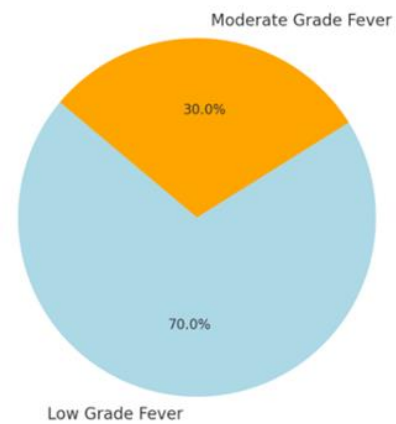
Figure 4: Associated symptoms with pyrexia of pregnancy



This figure shows associated symptoms of pyrexia with pregnancy with (23%) bodyache being most common followed by burning micturition (18%) and headache (16%) which is due to various inflammatory mediators released by body in pyrexia.

Figure 5: Grades of pyrexia

Distribution of Fever Grade in Pyrexia During Pregnancy



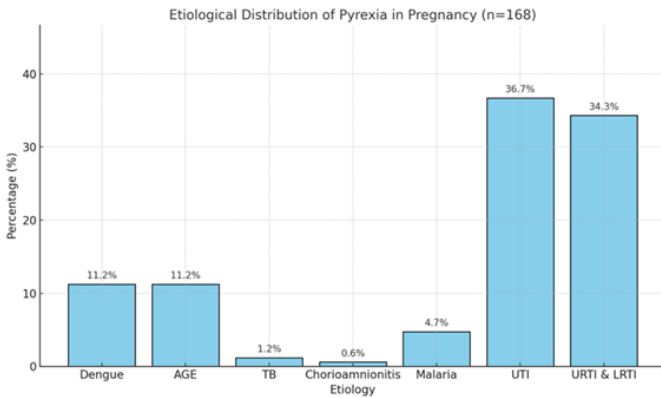
This figure shows low grade fever (70%) followed by moderate grade fever (30%) Most of the patients of low grade fever are of upper respiratory tract infections

(URTI), Tuberculosis, urinary tract infections (UTI) moderate grade fever was seen in influenza

Figure 6: Etiology (n-168)

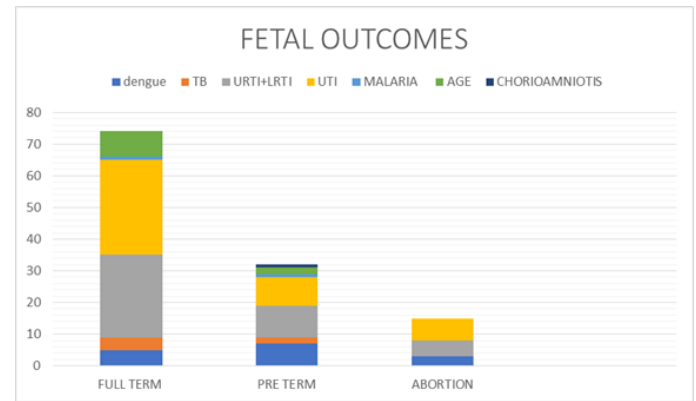
Etiological Distribution of Pyrexia in Pregnancy

The bar graph below shows the percentage distribution of various causes of pyrexia in pregnancy among 168 cases:



- Urinary Tract Infection (UTI) – 36.9%**
 - Most common cause.
 - Reflects the vulnerability of pregnant women to ascending infections due to physiological urinary stasis.
- Upper & Lower Respiratory Tract Infections (URTI & LRTI) –34.52%**
 - Second most frequent cause.
 - Seasonal and environmental exposure likely plays a role.
- Dengue & Acute Gastroenteritis – 11.3% each**
 - Viral fever (like dengue) is a major public health concern.
 - Gastrointestinal infections often result from poor sanitation or food contamination.
- Malaria accounts for 4.76% , tuberculous etiology accounts for 1.19% and chorioamnionitis accounts for 0.6%

Figure 7: Fetal Outcomes (N-120)



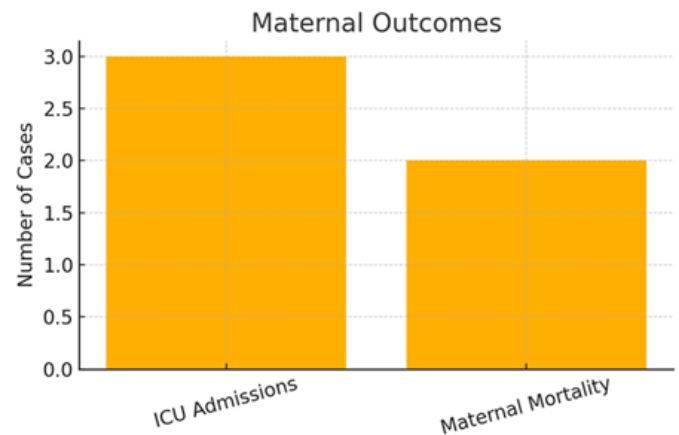
Following figure shows fetal outcomes based on etiology which highlights maximum of full term births followed by preterm births with one neonatal death on day 2 of life due to prematurity associated with patient of dengue hemorrhagic fever.

Maternal Complications Associated

In our study maternal complications encountered were anemia, pneumonia & dengue hemorrhagic fever, out of which cases associated with anemia were 25 (14%), followed by pneumonia 2 cases (1.1%) and lastly dengue hemorrhagic fever 1 case accounting for (0.5%)

Maternal Outcomes

Figure 8:



The following, graph illustrated maternal outcome with 3 cases (2.5%) ICU admissions and 2 cases (1.1%) (of maternal mortality due to dengue hemorrhagic fever and influenza)

Discussion

Pyrexia during pregnancy is a significant concern in obstetric practice due to its potential impact on both maternal and fetal health. The current prospective observational study involving 168 pregnant women admitted with fever highlights the epidemiological profile, clinical presentation, etiological factors, and outcomes associated with pyrexia in pregnancy at a tertiary care center.

The admission rate for pyrexia in pregnancy was 7.4%, This is comparable to other studies conducted in similar settings, such as by Mewada et al. (2020), who reported 1.8% admission rate and a high prevalence of infectious fevers among antenatal inpatients in India¹.

In the present study, 88% of women were registered for antenatal care, which aligns with improved antenatal outreach efforts. However, 12% remained unregistered, reflecting a gap in healthcare access or awareness, especially in lower socioeconomic groups. As observed, 53% of cases were from middle-class backgrounds, and 36% from lower-income strata, consistent with findings by Biswas et al. (2015), who emphasized the role of socioeconomic status in infection risk and health-seeking behavior²

Most patients presented during the second trimester (54%), followed by the first trimester (33%), a finding that diverges from earlier studies which noted higher susceptibility during the third trimester due to physiological immunosuppression. The predominance of primigravida (46%) in findings by Sharma et al. (2020), suggesting increased clinical vigilance in first pregnancies differed from our study with predominance of multigravidas (53.5%)⁴.

Regarding symptoms, body ache (23%), burning micturition (18%), and headache (16%) were the most common, indicating diverse causes including viral fevers,

urinary tract infections (UTIs), and upper respiratory tract infections (URTIs)

UTIs were most common (31.3%), followed by URTIs (25%).in study conducted by Prajapati et al. (2024) which was in resonance with our study with UTI(36%) and URTI (33%)⁶

Laboratory diagnosis confirmed that low-grade fevers (70%) were mainly due to conditions like URTI, TB, and UTIs, while moderate-grade fevers (30%) were typically seen in dengue, malaria, and influenza. These findings are corroborated by recent regional surveillance data which show an increase in viral fevers, especially dengue and COVID-19, during the monsoon months as per data collected by WHO fact sheets 2023⁵

Fetal outcomes were mostly favorable, with a high rate of full-term deliveries. However, adverse outcomes including preterm delivery and 1 neonatal death were linked with chorioamnionitis and dengue fever, respectively pre-term birth (23.7%), low birth weight (40%), neonatal mortality (2.5%). As compared to Prajapati et al. (2024) with preterm delivery (23.7%) and abortion (13.8%)⁶ also compared to Mamatha et al (2023) with preterm delivery 25.8%⁷

Maternal outcomes showed a low rate of ICU admissions (2.5%) and maternal mortality (1.1%).

Fatalities were associated with dengue hemorrhagic fever and SARS-CoV-2 influenza, reiterating the importance of early detection and aggressive management of high-risk infections. Maternal complications such as anemia (14%) and pneumonia (1.1%) further emphasize the systemic impact of infection during pregnancy.

Prevention of influenza during pregnancy plays a vital role in ensuring safe maternal and fetal outcomes. Influenza infection in pregnancy is associated with increased risks of maternal complications such as

pneumonia, preterm labor, and hospitalization, as well as adverse fetal outcomes including low birth weight and stillbirth. A cross-sectional study conducted by Shaikh et al. (2023) in Pune, India, demonstrated that influenza vaccination during pregnancy is both safe and effective, with no significant increase in adverse birth outcomes and a potential reduction in very low birth weight deliveries⁸. These findings are strongly supported by the Centers for Disease Control and Prevention (CDC), which in its 2025 seasonal guidelines, emphasizes routine influenza vaccination during any trimester of pregnancy to protect both the mother and the infant during early life⁹. Incorporating influenza vaccination into routine antenatal care is a preventive measure that can significantly reduce maternal and perinatal morbidity.

Prevention of dengue during pregnancy is a critical public health priority in India, where seasonal outbreaks significantly increase the risk of maternal morbidity, fetal growth restriction, and preterm delivery; integrated strategies such as vector control, antenatal surveillance, and patient education have been emphasized in recent national guidelines and studies (Shaikh H et al., 2023⁽⁸⁾ Duarte G et al., 2024¹⁰ PAHO & Ministry of Health India, 2024).¹¹

The findings of this study highlight the importance of routine antenatal screening, timely referral, and early initiation of supportive and etiological treatment. Fever during pregnancy should always be investigated thoroughly, given its potential to result in poor maternal and fetal outcomes even when clinical symptoms appear mild.

Limitations

- Single-center study with a relatively small sample size.
- Some fetal outcomes were unavailable due to loss to follow-up.

- Seasonal variation in fever etiology was not analyzed.

Conclusion

This prospective observational study underscores that pyrexia in pregnancy is a significant clinical concern, with an admission rate of 7.4% among antenatal patients. The majority of cases occurred in women from middle and lower-middle socioeconomic backgrounds, reflecting the role of social and environmental factors in disease susceptibility.

Urinary tract infections (UTIs) and respiratory tract infections (RTIs) were identified as the most common etiological factors. Malaria, dengue, and acute gastroenteritis constituted the second major group of infectious causes. Anemia was the most frequent complication associated with febrile illness during pregnancy.

Higher rates of specific maternal medical complications were observed in cases of tuberculosis, lower respiratory tract infections, malaria, and dengue. Notably, fetal complications were more prevalent than maternal complications, highlighting the vulnerability of the fetus in the context of maternal infection.

The maternal mortality rate was 1.1%, indicating that although rare, severe outcomes can occur, particularly with delayed diagnosis and inadequate management.

These findings emphasize the importance of early identification, appropriate antimicrobial therapy, and supportive care in managing pyrexia during pregnancy. Strengthening antenatal care services, improving public health infrastructure, and raising awareness about early symptoms of infection are essential strategies to mitigate maternal and fetal morbidity and mortality.

Infectious diseases like influenza and dengue, which are largely preventable, demand focused attention in antenatal care, especially in light of the two maternal

deaths observed in our study due to these infections. Implementing robust preventive strategies—such as routine immunization and effective vector control—can play a pivotal role in lowering maternal mortality and improving perinatal outcomes.

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