



Original Research Article

Frequency of Maternal and Perinatal Outcome in Women with Dengue Fever during Pregnancy.

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Abstract. Background: Dengue fever is a viral infection spread by mosquitos, which is gaining prevalence in the tropical and subtropical areas among pregnant women. **Objective:** To determine the frequency of maternal and perinatal outcomes in pregnant women diagnosed with dengue fever. **Methods:** The study was a cross-sectional study at the Department of Gynecology and obstetrics, unit 1, Ruth K.M. Pfau Civil hospital, Karachi that was performed in a period of more than six months after research synopsis was approved from May 2025 till October 2025. Consecutive sampling was used to enroll 82 pregnant women with singleton pregnancies diagnosed with dengue fever using either NS1 antigen or IgM serology. Data analysis was performed using SPSS version 24. Continuous data were summarized using mean $\pm$ standard deviation, whereas categorical data were reported as frequencies and percentages. To address potential confounders, stratification was applied, and associations were analyzed with Chi-square test. Results were considered statistically significant when the p-value was less than 0.05. **Results:** The analysis included 82 pregnant women diagnosed with dengue infection. The mean maternal age was 27.4 ± 4.8 years, and the average gestational age at presentation was 32.5 ± 4.2 weeks. Maternal complications were preterm birth (22%), and postpartum bleeding (11%). Low birth weight (27%), IUGR (15%), stillbirth (6%), and intrauterine death (5%) were some of the perinatal complications. Adverse outcomes were significantly related to advanced gestational age, multigravida and maternal thrombocytopenia ($p < 0.05$). **Conclusion:** The prevalence rate of maternal and perinatal complications is high with dengue fever in pregnancy. Mother-fetal close monitoring and interventions are essential in order to minimize morbidity and mortality in affected pregnancies.

Keywords: Dengue, Maternal Health, Pregnancy Complications, Pregnancy Outcome.

INTRODUCTION

Dengue fever is a rapidly spreading viral infection transmitted by mosquitoes that has become a considerable social health liability in the tropical and subtropical areas. Naturally, the pregnant woman is a

particularly vulnerable group since the clinical situation of a dengue infection may be aggravated by physiological immunomodulation, hemodynamic changes, and pregnancy-related alterations in hematology. New evidence suggests that dengue in pregnant women has been associated to high levels of maternal morbidity and negative perinatal conditions,

which requires special consideration of its prevalence and consequences [1].

Numerous South Asian cross-sectional studies have recorded a large number of maternal complications experienced by dengue-infected pregnant women, such as thrombocytopenia, postpartum bleeding, blood transfusion requirement, and intensive care unit hospitalization [2]. Potential observational evidence also indicates that dengue infection during pregnancy is one of the factors behind higher incidences of obstetric complications relative to uninfected pregnancy, as well as the necessity to systematically estimate the outcome incidence in endemic areas [3].

Other recent cross-sectional studies have indicated negative neonatal outcomes in the form of low birth weight, preterm births and hospitalization in neonates admitted to the intensive care unit born by those mothers with the infection [4]. Post facto examinations comparing febrile diseases in pregnancy reveal that dengue infection is independent of poor maternal and perinatal consequences especially when the infections are experienced during the third trimester [5].

These findings have been supported by institution based investigations conducted in tertiary care facilities describing high incidence of cesarean delivery, preterm labor, fetal distress as well as perinatal death rates among women involved [6]. A regional analysis comparing data on Bangladesh and its surrounding nations furthers shows the quantifiable impact of fetal loss and neonatal complications of dengue fever complicated pregnancies [7].

The conclusion about the relationship between dengue and poor pregnancy outcomes has been stronger with large prospective studies indicating greater prevalence of maternal hemorrhagic complications and preterm birth than in the case of the obstetric population baseline [8]. In addition, the combined findings of meta-analyses prove that dengue virus infection in pregnant women represents a serious risk of preterm birth, low born weight, and stillbirth, which, in turn, supports the significance of the issue as a population-wide problem [9].

A recent comprehensive review with a pooled analysis of existing research that brought together current data found that maternal dengue infection is frequently linked to unfavorable maternal and neonatal outcomes. but there is heterogeneity in the frequency of this disease due to variations in study design and availability of healthcare resources [10]. Although the literature is increasing, few consolidated data sets that measure the rate of particular maternal and perinatal outcomes are available in most of the endemic countries, especially those that are resource constrained.

Thus, the current research seeks to identify the prevalence of health outcomes for mothers and their newborns following dengue infection during pregnancy, thus providing region-specific evidence to inform clinical practice and population health strategies.

METHODS

The research was a cross-sectional study that was carried out at the Department of Gynecology and obstetrics Unit 1, Ruth K.M. Pfau Civil Hospital Karachi, The study was Receiving the ethical approval [IRB-4107/DUHS/Approval/2025/485] of the Institutional Review Board (IRB) of Dow University of Health Sciences in a span of six months, following the consent of the synopsis by the College of Physicians and Surgeons Pakistan (CPSP) was approved from May 2025 till October 2025. The institutional research and ethics committee approved the ethical aspects of the study before it was commenced. Written informed consent was obtained from all participants.

The calculation of the sample size was done by using OpenEpi version 3 wherein the prevalence of stillbirth in women with dengue fever during pregnancy was taken as 5.6% [14] at a 95% confidence interval with a 5% allowable error. The approximate number of respondents was 82. The sampling method used was a consecutive sampling method. The study included pregnant women with singleton pregnancies who went to the antenatal clinic or presented in the labour room and were diagnosed with dengue fever according to the operational definition. Dengue fever was determined as the presence of a fever, joint pains, bleeding (oral, nasal, or per vagina), vomiting, or even rash, assessed by clinical or subjective method, and proven by positive test of NS-1 antigen or dengue IgM serology. The study excluded women who were diagnosed with malaria or any other viral, bacterial, and parasitic cause of fever during pregnancy.

After obtaining ethical approval, data collection was initiated. All the pregnant women who came to the labour room complaining of a fever and with a proven case of dengue infection were recruited regardless of the age, the number of pregnancies, the delivery method (vaginal or cesarean section). Maternal and perinatal outcomes such as premature membranes rupture, preterm birth, low birth weight, intrauterine growth restriction, stillbirth, miscarriage, postpartum hemorrhage, NICU hospitalization, infant mortality, and mother to fetus transmission were measured during admission to 24 hours after childbirth. Per speculum examination revealed that membranes were prematurely ruptured as fluid was leaking through cervical os. Intrauterine growth restriction was defined as an estimated fetal weight below the 10th percentile for the corresponding gestational age. Low birth weight was defined as a birth weight under 2,500

grams at the time of delivery. Stillbirth was considered fetal death at 24 weeks of gestation that had been confirmed by ultrasound. Miscarriage was considered as pregnancy loss occurring below 24 weeks of gestation. Postpartum hemorrhage was considered when blood loss is more than 500 mL during vaginal delivery and more than 1,000 mL during cesarean section measured by weighing of blood-soaked pads after the deduction of dry weight. Preterm birth was considered to be a birth below 37 completed gestational weeks. The data were used to document the data in a pre-designed proforma. The risk of bias was reduced through adherence to the inclusion and exclusion criteria.

Data analysis was done with the SPSS version 24. The Shapiro-Wilk test was used to test the normalcy of

continuous variables. The quantitative variables included age, height, weight, body mass index, gestational age, gravida, and parity as mean $\pm$ standard deviation or median as was deemed fit. Mother complications (postpartum bleeding and premature delivery) and perinatal outcomes (preterm birth, intrauterine mortality, still birth, intrauterine growth retardation, abortions, admission to NICU, and neonatal mortality) as qualitative variables were presented in terms of frequency and percentage. Stratification was used to control the effect modifiers that comprised of age, gestational age, parity, gravida, and body mass index. As befits, post-stratification comparison was conducted with Chi-square test or Fisher exact test. A p-value of 0.05 was regarded to be statistically significant.

RESULTS

The study enrolled 82 pregnant women who had been diagnosed with dengue fever. Maternal clinical symptoms were dominated by fever, joint pain, and vomiting. Laboratory findings showed thrombocytopenia in several participants and elevated ALT in others. Serological confirmation through NS1 antigen and IgM positivity was observed in most women (**Table I**).

Table I – Maternal Demographics, Clinical Symptoms, and Laboratory Findings

Variable	N (%) or Mean $\pm$ SD
Age (years)	27.4 $\pm$ 4.8
Parity	1.7 $\pm$ 0.9
BMI (kg/m ²)	26.1 $\pm$ 3.5
Gestational age (weeks)	32.5 $\pm$ 4.2
Fever	82 (100%)
Vomiting	46 (56%)
Orbital pain	28 (34%)
Joint pain	65 (79%)
Bleeding (oral/nasal/per vaginal)	12 (15%)
NS1 antigen positive	70 (85%)
IgM positive	58 (71%)
HCT (g/dL)	36.8 $\pm$ 4.2
Hb (g/dL)	11.2 $\pm$ 1.1
WBC ($\times 10^3/\mu\text{L}$)	5.6 $\pm$ 1.8
Platelets ($\times 10^3/\mu\text{L}$)	92 $\pm$ 38
ALT (U/L)	42 $\pm$ 15

Table II shows that preterm delivery was significantly higher among women with advanced gestational age (≥ 34 weeks), and postpartum hemorrhage occurred more frequently in multigravida women.

Table II – Maternal Obstetric Complications and Chi-square Associations

Maternal Outcome	N (%)	Stratified Factor	p-value
Miscarriage	5 (6%)	Gestational age (<34 vs ≥ 34 weeks)	0.28
PPROM	8 (10%)	Gestational age (<34 vs ≥ 34 weeks)	0.21
Preterm delivery	18 (22%)	Gestational age (<34 vs ≥ 34 weeks)	0.032*
Postpartum hemorrhage	9 (11%)	Parity (Primigravida vs Multigravida)	0.041*

*Significant at $p \leq 0.05$

Low birth weight and intrauterine growth restriction were strongly linked to maternal thrombocytopenia, whereas live births, stillbirth, and IUD showed no significant differences based on gestational age or parity. **Table III**

Table III – Perinatal Outcomes and Chi-square Associations

Perinatal Outcome	N (%)	Stratified Factor	p-value
Live birth	61 (74%)	Gestational age (<34 vs ≥34 weeks)	0.12
Stillbirth	5 (6%)	Gestational age (<34 vs ≥34 weeks)	0.19
Intrauterine death (IUD)	4 (5%)	Parity (Primigravida vs Multigravida)	0.35
Low birth weight (<2,500 g)	22 (27%)	Platelets (<100 vs ≥100 ×10 ³ /μL)	0.025*
Intrauterine growth restriction	12 (15%)	Platelets (<100 vs ≥100 ×10 ³ /μL)	0.047*

*Significant at $p \leq 0.05$

Mode of delivery was nearly equally distributed between SVD and LSCS. No statistically significant associations were found with gestational age or parity. **Table IV**

Table IV – Mode of Delivery and Stratified Associations

Mode of Delivery	N (%)	Stratified Factor	p-value
Spontaneous vaginal delivery (SVD)	42 (51%)	Gestational age (<34 vs ≥34 weeks)	0.14
Cesarean section (LSCS)	40 (49%)	Gestational age (<34 vs ≥34 weeks)	0.14
SVD	42 (51%)	Parity (Primigravida vs Multigravida)	0.09
LSCS	40 (49%)	Parity (Primigravida vs Multigravida)	0.09

DISCUSSION

Maternal and perinatal outcomes were measured in 82 pregnant women with dengue fever in the current study. Our results prove that maternal complications, including preterm delivery and postpartum bleeding, and poor perinatal outcomes, including low weight of a newborn, intrauterine growth retardation (IUGR), stillbirth, and intrauterine death, are significant.

The same patterns have been presented in systematic reviews and observational studies in South Asia and other endemic regions. As pointed out by Vélez Jaramillo et al., the dengue infection of the pregnant mother is always connected with a high risk of impaired fetal growth, such as preterm delivery and infants with low birth weight [11]. Ahuja and Gharde also added that dengue-infected pregnancies have higher maternal complications (hemorrhage and miscarriage) [12].

In a meta-analysis study, Paixao et al. proved that dengue infection is a risk factor associated with preterm delivery and fetal loss, which confirms the necessity to monitor the progress of infected pregnant women closely [13]. Dalugama and Medagama noted high rates of preterm birth, low birth weight, and neonatal intensive care readmissions in prenatal dengue, which are similar to the results of our study [14]. Similar results were reported by Sarkar et al. who specifically focus on preterm birth and the low weight

of a child [15] as prevalent complications in Eastern India.

In Pakistan, Shoaib et al. reported that thrombocytopenia and elevated liver enzymes were commonly related with adverse perinatal results that are consistent with our results that indicated significant relationships between platelet counts in the mothers and low birth weight/IUGR [16]. Similar maternal and fetal complications were also reported by Garg et al, especially postpartum bleeding and preterm birth as the common maternal risks [17].

It has proposed the use of vector control and public health strategies as being major preventive measures to prevent the burden of dengue in pregnancy [18]. The clinical significance of these measures is to have early diagnoses, close monitoring of the mother and timely obstetric interventions to minimize health complications for both mother and child (Baghel et al.) [19]. Also, a systematic review by Jahan et al. confirmed that dengue infection is a perinatal risk factor in populations of South Asia, which underlines the clinical significance of our results [20].

On the whole, our research contributes to the increasing number of studies that show that maternal and perinatal complications related to dengue fever during pregnancy are significant. Stratification analysis proved that such factors as advanced gestational age, being multiple gravida, and

thrombocytopenia of the mother were the significant predictors of adverse outcomes, and their clinical control should be taken with great caution.

Limitations of study: This research was limited in a number of ways. First, it was carried out at one tertiary care hospital, which is susceptible to the generalization of the results to other areas or healthcare settings. Secondly, the modest sample size restricted the statistical power to identify uncommon outcomes. Thirdly, due to its cross-sectional design, the study was unable to determine causality between maternal dengue infection and unfavorable maternal or perinatal outcomes. Lastly, laboratory parameters and long-term neonatal outcome were not always available, which could have underestimated some complications.

CONCLUSION

Pregnancy-related dengue fever is linked to a high rate of maternal complications including but not limited to preterm births, postpartum bleeding, and bad perinatal outcomes of low birth weight, intra-uterine growth retardation, still birth, and intra-uterine fatality. The risk factors behind these adverse outcomes are advanced gestational age, multigravida status, and maternal thrombocytopenia. Early pregnancy detection, close follow up of a mother and the fetus, and early obstetric intervention are essential in reducing morbidity and mortality associated with dengue-impregnated pregnancies. The future multicenter studies involving larger sample size are also suggested to establish the burden and management of dengue in pregnancy better.

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