



FETOMATERNAL OUTCOME AMONG HIV POSITIVE PREGNANT WOMEN, A HOSPITAL BASED OBSERVATIONAL STUDY

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ABSTRACT

Introduction: HIV continues to be a major worldwide health issue, particularly for women of childbearing age. In India, where approximately 2.1 million people live with HIV, the prevalence among pregnant women poses a substantial public health challenge¹. **Methodology:** This hospital-based observational study evaluates the fetomaternal outcomes among HIV-positive pregnant women at Umaid Hospital, Jodhpur. The study aims to assess the neonatal outcomes, obstetric complications, and perinatal transmission rates. A mixed cohort design was employed, encompassing both retrospective and prospective data collection from June 2023 to June 2024. **Result:** In this study, it was found that early initiation of antiretroviral therapy significantly improved maternal and neonatal outcomes. Despite a high rate of obstetric complications, the majority of neonates were born healthy, with no cases of vertical HIV transmission observed at the six-week follow-up. **Conclusion:** This study highlights the importance of early ART initiation and comprehensive antenatal care in managing HIV-positive pregnancies.

KEYWORDS

INTRODUCTION

HIV is now a days a worldwide health issue, particularly for women of childbearing age. In India, with about 2.1 million people living with HIV, the prevalence among pregnant women poses a considerable public health challenge¹. Vertical transmission from a woman to her baby in pregnancy, labour, delivery, or breastfeeding exposes both the mother and infant to serious health risks^{2,3}. Though the advancement of antiretroviral therapy and prevention strategies, HIV women still experience higher negative outcomes in pregnancy such as premature birth and underweight newborns and stillbirth⁴. This will be a study about assessing maternal and foetal outcomes among the population of HIV positive pregnant women. The present research will look specifically into health indicators about the mother and the newborn and the effectiveness of ART in lowering rates of vertical transmission from mother to child.

AIMS AND OBJECTIVES

Aims: To evaluate the fetomaternal outcomes among HIV-positive pregnant women in a hospital setting.

Objectives:

1. To study the neonatal outcome (birth weight, APGAR score, feeding practices, NICU admission).
2. To study the development of obstetric complications, mode of delivery, intrapartum interventions, and postpartum complications.
3. To assess the perinatal transmission rate at six weeks.

MATERIALS AND METHODS

Study Area: Obstetrics and Gynaecology Department, Umaid Hospital, Dr. S. N. Medical College, Jodhpur.

Study Design: Mixed cohort study (retrospective and prospective).

Study Population: Pregnant women with known HIV-positive status or those who tested positive at admission.

Inclusion Criteria: Pregnant women with a gestational age of more than 28 weeks who tested positive for HIV.

Exclusion Criteria: Women who tested positive elsewhere or were lost to follow-up.

Sample Size: All pregnant women delivering in the labor room of Umaid Hospital from June 2023 to June 2024 who tested positive for HIV.

Sampling Method: Convenience sampling.

Data Collection: Information on sociodemographic status, treatment history, obstetric history, partner status, and maternal/neonatal outcomes was collected.

Statistical Analysis: The data was analysed using SPSS software, employing Chi-square tests for qualitative data and t-tests for quantitative data.

Review Of Literature

In recent decades, a lot of research work has been carried out to study the relationship between HIV infection and pregnancy outcomes. As such, pregnancies among patients who are HIV seropositive are inherently high risk, both to mother and child. Study after study has proved that in the absence of any intervention, the rate of mother-to-child transmission (MTCT) of HIV may range from 15-45% during pregnancy, labor, delivery, or breastfeeding. However, with the option of ART and holistic prevention programs, rates of mother-to-child transmission (MTCT) have dramatically reduced to less than 5% of the new rates in most settings and, in some affluent countries, as low as 1-2%. Influential for this was a study by Landesman et al.⁶ (1996), which showed the significance of maternal viral load as one of the most important markers of mother-to-child transmission (MTCT).

The study found a very evident relationship between elevated maternal virus levels and increased rates of transmission, emphasizing the importance of early commencement on ART and maintenance on ART to reduce viremia during pregnancy. Simulating the above findings, Kuhn et al.⁷ (1997) also found that maternal-infant HIV transmission is highly correlated to events that occur during childbirth, and quite a significant number of infections are transmitted during labour and delivery. This finding actually supported using the elective caesarean delivery as a means of further reducing the risks of mother-to-child transmission. The most radical shift in the management of HIV in pregnancy was introduced with the advent of ART, especially cART. Trials conducted by Mofenson et al.⁸ in 1999, and Ioannidis et al. in 2001) demonstrated that the use of the new cART significantly decreases the level of MTCT due to significantly decreasing detectable virus in the mother to levels that are undetectable.

In addition, these studies have also proved that it is very important to initiate anti-retroviral therapy once pregnancy is detected so as to receive the maximum possible benefit in prevention. As is to be expected, the challenges of taking care of HIV parturients are more pronounced in areas where resources for anti-retroviral therapy (ART) are limited and those for healthcare general. A study in Africa supporting maternal antiretroviral therapy use while breastfeeding as a factor for the HIV-free survival at 1 year of age was noted by Marazzi et al.¹⁰ 2009. This investigation concluded that the use of more potent antiretroviral medication regimens greatly raised the survival rates among the infants.

This re-emphasizes the importance of continuing Antiretroviral Therapy (ART) throughout the whole period of breast feeding. In the Indian scenario different studies have shown different results depending on regional variations of health care infrastructure and in

access of ART availability. There is a definite need therefore, for customized interventions specific to the challenges facing public health care in India. Generally, the literature tends to support the effectiveness of ART; it brings about reductions in MTCT and improves the motherly and neonatal outcome. However, access to ART is not universal, and gaps exist in its application to more resource-limited settings and between addressing social determinants of health that are relevant to HIV-infected pregnant women.

RESULTS

This study included a total of 34 HIV-positive pregnant women who delivered at Umaid Hospital, Jodhpur, between June 2023 and June 2024. The sociodemographic characteristics, obstetric history, and outcomes of these women and their neonates were analyzed.

Table 1: Demographic And Clinical Characteristics Of Study Participants

Characteristic	Frequency (n=34)	Percentage (%)
Age Group		
20-25 years	14	41.2
26-30 years	14	41.2
>30 years	6	17.6
Residence		
Rural	31	91.18
Urban	3	8.82
Education		
No formal education	12	35.3
Primary education	12	35.3
Secondary education	5	14.7
Higher education	5	14.7
Obstetric History		
Primigravida (G1)	14	41.2
Multigravida (G2 or more)	20	58.8
Treatment Initiation		
Before pregnancy	28	82.35
During pregnancy	6	17.65
Source of Infection		
Through partner	28	82.35
Unknown	6	17.65
Obstetric Complications		
Preterm labor	7	20.7
FGR	3	8.8
Anemia	3	8.8
No complications	19	55.8

Table 2: Maternal And Neonatal Outcomes

Outcome	Frequency (n=34)	Percentage (%)
Mode of Delivery		
Vaginal delivery (Term + Preterm)	21	61.6
Cesarean section (Emergency + Elective)	11	32.4
Neonatal Outcomes		
Birth Weight > 2.5 kg	17	50
Preterm Birth	7	20.5
Term Birth	27	79.4
Apgar Score > 7 at 1 min	23	67.6
NICU Admission	5	14.7
Postpartum Complications		
No complications	31	91.2
Puerperal Pyrexia	2	5.9
Anemia	1	2.9
Nevirapine Prophylaxis (Newborns)	34	100
Six-Week Follow-up		
Tested Negative for HIV	34	100

Figure: Key Findings Summary

1. Age Distribution of Participants: Majority between 20-30 years (82.4%).
2. Residence: Predominantly rural (91.18%).
3. Mode of Delivery: Vaginal deliveries (61.6%); Cesarean sections (32.4%).
4. Birth Weight: 50% of newborns >2.5 kg.
5. Preterm vs Term Births: 79.4% of newborns were term.
6. Neonatal Apgar Scores: 67.6% had scores >7 at 1 min.

Demographic Characteristics

Age Group: The majority (82.4%) of the 34 HIV-positive pregnant women in the study were between 20 to 30 years old, with 41.2% in the 20-25 age group and 41.2% in the 25-30 age group.

Residence: A significant proportion (91.18%) of the participants resided in rural areas.

Education: The educational level was varied, with 35.3% having no formal education, and another 35.3% only completed primary education.

Obstetric History And Treatment

Obstetric History: 41.2% of the women were primigravida (first pregnancy), 23.5% were in their second pregnancy, and 35.3% were in their third or more pregnancies.

Time of Treatment Initiation: A large majority (82.35%) initiated treatment before pregnancy.

Source of Infection: 82.35% of infections were acquired through partners, with no cases attributed to blood products or intravenous drug use.

Maternal And Neonatal Outcomes

Obstetric Complications: 44.1% of the women experienced complications, with preterm labor (20.7%) being the most common, followed by FGR (8.8%) and anemia (8.8%).

Mode of Delivery: Vaginal deliveries were predominant, accounting for 67.6% of cases, while 32.4% underwent cesarean sections.

Neonatal Outcomes: 50% of the newborns had a birth weight over 2.5 kg, and 79.4% were born at term. Apgar scores at 1 minute were >7 in 67.6% of infants, improving to 76.5% at 5 minutes.

Complications And Follow-up

Postpartum Complications: The majority (91.2%) had no postpartum complications. Anemia and puerperal pyrexia were noted in a few cases.

NICU Admission: 14.7% of newborns required NICU admission.

Prophylaxis and Follow-up: All infants received Nevirapine prophylaxis, and follow-up at 6 weeks showed no HIV transmission.

DISCUSSION

The findings of this study corroborate the evidence from existing literature that early initiation of ART and comprehensive antenatal care are critical in managing HIV-positive pregnancies and improving fetomaternal outcomes. The majority of the participants (82.4%) had initiated ART before pregnancy, which is a significant protective factor against MTCT of HIV. This early initiation likely contributed to the favorable neonatal outcomes observed, with all infants testing negative for HIV at the six-week follow-up.

The high rate of obstetric complications (44.1%) among the study participants aligns with previous research, indicating HIV-positive women face a higher likelihood of experiencing difficulties such as preterm labour, foetal growth restriction (FGR), and anaemia. However, despite these complications, the neonatal outcomes were generally positive, with a significant proportion of infants born at term (79.4%) and with acceptable birth weights.

The study also highlights the importance of continuous ART adherence during pregnancy. The majority of participants (82.3%) had undetectable viral loads, which is a strong predictor of reduced MTCT risk. This finding is consistent with studies by Mofenson et al. ⁸ (1999) and Ioannidis et al. ⁹ (2001), which emphasized the crucial role of maintaining low viral loads to prevent vertical transmission.

The predominantly vaginal deliveries (67.6%) in this study reflect current guidelines that suggest vaginal delivery is safe for HIV-positive women with undetectable viral loads. However, the 32.4% rate of cesarean sections indicates that surgical intervention remains necessary in certain cases to manage complications or when viral load data is unavailable.

This study further underscores the challenges faced by HIV-positive

pregnant women in rural settings, where access to healthcare services and ART may be limited. The rural residency of 91.2% of participants highlights the need for targeted healthcare strategies to improve access and outcomes in these populations.

SUMMARY AND CONCLUSION

Early initiation and maintenance of antiretroviral therapy in pregnant women lowered the risk of vertical transmission to their babies, with good maternal and neonatal outcomes. This finding supports routine universal prenatal care with early screening for HIV during pregnancy and highlights effective postnatal prophylaxis as important components in successful HIV-positive pregnancy management. Despite the challenges that obstetric complications pose, therefore, this study confirms that with proper care, one has a clear opportunity to make dramatic improvements in outcome for the HIV-positive pregnant women and their infants.

Limitations

Single center study with short follow-up period

REFERENCES

1. World Health Organization (WHO). WHO statistics and prevalence of HIV 2023. Available from: <https://www.who.int/teams/global-hiv-hepatitis-and-stis-programmes/hiv/data>
2. Kumar S. Preventing mother to child transmission of HIV - current strategies. *Med J Armed Forces India*. 2014;70(4):304–10.
3. HIV surveillance. Cdc.gov. 2023. Available from: <https://www.cdc.gov/hiv/statistics/index.html>
4. Children and pregnant women living with HIV. Unaids.org. Available from: <https://www.unaids.org/en/resources/documents/2023/children-and-pregnant-women-living-with-hiv>
5. Rajasekaran S, Jeyaseelan L, Raja K, Ravichandran N, Vijayakumari JJ, Suniti S. Post-highly active antiretroviral therapy era: the clinical profile of children with HIV/AIDS in India. *J Trop Pediatr*. 2009;55(3):225–31.
6. Landesman SH, Kalish LA, Burns DN, et al. Obstetrical factors and the transmission of human immunodeficiency virus type 1 from mother to child. The Women and Infants Transmission Study. *N Engl J Med*. 1996;334(25):1617–23.
7. Kuhn L, Abrams EJ, Matheson PB, et al. Timing of maternal-infant HIV transmission: associations between intrapartum factors and early polymerase chain reaction results. New York City Perinatal HIV Transmission Collaborative Study Group. *AIDS*. 1997;11(4):429–435.
8. Mofenson LM, Lambert JS, Stiehler ER, et al. Risk factors for perinatal transmission of human immunodeficiency virus type 1 in women treated with zidovudine. Pediatric AIDS Clinical Trials Group Study 185 Team. *N Engl J Med*. 1999;341(6):385–393.
9. Ioannidis JP, Abrams EJ, Ammann A, et al. Perinatal transmission of human immunodeficiency virus type 1 by pregnant women with RNA virus loads <1000 copies/mL. *J Infect Dis*. 2001;183(4):539–545.
10. Marazzi MC, Nielsen-Saines K, Buonomo E, et al. Increased infant human immunodeficiency virus-type one free survival at one year of age in sub-Saharan Africa with maternal use of highly active antiretroviral therapy during breastfeeding. *Pediatr Infect Dis J*. 2009;28(6):483–487.