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Original Research Article

## Study on pyrexia in pregnancy and labour with special emphasis on fetomaternal outcome

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### ABSTRACT

**Background:** Pyrexia in pregnancy is a very common clinical problem worldwide. Fever during pregnancy causes significant maternal and fetal complications. Fetus being an integral part of the fetomaternal unit and pregnancy involving numerous physiological changes and adaptations, pyrexia during the pregnancy affects both the mother and her foetus adversely. Effect of pyrexia on pregnancy depends on the extent of the rise in the temperature.

**Methods:** This is a prospective observational hospital-based study conducted over a period of 1 year from March 2018 to February 2019 Department of Obstetrics and Gynaecology, Sultania Zanana Hospital, Gandhi Medical College, Bhopal.

**Results:** Total no. of antenatal admission in Hospital during study period were 15354. Total 306 cases of pyrexia in pregnancy were found during the study period. Incidence of pyrexia in pregnancy in our study during study period was found 2%.

**Conclusions:** The present study has demonstrated a need for multidisciplinary approach in cases of pregnancy complicated with pyrexia and also higher risk of maternal morbidity and mortality in un-booked patients. We found that pregnancy outcomes were good in booked cases with regular checkup. Early detection and management of patients with pyrexia can certainly help to improve maternal and fetal outcome. This also shows that multidisciplinary approach should extend throughout antenatal, intra-partum and postpartum period.

**Keywords:** Pyrexia, Pregnancy, Labour, Incidence

### INTRODUCTION

Pyrexia in pregnancy is a very common clinical problem worldwide. Fever during pregnancy causes significant maternal and fetal complications.

Fetus being an integral part of the fetomaternal unit and pregnancy involving numerous physiological changes and adaptations, pyrexia during the pregnancy affects both the mother and her foetus adversely. Effect of pyrexia on pregnancy depends on the extent of the rise in the temperature.

Globally, pyrexia in pregnancy occurs as a common clinical problem and the fetomaternal risk is significantly elevated in pregnancy complicated by infection and fever. A wide range of maternal medical complications as well as fetal and neonatal complications occur due to pyrexia in pregnancy from various etiologies that range from preventable infections like malaria to hepatitis. Maternal complications were very much dependent on the etiology of fever however fetal outcomes overlapped irrespective of the cause of fever. Moreover, adverse fetal outcome was more numerous than maternal complication. Hence it can be hypothesized

that hyperthermia related changes in the uterine environment can affect fetal well-being.<sup>1</sup>

Many cases of pyrexia in pregnancy have atypical and uncommon presentations which may be problematic for clinician in giving appropriate diagnosis and specific treatment. pyrexia from various etiology that ranges from preventable infection like malaria, dengue, typhoid, hepatitis results in adverse fetomaternal outcome. Therefore, standard methods of infection control in homes, communities and health care settings should be emphasised.<sup>2</sup>

Therefore, some febrile diseases may take a more severe course in pregnancy leading to transplacental transmission of infectious agents and fetal jeopardy. Further, intrapartum fever in absence of infection has also been found to be associated with increased risk of developing neonatal hypoxic encephalopathy and unexplained neonatal seizures.<sup>3,4</sup>

Febrile illness in pregnancy may also occur due to infection. Pregnant women with febrile illness usually present with high temperature, sweating, shivering, headache, muscle ache, dehydration and fatigue.<sup>5</sup>

Maternal immune function is usually decreased in normal pregnancy and many of the potent antibiotics should be used with caution in pregnant women due to the risk of teratogenicity.

It has also been suggested that a maternal febrile episode can predispose to embryonic death, abortion, growth retardation, and defects of development and these defects might be caused by metabolic changes in the mother due to infections and fever, and not due to the associated elevation of temperature.<sup>6</sup>

### ***Aims and objectives***

Aim and objectives were to study incidence of pyrexia in pregnancy during the study period, to evaluate different causes of pyrexia in pregnancy and labor and to study effect of pyrexia in pregnancy on maternal and fetal outcome.

### **METHODS**

This study was conducted in the department of obstetrics This is a prospective observational hospital-based study conducted over a period of 1 year from march 2018 to February 2019 Department of Obstetrics and Gynaecology, Sultania Zanana Hospital, Gandhi Medical College, Bhopal.

### ***Inclusion criteria***

All cases with pyrexia with pregnancy and labour admitted in Sultania Zanana Hospital Gandhi medical

College Bhopal during study period were included in the study.

### ***Exclusion criteria***

Include the fever due to septic abortions, blood transfusion reactions, diabetes mellitus, and cardiovascular diseases were excluded.

All relevant investigation pertaining to fever was done. All patients admitted with pyrexia in pregnancy and labour were followed till delivery for their materno-fetal outcome.

The main parameters of assessment include: incidence of fever in pregnancy, causes of fever, effects of episodes of fever on maternal and fetal outcomes, effect of specific infection on maternal and fetal outcomes and impact of fever on antepartum, intrapartum and postpartum phases.

Maternal complications in terms of postpartum hemorrhage (PPH), pneumonia, acute respiratory distress syndrome (ARDS), jaundice, septicaemia, post-operative infection, and other complications of specific fever, maternal death was studied.

At the time of delivery birth weight of baby, gestational age at birth was studied. And the fetal outcome studied in terms of IUGR, pre-term, low birth weight, intrauterine fetal death (IUFD), refer to neonatal intensive care unit (NICU), neonatal and perinatal death. Collected data were entered in Microsoft excel spreadsheet and all the collected data were tabulated and analysed. Etiologies of pyrexia in pregnancy and various complications of maternal fever is analysed in form of proportions and percentages.

### **RESULTS**

Details of the present study and observations are as follows:

There was a total of 110 babies in the study including 3 sets of twins. There were 46 (41.8%) babies with IUGR. Eleven major adverse outcomes were noted in the study- 2 stillbirths, 6 babies required immediate respiratory support and three babies had respiratory distress subsequently.

Of the 6 babies who required immediate resuscitation, one expired in immediate neonatal period due to birth asphyxia (intrapartum fetal distress at 32 weeks in woman with severe preeclampsia), one expired after 10 days due to metabolic complications and the rest four survived.

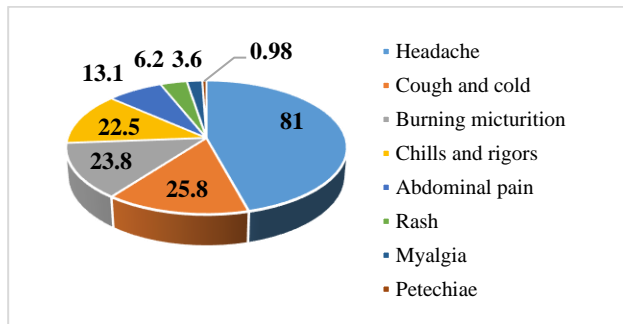
Total no. of antenatal admission in Sultania Zanana Hospital during study period were 15354.

Total 306 cases of pyrexia in pregnancy were found during the study period. Incidence of pyrexia in pregnancy in our study during study period was found 2% (Table 1).

**Table 1: Incidence of pyrexia in pregnancy.**

Total no of antenatal admission during the study period	Total cases of pyrexia in pregnancy among antenatal admission	Incidence of pyrexia in pregnancy
15354	306	2%

All the admitted pregnant women with fever  $\geq 100.4^{\circ}\text{F}$  once or  $99.5^{\circ}\text{F}$  on two occasion two hours apart were enrolled in the study after taking consent.



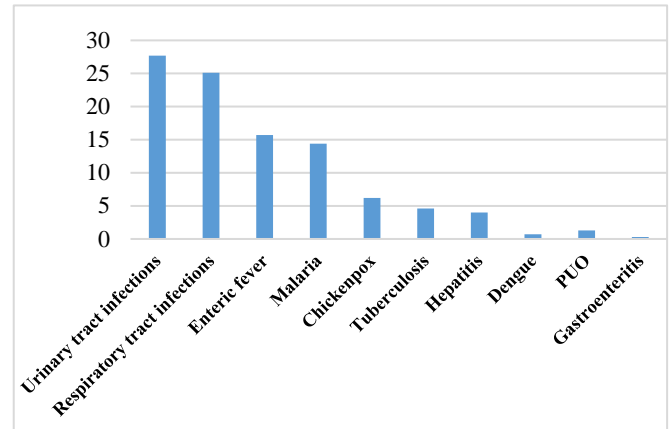
**Figure 1: Distribution of patients according to symptomatology.**

Data was collected from consenting females with written consents in their own language with the help of preformed tests and clinical questionnaire which contain age, demographics details, education status, parity, gestational age at the time of first episode of fever, duration of fever, and clinical pattern of fever and its variations by interview technique and their proforma was filled and then we follow the patient for their maternal and fetal outcome was coded appropriately and data collected was compile using MS excel and is expressed in form of percentage and proportion. All patient studied in detail with reference to pyrexia in pregnancy and labour, intervention required, mode of delivery, and fetomaternal outcome (Figure 1).

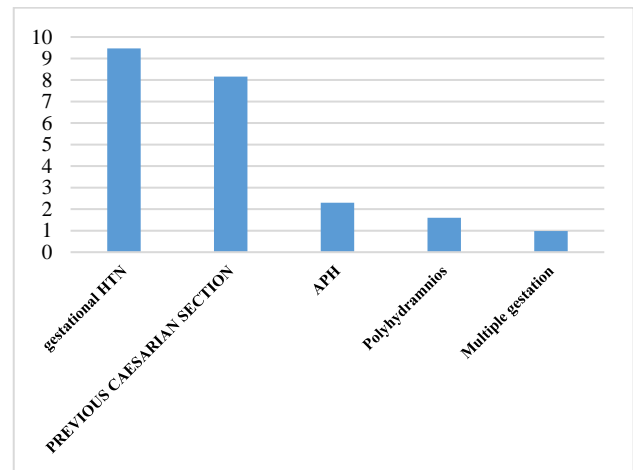
Headache (81%) was the most common symptoms followed by burning micturition in 25.8%, cough and cold in 23.8%, chills and rigors in 22.5% and abdominal pain in 40 (13.1%).

This (Figure 2) shows that most common cause of pyrexia in pregnancy is urinary tract infections (UTI) 85 (27.7%), respiratory tract infections 77 (25.1%), enteric fever 48 (15.7%) and malaria 44 (14.4%), chicken pox 19 (6.2%), tuberculosis 14 (4.6%), hepatitis 12 (4%), dengue in 2 (0.7) and pyrexia of unknown origin (PUO) in 4

(1.3%). This shows that anatomical and physiological changes during pregnancy predisposes women to UTI.

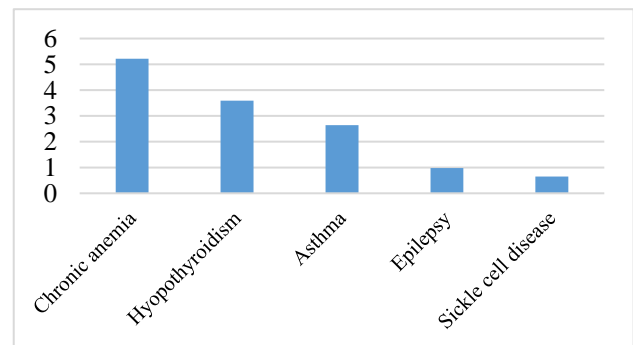


**Figure 2: Distribution of patients according to type of fever.**



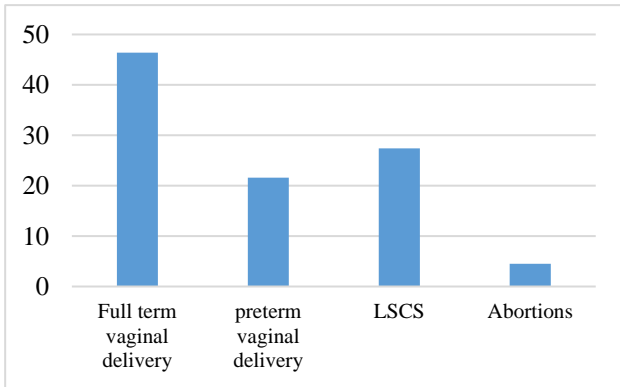
**Figure 3: Associated obstetrics comorbidities.**

This Figure 3 shows among 306 cases, 67 (21.89%) cases have obstetrics co-morbidity. Out of which Gestational hypertension 29 (9.47%) was most commonly seen. Previous caesarean section was 22 (7.18%), APH in 7 (2.3%), polyhydramnios in 4 (1.63%) and multiple gestation was 4 (0.3%).



**Figure 4: Associated medical comorbidities.**

This Figure 4 shows that anaemia 16 (5.22%) and hypothyroidism 11 (3.59%) were most common medical co-morbidity were seen.

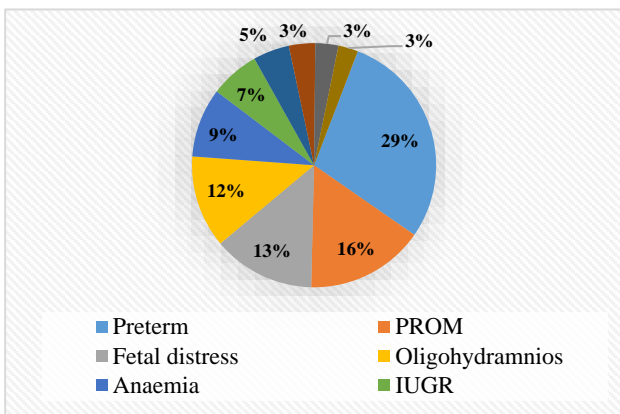


**Figure 5: Distribution of patients according to outcome of pregnancy.**

This Figure 5 shows that total vaginal delivery was 208 out of which 142 (46.4%) were full term vaginal delivery and 66 (21.6%) were preterm vaginal delivery. Caesarian section was 84 (27.4%). Abortions were in 14 (4.6%) cases.

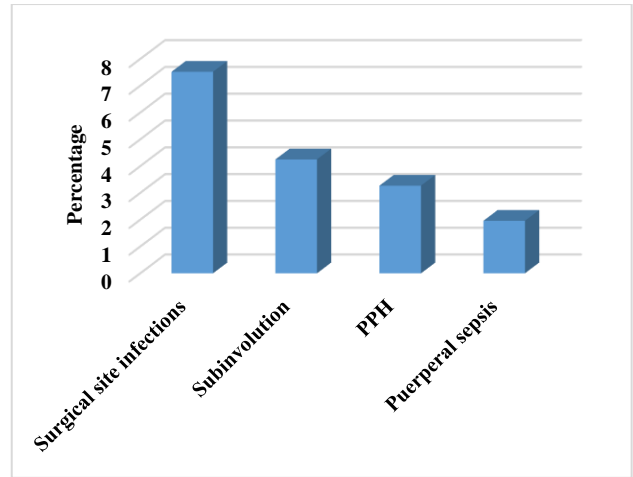
**Distribution according to antepartum complications**

This Figure 6 shows that pre-term 66 (21.56 %) and PROM 36 (11.76%) and fetal distress 31 (10.13%), Oligo hydramnios 28 (9.15%), anaemia in 21 (6.86%) was the most common antepartum complication seen in patients with pyrexia with pregnancy. Other complication includes IUGR 15 (4.9%) and hypoglycaemia 11 (3.59%) and scar tenderness in 8 (2.61%) cases.



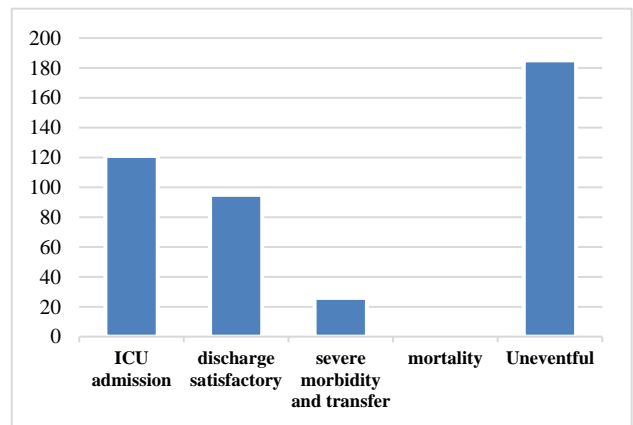
**Figure 6: Distribution according to antepartum complications.**

This Figure 7 shows that most common postpartum complication was surgical site infection 23 (7.52%) and subinvolution 13 (4.25%) and PPH 10 (3.27%). Puerperal sepsis seen in 06 (1.96%) cases.

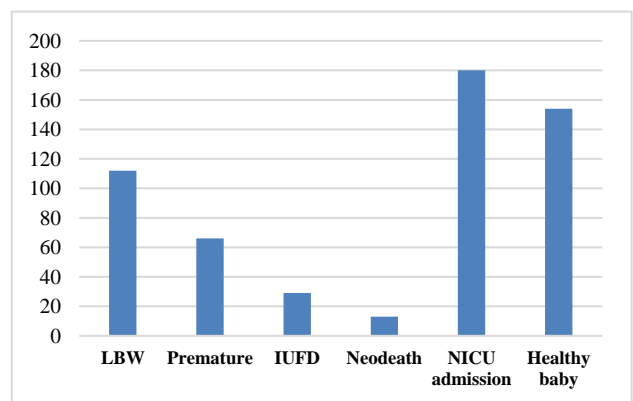


**Figure 7: Distribution of patients according to postpartum complications.**

This Figure 8 shows that ICU admission was in 121 cases (39.54%), out of which severe morbidity and transfer to medicine department 26 (21.48%), 95 (78.51%) cases discharge in satisfactory condition and there was a mortality in 1 (0.82%) case. Mortality was due to complicated malaria.



**Figure 8: Distribution of maternal outcome.**



**Figure 9: Distribution according to fetal outcome.**

This Figure 9 shows low birth weight 112 (36.6%) most common fetal complications seen in pyrexia with pregnancy. Premature delivery was 66 (21.6%). NICU admission 180 (58.82%) and 29 (9.5%) were stillbirth and 13 (4.2%) were neo-death. This indicate that pyrexia in pregnancy has impact on fetal outcome depending on severity of febrile illness.

## DISCUSSION

The study was aimed to evaluate incidence of pyrexia in pregnancy, different causes of pyrexia in pregnancy and labor and effect on fetomaternal outcome.

During our study, 306 patients of pyrexia in pregnancy was admitted over the period of 1 year fulfilling the inclusion criteria.

### *Incidence of pyrexia in pregnancy*

In our study incidence of pyrexia in pregnancy was 2%. This correlate with study done by Shrestha N et al (3.15%).<sup>7</sup> In contrast to my study higher incidence (6%) was seen in study by MPoovathi et al.<sup>8</sup> This is probably due to our centre being tertiary care centre located in centre of city so all type of low risk as well as high risk cases admitted here and admission rate is quite high (Table 1).

### *Distribution according to symptomatology of patients*

In our study headache 81% was the most common symptom seen followed by burning micturition 25.8%, cough and cold in 23.8% and chills and rigors in 22.5% and abdominal pain in 13.1% cases (Figure 1).

In another study by Chansamouth et al cough seen in 78 (31%), dysuria 34 (14%), diarrhea 27 (11%), bleeding 14 (6%), rash in 14(6%) and abdominal tenderness in 13(5%) cases.<sup>7</sup>

In another study by Gehlot et al myalgia in 21 (84%), headache 17 (68%), skin rash 6 (24%), Petechiae 3 (12%) and Gum bleeding in 1 (4%) cases.<sup>9</sup>

### *Type of fever*

In our study most common cause of pyrexia in pregnancy is urinary tract infection 85(27.7%) followed by respiratory tract infection 77 (25.1%) and Enteric Fever 48 (15.7%) (Figure 2).

In study by Biswas et al most common cause of pyrexia in pregnancy was malaria 34.97% followed by UTI 21.31% and RTI 16.39%.<sup>1</sup> Similarly, Nath studies that most common cause of pyrexia in pregnancy was malaria 21.6%, UTI 20%, dengue 17.2%. In our study maximum cases of UTI were found which shows that anatomical and physiological changes during pregnancy predisposes pregnant women to urinary tract infection.<sup>2</sup>

### *Associated obstetric and medical co-morbidities*

In our study among obstetric co-morbidities, gestational HTN 29 (9.47%) was most commonly seen followed by Previous Caesarian section 22 (7.18%) and APH 7 (2.3%). Anemia 16 (5.22%) and hypothyroidism 11(3.59%) were most common medical co-morbidities (Figure 3 and 4).

In contrast to my study, Vibha et al shows comparatively lower previous caesarian section 3.<sup>10</sup>

In study by Poovathi et al higher incidence of gestational HTN 19 cases were seen.<sup>7</sup>

### *Outcome of delivery*

In our study vaginal delivery were 208 out of which 142 (46.4%) were full term vaginal delivery and 66 (21.6%) were preterm vaginal delivery and LSCS was 84 (27.4%) and abortions 14 (4.6%) (Figure 5).

In study by Vibha et al comparatively lower proportion of caesarean section were seen (13%).<sup>10</sup>

In our study incidence of abortion was 4.3%, as compared to study conducted by More VS, Poovathi M et al where incidence of abortion was 14% and 13% respectively.<sup>8,10</sup>

### *Antepartum complications*

In our study preterm, 66 (21.56%), and PROM 36 (11.76%), fetal distress 31 (10.13%) and oligo hydramnios 28 (9.15%) was the most common antepartum complication seen in patients with pyrexia in pregnancy. Anemia 21 (6.86%) and IUGR seen in 15(4.9%) cases. In similar study Poovathi M et al preterm 28% was the most common complication followed by fetal distress 21% and oligohydramnios in 19%. And anemia was in 41 cases.<sup>8</sup>

This indicates that pyrexia in pregnancy causes preterm labor, IUGR, PROM and oligohydramnios hence it can be hypothesized that hyperthermia related changes in the uterine cavity affect the fetal wellbeing (Figure 6).

### *Maternal outcome*

In our study there were 95 (31.04%) ICU admission out of which 26 (27.36%) cases transferred to medicine department due to severe morbidity and there is one mortality 1.05% seen due to complicated malaria and 211 (68.96%) cases having uneventful outcome (Figure 8).

Maternal mortality in our study was 1 (1.05%), referred from PHC. Therefore, early referral and prompt critical care and management prevent in maternal death.

In study by Poovathi et al maternal mortality was 25% most of that were associated with DIC, IUD and one or two combined risk factors.<sup>8</sup>

### **Fetal outcome**

In our study low birth weight was most common 112 (36.6%) fetal complication, pre term was 66 (21.6%) and still birth seen in 29 (9.5%) cases (Figure 9).

Similarly, in study by Nath et al low birth weight 52.6% was the most common fetal complication seen while in study by Poovathi et al preterm and low birth weight 28% was most common fetal outcome.<sup>7,9</sup>

This signify that pyrexia in pregnancy has impact on fetal outcome depending on severity of febrile illness.

### **CONCLUSION**

The present study was a hospital based prospective observational Conducted from march 2018 to February 2019 in Department of Obstetrics and Gynecology, Sultania Zanana Hospital, Gandhi Medical College, Bhopal has demonstrated a need for multidisciplinary approach in cases of pregnancy complicated with pyrexia and also higher risk of maternal morbidity and mortality in un-booked patients. We found that pregnancy outcomes were good in booked cases with regular checkup. Early detection and management of patients with pyrexia can certainly help to improve maternal and fetal outcome. Pyrexia in pregnancy, a common clinical entity, results in wide range of maternal medical complications as well as fetal and neonatal complications. Duration of fever is linearly associated with poor outcomes. Preterm, IUGR, PROM, meconium stained amniotic fluid and abortions were most commonly seen. Different causes of fever had different impact on maternal and fetal outcome. Hence it is suggested that fever during pregnancy needs to be promptly investigated and treated to have a better outcome. One maternal death seen in our study were un-booked and late referred patients. This indicates that early referral from primary health centre and preventive measures help in preventing maternal mortality and neonatal mortality. Our study shows that despite having lack of awareness regarding complications of fever in pregnancy, awareness regarding family planning and birth spacing is low. Multigravida women were also seen in our study. This indicates need of awareness regarding family planning and birth spacing to further reduce maternal morbidity and mortality. Pyrexia from various etiologies that ranges from

preventable infections results in adverse fetomaternal outcome. Therefore, standards method of infection control in home, communities, and healthcare settings, improving health education and awareness will go a long way in preventing such adverse fetomaternal outcomes.

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*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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