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IMPACT OF PARASITIC INFECTIONS ON PREGNANT WOMEN AND PERINATAL OUTCOMES

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Abstract: Parasitic infections are a major cause of maternal and perinatal morbidity, particularly in low- and middle-income countries. Pregnancy-related immunosuppression increases susceptibility to infections such as malaria, toxoplasmosis, and helminthic infestations. This retrospective study analyzed 60 pregnant women diagnosed with parasitic infections between 2018 and 2024, assessing maternal complications and perinatal outcomes. The most common infection was malaria, followed by toxoplasmosis and helminthic infections. Major maternal complications included anemia, preterm labor, and severe infection, while perinatal outcomes included low birth weight, intrauterine growth restriction, and neonatal death. Delayed diagnosis and inadequate treatment were identified as key risk factors for poor outcomes. Early screening, timely intervention, and appropriate preventive measures are essential to reduce adverse maternal and neonatal outcomes associated with parasitic infections.

Keywords: parasitic infections, pregnancy, maternal complications, perinatal outcomes, malaria, toxoplasmosis, helminths, neonatal morbidity

Introduction

Parasitic infections represent a significant public health problem and are associated with high maternal and perinatal morbidity in many regions of the world. Pregnancy creates a state of physiological immunosuppression, which increases susceptibility to infections such as malaria, toxoplasmosis, and helminthic infestations. According to the World Health Organization, parasitic infections in pregnancy can result in maternal anemia, preterm labor, low birth weight, intrauterine growth restriction, and even perinatal mortality.

Malaria is particularly concerning in endemic areas, as it can rapidly lead to severe maternal anemia, cerebral malaria, and maternal death. Toxoplasmosis is associated with congenital infection, which can cause neurological and ocular defects in the newborn. Helminth infections can exacerbate maternal malnutrition and anemia, further compromising maternal and fetal health.[5]

Despite the clinical importance, there is limited data on the distribution, severity, and outcomes of parasitic infections in pregnant women. Late diagnosis, insufficient monitoring, and delayed treatment contribute significantly to adverse maternal and neonatal outcomes. This study aims to analyze the

incidence and clinical course of parasitic infections during pregnancy, evaluate their impact on maternal and perinatal health, and propose preventive and management strategies to improve outcomes.[8]

Methods

This study was designed as a retrospective clinical study with analytical components to evaluate the impact of parasitic infections on maternal and perinatal outcomes. The research was conducted at a tertiary-level maternity hospital from 2018 to 2024. The study included all pregnant women diagnosed with parasitic infections during this period who had documented maternal complications or adverse perinatal outcomes.

The study population consisted of 60 pregnant women with confirmed parasitic infections, including malaria, toxoplasmosis, and helminthic infestations. Cases were included if the infection was diagnosed during pregnancy and was associated with maternal or neonatal complications. Cases caused solely by obstetric complications unrelated to parasitic infection were excluded to focus on the effects of parasitic diseases.[2]

A major problem identified during preliminary data review was the high incidence of maternal anemia, preterm labor, and perinatal complications due to delayed diagnosis and inadequate treatment of parasitic infections. To address this, the study incorporated analytical components designed to identify high-risk factors and potential interventions.

All cases were classified by type of parasitic infection (malaria, toxoplasmosis, helminths) and severity (mild, moderate, severe), based on clinical presentation, laboratory data (hemoglobin levels, parasite load), and presence of complications such as maternal anemia, preterm labor, low birth weight, or neonatal death. Trimester-based analysis was performed to determine whether the timing of infection influenced maternal or perinatal outcomes.[10]

Maternal and neonatal outcomes were compared between survival and complication groups to identify factors associated with poor prognosis. Delays from symptom onset to hospital admission and treatment initiation were analyzed to determine their impact on disease progression. Modifiable factors, such as late referral, insufficient monitoring, and delayed intervention, were assessed to propose clinical solutions.

Data sources included medical records, laboratory reports, ultrasound findings, and perinatal records. Variables analyzed included maternal age, gestational age, type and severity of parasitic infection, maternal complications, perinatal outcomes (birth weight, preterm birth, neonatal death), and treatment interventions. Statistical analysis involved descriptive statistics including percentages and frequencies, as well as comparative analysis between survival and adverse outcome groups.[6]

This methodological approach allowed a systematic evaluation of the prevalence, severity, and outcomes of parasitic infections in pregnancy, while highlighting key modifiable factors to reduce maternal and perinatal morbidity and mortality.

Results

A total of 60 pregnant women with confirmed parasitic infections were included in the study. The most common infection was malaria (45%), followed by toxoplasmosis (30%) and helminthic infections (25%). Severe maternal complications were most frequent in malaria cases, particularly in women presenting during the third trimester.

Distribution of Parasitic Infection Types

Type of ParasiticInfection	**Number of Cases**	**Percentage (%)**	Maternal Deaths
Malaria	27	45%	2
Toxoplasmosis	18	30%	1
Helminthic Infections	15	25%	0

Maternal Complications

Complication	**Number of cases**	**Percentage (%)**
Anemia	28	46.7%
Preterm Labor	15	25%
Severe Infection/Shock	10	16.7%
Maternal Death	3	5%
Total	60	100%

A line graph with **Perinatal Outcome on the x-axis** and **Number of Cases on the y-axis** highlights the frequency of adverse perinatal outcomes. Neonatal deaths, although fewer, indicate severe consequences of parasitic infections during pregnancy.

Analysis revealed that **60% of severe maternal complications and 70% of perinatal deaths occurred during the third trimester**, emphasizing that late pregnancy is the most vulnerable period for complications related to parasitic infections.

Delayed diagnosis and inadequate treatment were consistently associated with more severe maternal complications and worse perinatal outcomes, while early detection and timely management significantly improved maternal and neonatal prognosis.

Analysis

The analysis of 60 pregnant women with parasitic infections showed that malaria was the most common infection, accounting for 45 percent of cases, followed by toxoplasmosis (30%) and helminthic infections (25%). Maternal deaths were concentrated in malaria (2 cases) and toxoplasmosis (1 case), indicating that although helminthic infections were relatively frequent, they posed lower mortality risk.

Maternal complications were dominated by anemia (46.7%), followed by preterm labor (25%) and severe infection or shock (16.7%). Maternal death occurred in 5 percent of cases. Line graphs of complications reveal the steep decrease from anemia to maternal death, highlighting the severity gradient and the critical need for early intervention.

Perinatal outcomes included low birth weight (33.3%), preterm birth (30%), intrauterine growth restriction (20%), neonatal death (8.3%), and healthy births (8.3%). A line graph visualizing perinatal outcomes shows that adverse outcomes are frequent, with neonatal death being the most severe but less frequent event.

Trimester-based analysis showed that the third trimester accounted for 60 percent of maternal complications and 70 percent of perinatal deaths, emphasizing the late pregnancy period as the most vulnerable. Delayed diagnosis and inadequate treatment were consistently associated with poorer maternal and neonatal outcomes. Early detection, timely intervention, and preventive strategies were linked to improved outcomes.

Discussion

This study confirms that parasitic infections during pregnancy are a significant cause of maternal and perinatal morbidity. Malaria was the most common infection and the leading cause of maternal deaths, while toxoplasmosis also contributed to adverse outcomes. Helminthic infections were less severe but contributed to maternal anemia and nutritional compromise.

Late diagnosis, insufficient monitoring, and delayed treatment were identified as major contributors to maternal complications and adverse perinatal outcomes. These findings are consistent with global data reported by the World Health Organization, highlighting the critical need for early screening and preventive interventions, particularly in endemic areas.

Preventive strategies, including routine screening for malaria and toxoplasmosis, prompt treatment, nutritional supplementation, and public health education, are essential to reduce the impact of parasitic infections. Multidisciplinary care involving obstetricians, infectious disease specialists, and neonatologists can improve maternal and neonatal outcomes.

Conclusion

Parasitic infections during pregnancy are a significant contributor to maternal and perinatal morbidity and mortality. Malaria and toxoplasmosis were identified as the most critical infections, with the highest rates of severe maternal complications and perinatal adverse outcomes. Helminthic infections, while less fatal, contributed substantially to maternal anemia and nutritional compromise, which can indirectly affect fetal development.

The study highlights that delayed diagnosis, inadequate treatment, and insufficient monitoring are major risk factors for poor maternal and neonatal outcomes. Severe maternal anemia, preterm labor, and maternal infection were closely associated with adverse perinatal outcomes, including low birth weight, intrauterine growth restriction, preterm birth, and neonatal death. The third trimester was

identified as the period of highest vulnerability, emphasizing the importance of early detection and continuous monitoring throughout pregnancy.

Preventive measures such as routine screening for malaria and toxoplasmosis, timely anti-parasitic therapy, nutritional support, health education, and public health interventions in endemic areas are essential to reduce the burden of these infections. Multidisciplinary care involving obstetricians, infectious disease specialists, and neonatologists can significantly improve maternal and neonatal outcomes.

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