

## CLINICAL PROFILE OF MOTHER WITH HUMAN IMMUNODEFICIENCY VIRUS AND ITS FETOMATERNAL OUTCOME

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### ABSTRACT

**Objectives:** Human immunodeficiency virus (HIV) infection carries many high-risk conditions in pregnancy. Our study aims to analyze the clinical profile of HIV-pregnant women and to determine the fetomaternal outcomes among HIV-positive pregnancies.

**Methods:** This study is a retrospective observational study carried out at C U Shah Medical College and Hospital, Surendranagar, Gujarat, covering data of all pregnant women with HIV who delivered between January 2018 and December 2022.

**Results:** Among a total of 8881 patients delivered from January 2018 to December 2022, 56 mothers with HIV positivity gave birth. 80% of HIV-positive mothers are between 21 and 30 years of age group. Among all HIV-positive pregnant patients, 30% were diagnosed during pregnancy, and 75% were taking regular antenatal care (ANC) visits. A total of 60% of HIV-positive patients were undergone vaginal delivery, and 40% underwent lower segment cesarean section. Among all HIV-positive pregnant patients, different maternal complications were found in 65% of the population. A total of 1.8% of babies are positive with HIV at 6-week postpartum intervals through mother-to-child transmission (MTCT).

**Discussion:** The study analyzed the 5-year clinical profile of HIV-positive mothers and their fetomaternal outcomes. The findings from the study reveal important facets related to maternal health and neonatal outcomes, the impact of antiretroviral therapy (ART), and the prevention of MTCT of HIV.

**Conclusion:** This study brings out the clinical profile and fetomaternal outcomes of HIV-positive mothers over 5 years, with a special emphasis on the role of ANC and ART in improving outcomes. Early diagnosis of HIV infection, regular ANC, and strict adherence to ART reduce complications and improve outcomes.

**Keywords:** Human immunodeficiency virus in pregnancy, Antiretroviral therapy, Mother-to-child transmission, Fetomaternal outcomes.

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### INTRODUCTION

Human immunodeficiency virus (HIV) infection in pregnant women presents major problems for both maternal and fetal health, altering clinical outcomes for the mother and infant. Although antiviral medication (ART) has considerably reduced maternal morbidity and death, HIV still poses significant hazards during pregnancy. HIV transfer from mother to child, also known as vertical transmission, can occur during pregnancy, labor, delivery, or breastfeeding [1]. Without intervention, the probability of vertical transmission is between 15% and 45%; however, with good management, it can be decreased to <5% [2].

#### Clinical profile of the mother

HIV-infected pregnant women may have a variety of clinical symptoms, depending on their immunological status [3]. Common clinical signs include opportunistic infections, low CD4 levels, anemia, and malnutrition. HIV also worsens other illnesses, such as tuberculosis, which is more common in HIV-infected people. Effective management with ART is critical to reduce problems and enhance both maternal and fetal outcomes.

#### Fetomaternal outcome

HIV infection raises the likelihood of abnormal outcomes for both mother and fetus. Preterm labor, intrauterine growth restriction, and a rise in cesarean birth rates are all possible maternal problems. Risks to the fetus include low birth weight, stillbirth, and neonatal HIV infection, particularly if ART is not provided effectively or the

mother's viral load is not well controlled. Early ART initiation and adherence to treatment protocols greatly improve fetal and mother outcomes [4].

#### Aim of the study

1. To assess the clinical profile of HIV-positive pregnant women
2. To evaluate maternal health outcomes in HIV-positive pregnancies
3. To analyze the fetal health outcomes
4. To identify key factors affecting fetomaternal outcomes.

#### Objectives

1. To analyze the clinical profile of HIV pregnant women
2. To determine the fetomaternal outcomes among HIV-positive pregnancies.

#### METHODS

This study was carried out at CU Shah Medical College and Hospital using a retrospective observational methodology. This study covered all pregnant women with HIV who gave birth between January 2018 and December 2022. After receiving approval from the Institutional Ethical Committee and Gujarat State AIDS Control Society (GSACS), data were gathered from medical records as well as prenatal, birth, and postnatal care logs.

HIV status was tested by quantitative enzyme-linked immunosorbent assay method on blood serum samples at our institutional central laboratory.

## RESULTS

There were 8881 deliveries from January 2018 to December 2022. During this time, 56 mothers (0.63%) who were HIV positive gave birth.

Table 1 shows age and parity-wise distribution among all 56 HIV-positive patients in numbers and percentage, in which a maximum (45) are between 21 and 30 years of age group and a major degree of patients (31) are multigravidae.

Table 2 and Fig. 1 show the time of HIV positivity diagnosis and regularity of antenatal care (ANC) visits among 56 HIV-positive patients, in which 17 patients were diagnosed HIV-positive during routine pregnancy check-ups and other 39 were already diagnosed as HIV-positive in pre-pregnancy time. Among all 56 HIV-positive pregnant patients of this study, 75% were taking regular ANC visits, and the other 25% were irregular in ANC visits.

Table 3 and Fig. 2 distribute all 56 HIV-positive patients of our study according to the mode of delivery in number and percentage, in which maximum patients (52.5%) underwent normal vaginal delivery, 7.5% underwent instrumental delivery, and the other 40% underwent cesarean section.

Table 4 shows the gestational age of the fetus at the time of delivery; 46 patients were delivered full term after 37 weeks, and others underwent preterm delivery <37 weeks.

Table 5 and Fig. 3 show that 50 patients, among a total of 56 patients in our study, were on ART treatment during pregnancy and continued after delivery, and the remaining six patients started their ART treatment after delivery.

Table 6 and Fig. 4 show that, in our study, 65% of patients were having maternal complications, in which anemia was the most common complication.

Table 7 and Fig. 5 show among all 56 deliveries, two stillbirths took place, and among all 54 live births, 10 babies were preterm neonates, and 14 had low birth weight.

Table 8 shows among all 54 live births, only one child has HIV positivity, and the other 98.2% were HIV negative at 6 weeks postpartum.

## DISCUSSION

The study analyzed the 5-year clinical profile of HIV-positive mothers and their fetomaternal outcomes. The findings from the study reveal important facets related to maternal health and neonatal outcomes, the impact of ART, and the prevention of mother-to-child transmission (MTCT) of HIV.

### Maternal characteristics

#### Age group

The most common age group of HIV-positive mothers (80%) falls within 21–30 years, similar to the peak reproductive age in India. The proportion of multigravida (55%) is also close to the prevalence of studies, which indicated that, usually, women with two or more pregnancies have more exposure and socioeconomic problems and thus are more frequently HIV positive (Table 1) [6,7].

### Prenatal care and ART coverage

Regular ANC (75%) and ART adherence (90%) were significant contributors to improved maternal and neonatal outcomes. Early initiation of ART in pregnancy has been shown to reduce maternal complications and MTCT rates effectively [8]. However, 25% of mothers lacked regular ANC, underscoring the need for better outreach and education programs for HIV-positive women (Table 2).

**Table 1: Maternal profile**

Age distribution	Numbers	Percentage
<20 years	03	5
21–30 years	45	80
31–40 years	08	15
Parity		
Primi	25	45
Multi	31	55
Total patients (n)	56	100

**Table 2: Antenatal care and diagnosis**

	Number (56)	Percentage
Diagnosed during pregnancy	17	30
Pre-pregnancy HIV-positive status	39	70
Regular ANC	42	75
Irregular ANC	14	25

HIV: Human immunodeficiency virus, ANC: Antenatal care

**Table 3: Mode of delivery**

Parameter	Number (56)	Percentage
Vaginal	30	52.5
Instrumental	04	7.5
Elective CS	08	15
Emergency CS	14	25

CS: Cesarean section

**Table 4: Gestational age at the time of delivery**

Gestational age at delivery	Number (56)	Percentage
<32 weeks	01	01.78
32–33+6 weeks	03	05.35
34–36+6 weeks	06	10.71
37 weeks onward	46	82.14

**Table 5: ART status**

Parameter	Number (56)	Percentage
On ART during pregnancy	50	90
Initiated after delivery	06	10

ART: Antiretroviral therapy

**Table 6: Maternal complications**

Parameter	Number	Percentage
Opportunistic infections	06	10
Anemia	20	35
Preterm labour	11	20

**Table 7: Neonatal outcome**

Parameter	Number	Percentage
Live births	54	96.4
Stillbirths	02	3.6
Preterm neonates	10	18
Low birth weight	14	25
APGAR score <7	08	15

### Maternal complications

The study noted that anemia (35%) and preterm labor (20%) were prevalent among HIV-positive mothers (Table 5). Anemia is a known complication among HIV-infected pregnant women, compounded

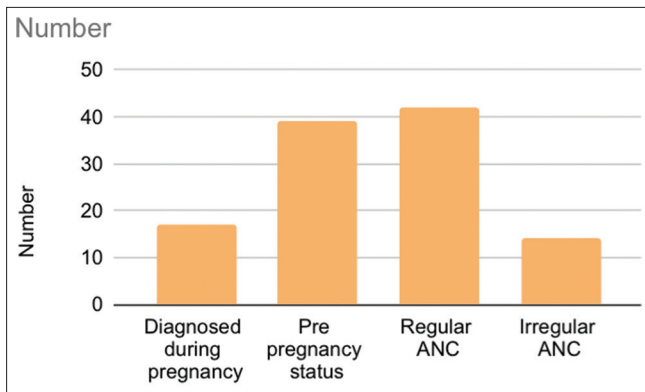


Fig. 1: Patient distribution in the form of antenatal care and diagnosis against number

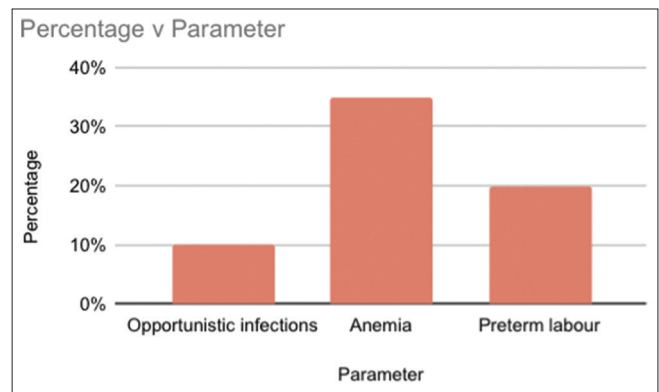


Fig. 4: Graphical presentation of maternal complications plotted in percentage

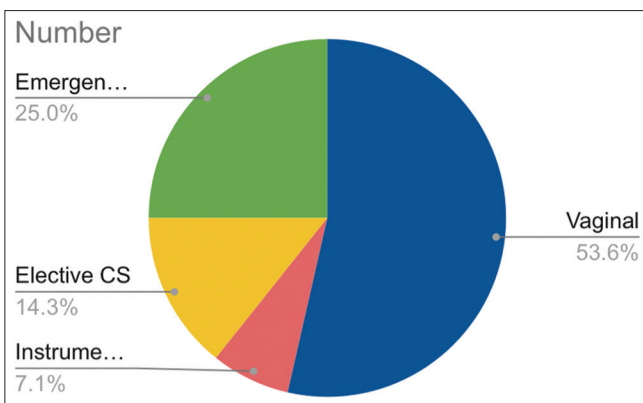


Fig. 2: Distribution of human immunodeficiency virus-positive patients according to mode of delivery in percentage

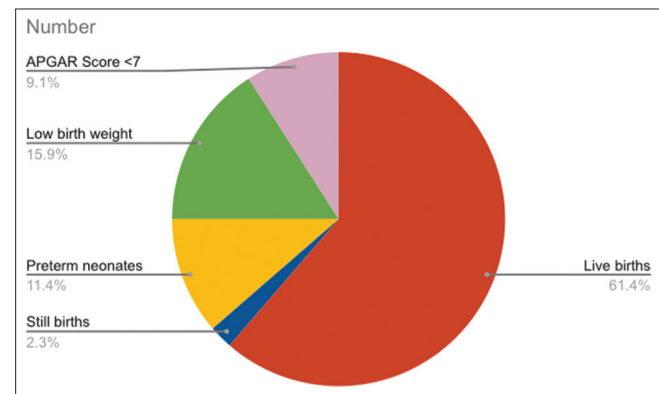


Fig. 5: Neonatal outcome in percentages

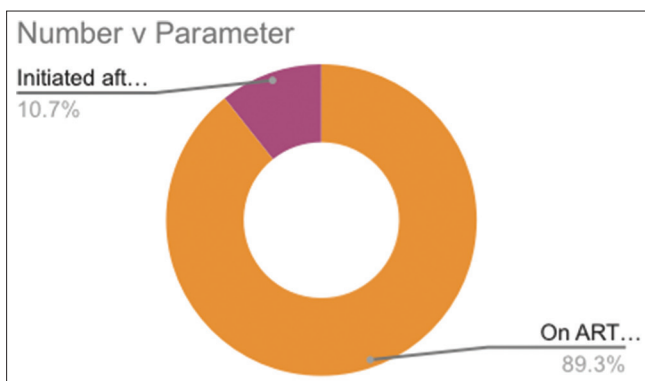


Fig. 3: Distribution according to initial time of antiretroviral therapy treatment

by nutritional deficiencies and side effects of ART [9]. Preterm labor in 20% of cases represents both direct and indirect effects of HIV on maternal health and higher rates of obstetric interventions [10].

#### Mode of delivery

The proportion of vaginal deliveries was high at 60% versus cesarean sections at 40% (Table 3). This is in line with the guidelines recommending vaginal delivery for HIV-positive women who are on effective ART with low viral loads. Emergency cesarean sections were performed at 25% of obstetric complications as practiced elsewhere [11].

Table 8: Mother-to-child transmission

Parameter	Number	Percentage
At 6 weeks HIV positive	1	1.8
At 6 weeks HIV negative	53	98.2

HIV: Human immunodeficiency virus

#### Neonatal outcomes

The neonatal outcomes were good. The live birth rate reached 96.4%, and the low MTCT rate was reported at 1.8%. This MTCT rate is significantly lower than the estimated global average of 15–45% without ART; it, therefore, goes to show that ART intervention has been successful [12]. However, neonatal challenges still exist; for instance, preterm births stood at 18%, and low birth weight, at 25% (Table 6), were much higher than for non-HIV populations. These results are consistent with previous ones linking HIV infection and exposure to ART with adverse neonatal outcomes [13].

#### Public health implications

The results emphasize the critical role of comprehensive ANC and ART in improving fetomaternal outcomes among HIV-positive mothers. Therefore, it is crucial to strengthen community-level interventions, improve access to healthcare services, and remove socioeconomic barriers to achieve better outcomes [14].

#### CONCLUSION

This study brings out the clinical profile and fetomaternal outcomes of HIV-positive mothers over 5 years, with a special emphasis on the role of ANC and ART in improving outcomes.

**Maternal health**

Regular ANC and ART adherence were associated with reduced complications and improved maternal outcomes. However, anemia and preterm labor remain prevalent, requiring targeted interventions.

**Neonatal outcomes**

There were positive neonatal outcomes, with an impressive live birth rate of 96.4% and a relatively low MTCT rate of 1.8%, signifying the success of the ART programs. However, the higher rates of preterm births and low birth weight in HIV-positive pregnancies compared to non-HIV pregnancies underscore the necessity of improved perinatal care.

**Public health implications**

For better improvement of fetomaternal outcomes, early diagnosis of HIV, better ANC services, improved nutritional support, and socioeconomic barriers should be addressed.

**AUTHOR'S CONTRIBUTION**

Dr. Hetaxi A Chheta- Data collection, Investigation, Resources, and Visualization. Dr. Harshdeep K Jadeja- Methodology, Analysis, Data curation, and Writing. Dr. Bhavesh B Airao- Supervision, Conceptualisation, and Project administration.

**ETHICAL COMMITTEE APPROVAL**

Yes. Approval Id: (CUSMC/IEC(HR)/RP/17/2023/Final Approval/313/2023).

**GUJARAT STATE AIDS CONTROL SOCIETY APPROVAL**

Yes. Approval Id: (GSACS/SIMU/Research/2023-24/3/3553-56)

**RETROSPECTIVE DATA SOURCES**

Paper logs.

**CONFLICTS OF INTEREST**

None.

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