

A study on Awareness and Knowledge on HIV & Mother-To-Child Transmission Among Pregnant Women at A Tertiary Care Center**Vakiti Manisree¹, Geethanjali Ankireddy², Marupuri Sushma², Shamshad Begum³**¹Assistant Professor, Department of Obstetrics & Gynecology, Government Medical College, Ananthapuramu²Assistant Professor, Department of Community Medicine, Government Medical College, Ananthapuramu³Professor & HOD, Department of Obstetrics & Gynecology, Government Medical College, Ananthapuramu

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Abstract:**Background:** Mother-to-child transmission (MTCT) of HIV remains a key route of pediatric HIV infection. Awareness and understanding among pregnant women are crucial for the effectiveness of Prevention of Mother-to-Child Transmission (PMTCT) initiatives. This study investigated awareness and knowledge of HIV and MTCT among pregnant women attending a tertiary care center.**Methods:** A cross-sectional descriptive study was conducted among 496 pregnant women attending the antenatal clinic. Participants were selected using systematic random sampling. Data was obtained via a pre-tested, semi-structured questionnaire addressing sociodemographic variables, awareness of HIV/AIDS, understanding of transmission channels, and PMTCT measures. Descriptive statistics were employed to summarize findings.**Results:** Most participants were aged 20–29 years (69%), married (98%), and from rural areas (78.4%). Awareness of HIV/AIDS was high (93%), with health personnel as the main source of information (50.9%). Knowledge of transmission was moderate for sexual contact (68.2%) and blood transfusion (62.5%) but poor for sharing sharp items (24.6%) and apparently healthy carriers (21.8%). Awareness of MTCT was reported by 60.1% of participants; however, knowledge of PMTCT interventions was low—antiretroviral therapy during pregnancy (43.6%), neonatal prophylaxis (9.3%), cesarean delivery (3.5%), and avoidance of breastfeeding (4.5%). Knowledge gaps were more pronounced among rural and less-educated women ($p < 0.05$).**Conclusion:** Although broad awareness of HIV/AIDS was moderate, detailed information, notably about MTCT and its prevention, was inadequate. Targeted educational programs, better antenatal counseling, and greater community engagement are necessary to improve maternal understanding and prevent vertical transmission.**Keywords:** HIV, Mother-to-Child Transmission, Awareness, Knowledge, Pregnant Women, PMTCT.

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Introduction

Human Immunodeficiency Virus (HIV) continues to be a major global public health issue. Every year, almost 1.3 million women with HIV become pregnant around the world, which puts their children at risk of getting the virus. [1] Mother-To-Child transfer (MTCT) is the term for this transfer from an HIV-positive mother to her child during pregnancy, labor, delivery, or breastfeeding. [2] MTCT is the most prevalent way for kids to get HIV, and it causes up to 90% of all HIV infections in kids. [3,4] The probability of MTCT is thought to be between 20% and 50% without any help. [5] The transmission can happen during pregnancy (5–10%), during birth (10–20%), and while breastfeeding (5–20%). [6]

The establishment of Prevention of Mother-to-Child Transmission (PMTCT) programs has been

fundamental in the worldwide initiative to address the pediatric HIV epidemic. Evidence suggests that with the proper implementation of PMTCT services, the risk of new infections in babies can be drastically decreased from as high as 40% to less than 5%. [7] These services include routine HIV counseling and testing for pregnant women, and the administration of appropriate antiretroviral medication (ART) for mothers and their newborns. [7]

A significant determinant for the effectiveness of PMTCT programs is the awareness and knowledge of pregnant women on HIV and its transmission routes. [8] A high level of maternal knowledge regarding HIV and MTCT is linked to a higher rate of maternal HIV testing and ART adherence. [7] Research undertaken in multiple countries has

consistently highlighted the significance of maternal awareness in the eradication of pediatric HIV. [7,9] Despite this, knowledge gaps persist. Given that women of reproductive age are more vulnerable to HIV and can spread the virus to their children, educating them about transmission and prevention is of fundamental importance. [7] This study seeks to analyze the existing level of awareness and knowledge regarding HIV and MTCT among pregnant women attending a tertiary care center to identify knowledge gaps and inform targeted educational interventions.

Materials and Methods

Study Design: Hospital based cross-sectional descriptive study

Study setting: The study was conducted in a antenatal clinic of a tertiary care teaching hospital, Government Medical College, Ananthapuramu, Andhra Pradesh.

Study Population: The study population comprised of all pregnant women attending the antenatal clinic during the study period, regardless of their gestational age or parity.

Inclusion Criteria: All pregnant women aged 18 years and above, seeking antenatal services on an outpatient basis or admitted for inpatient care at the Government General Hospital, Ananthapuramu and those who are willing to give consent were included in the study.

Exclusion Criteria: Women in active labor, those with severe medical illnesses, or those unable to understand the questionnaire were excluded.

Sample Size: The sample size was calculated using the following formula outlined in the WHO manual for sample size determination.[10]

$$(Z_{1-\alpha/2})^2 p(1-p)$$

$$\text{Sample Size (n)} = \frac{\text{-----}}{d^2}$$

Based on an assumed prevalence of 84% for awareness of mother-to-child transmission of HIV among pregnant mothers [11], a relative precision of 4% at a 5% significance level, and allowing for a 9%

non-response rate, the minimum required sample size was calculated to be 498, which was rounded to 500.

Study Duration: From December 2024 to March 2025.

Sampling Technique: Systematic random sampling was employed to recruit the required number of participants from all registered pregnant women attending the clinic on predetermined days.

Study tool: Data was collected using a pre-tested, semi-structured questionnaire administered by trained interviewers. Adapted from previous studies [9] and translated into the local language, it captured sociodemographic characteristics, awareness of HIV/AIDS (sources of information, transmission routes, and mother-to-child transmission), and knowledge of PMTCT (Prevention of Mother To Child Transmission). Descriptive statistics (frequencies, percentages, mean, and standard deviation) summarized the findings.

Ethical Compliance: The study protocol was approved by the Institutional Ethics Committee. Informed written consent was obtained from each participant after explaining the goal and nature of the study.

Results

A total of 500 participants were studied, with the majority belonging to the younger age group; 35.8% were aged 20–24 years and 33.2% were 25–29 years. Most respondents were married (98%) and rural residents (78.4%). Educational attainment was modest, as (39.2%) had only secondary education, while just 5.4% were graduates or above as mentioned in Table 1.

Awareness of HIV/AIDS in the present study (Fig.1) was indicated by 93% of respondents. Health personnel were the major source of information (50.9%), followed by friends and relatives (28.72%), while mass media accounted for around one-fifth (20.3%). Awareness levels were substantially greater among urban dwellers and those with secondary or higher education compared to their rural and less-educated counterparts ($p < 0.05$).

Table 1: Distribution of Study Subjects According to Socio-demographic Variables

Characteristics	Category	Number of Patients (n=500)	Percentage (%)
Age (in years)	< 20	56	11.2
	20-24	179	35.8
	25-29	166	33.2
	30-34	75	15
	>= 35	24	4.8
Religion	Hindu	421	84.2
	Muslim	73	14.6
	Christian	6	1.2
Marital Status	Married	490	98

	Separated/Divorced	9	1.8
	Widow	1	0.2
Level of education	Secondary	213	42.6
	Primary	170	34
	Illiterate	90	18
	Graduate & above	27	5.4
Economic status	Class 4	241	48.2
	Class 3	174	34.8
	Class 5	77	15.4
	Class 2	7	1.4
	Class 1	1	0.2

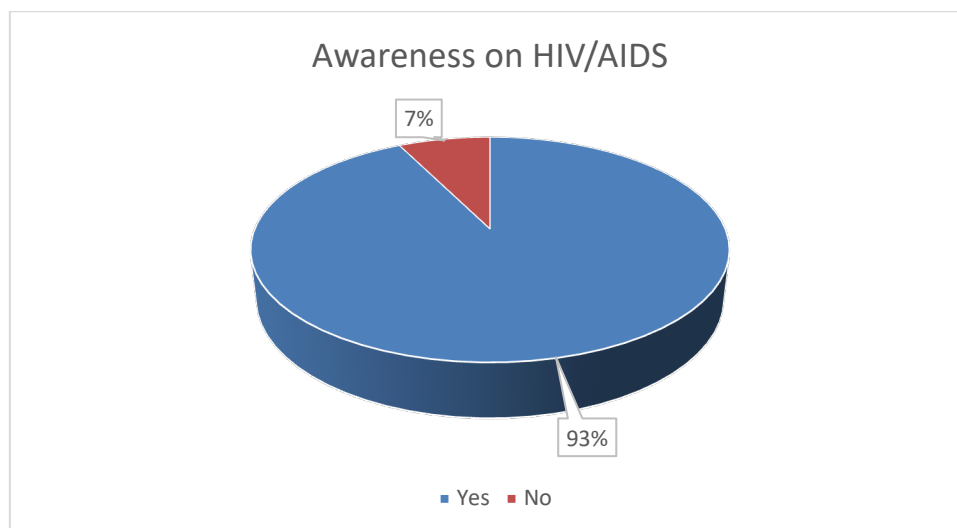


Figure 1: Awareness of Study participants on HIV/AIDS

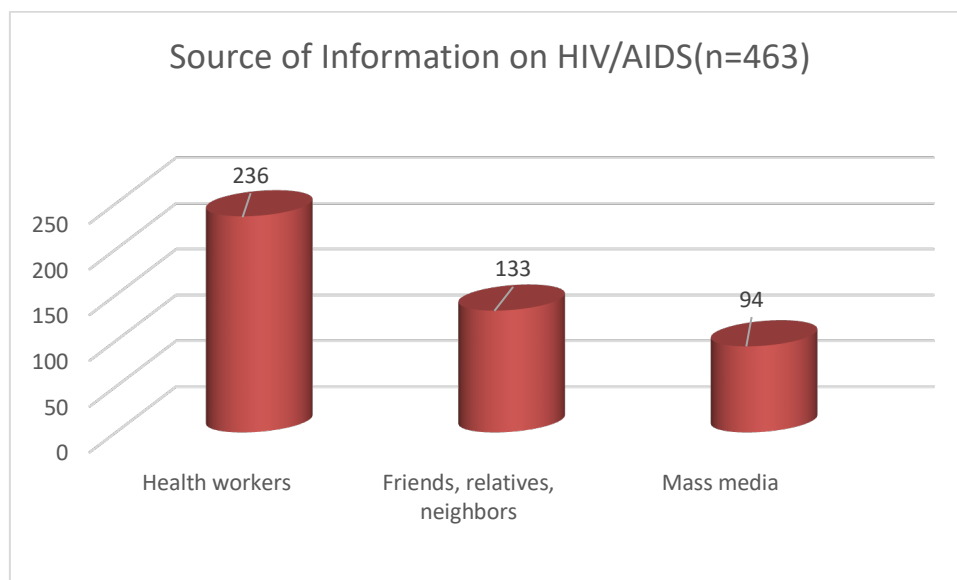


Figure 2: Source of Information on HIV/AIDS

Knowledge of HIV transmission paths varied substantially (Table.3). Sexual contact with an infected partner (68.2%) and transfusion of infected blood (62.5%) were the most acknowledged

modalities. Knowledge of Mother-to-child transmission was observed in 60.1% of participants; however, only 21.8% were aware that apparently healthy adults may transmit the virus.

Table 3: Knowledge Regarding Transmission of HIV/AIDS

Mode of Transmission	Response	Number of Patients (n=463)	Percentage (%)
Sexual intercourse with infected partner	Yes	316	68.2
	Don't know	147	31.8
Sharing sharp objects with infected person	Don't know	349	75.4
	Yes	114	24.6
Transfusion with infected blood	Yes	289	62.5
	Don't know	174	37.5
Mother to child transmission	Yes	279	60.3
	Don't know	182	39.3
	No	2	0.4
Apparently healthy individuals can be infected	Don't know	362	78.2
	Yes	101	21.8
Infected person can transmit to partner(s)	Yes	318	68.7
	Don't know	145	31.3
Multiple partners increase risk	Yes	293	63.3
	Don't know	170	36.7

Knowledge addressing prevention of mother-to-child transmission was notably weak (Table 4). Less than half (43.6%) were aware of the benefit of antiretroviral medication during pregnancy, while recognition of other interventions was very low:

cesarean delivery (3.5%), neonatal prophylaxis (9.3%), and avoidance of breastfeeding (4.5%). These inequalities were more significant among women with lower education and those from rural areas ($p < 0.05$).

Table 4: Knowledge Regarding Prevention of Mother to Child Transmission of HIV

Methods of Prevention	Response	Number of Patients (n=463)	Percentage (%)
Antiretroviral therapy during pregnancy	Don't know	261	56.4
	Yes	202	43.6
Delivery by caesarean section	Don't know	410	88.5
	No	37	8.0
	Yes	16	3.5
Giving antiretroviral drugs to newborn	Don't know	420	90.7
	Yes	43	9.3
Avoid breast feeding	Don't know	396	85.6
	No	46	9.9
	Yes	21	4.5

Discussion

This study reveals that general awareness of HIV/AIDS was very good (93%), but specific knowledge of transmission pathways and prevention, notably PMTCT, remains inadequate. Similar patterns have been discovered in India and other low-resource countries. Research from Pune and Tamil Nadu indicated that while over 90% of pregnant women had heard of HIV/AIDS, only 60–70% recognized vertical transmission and fewer yet were aware of specific prevention strategies. [12,13] In Gujarat, awareness among rural youth was much lower, with only 60% having heard of HIV/AIDS and common beliefs regarding transmission continuing. [14]

The present study found that 68.2% recognized sexual interaction and 62.5% identified blood transfusion as transmission mechanisms is consistent with earlier study. A hospital-based study in Jodhpur indicated that roughly 77% of pregnant

women acknowledged sexual transmission, however many still held misunderstandings. [15] Similarly, research in Southern Rajasthan found that although most respondents understood important transmission mechanisms, misunderstandings such as transmission by touch or casual contact were frequent. [16] These comparisons demonstrate that while awareness of key transmission channels is expanding, inadequate or incorrect knowledge remains ubiquitous.

Knowledge of MTCT prevention was notably insufficient in our population, with fewer than half identifying antiretroviral medication (ART) in pregnancy and barely 3–9% recognizing cesarean birth, neonatal prophylaxis, or breastfeeding avoidance. This is identical to findings from Bhopal, where barely one-third of women were aware of ART during pregnancy, and from rural Karnataka, where 42% recognized vertical transmission but considerably fewer knew of preventive methods. [17,18] Likewise, in Northern India, just 24% of

pregnant women knew about HIV transmission through breast milk. [19] Such limitations are significant, as comprehensive reviews have indicated that lack of maternal ART and newborn prophylaxis are substantially connected with increased MTCT risk in India. [20]

Sociodemographic characteristics tend to influence awareness substantially. In this study, more knowledge was reported among urban inhabitants and better-educated individuals, which is consistent with earlier findings from both rural and urban cohorts in India. [12,20,21] These relationships emphasize the necessity of tailored therapies that aid disadvantaged groups such as rural, less-educated moms who are more at risk of missing PMTCT opportunities. Addressing these gaps through community-based education, greater media engagement, and integration of HIV counseling into routine maternal health care could play a vital role in lowering the still large burden of mother-to-child transmission in India.

Conclusion:

The study revealed that although overall awareness regarding HIV/AIDS was satisfactory, notable deficiencies remain in the understanding of its modes of transmission and the specific measures for preventing mother-to-child transmission. This indicates that general awareness does not necessarily translate into comprehensive knowledge or safe practices. Strengthening health education initiatives with an emphasis on transmission routes, preventive strategies, and antenatal counseling is essential. Moreover, integrating community-based awareness programs and continuous health worker training can further enhance understanding and promote behavioral change. A coordinated effort between healthcare providers, policymakers, and the community is vital to bridge these knowledge gaps and effectively reduce the risk of vertical transmission.

References:

1. Abiodun MO, Ijaiya MA, Aboyaji AP. Awareness and knowledge of mother-to-child transmission of HIV among pregnant women at the University of Ilorin Teaching Hospital, Ilorin, Nigeria. *J Matern Fetal Neonatal Med.* 2007; 20(2):137-40.
2. Luo Y, He G, Zhou Y, Li Q, Li Z. Pregnant women's awareness and knowledge of mother-to-child transmission of HIV in Chengdu, China. *Acta Obstet Gynecol Scand.* 2008;87(9):927-32.
3. Mohammed H, Adu-Gyamfi K, Abasimi E, Amoah RM, Zotor FB, Amuna P. Knowledge of HIV transmission during pregnancy among reproductive-age women in Ghana: evidence from the 2014 Ghana demographic and health survey. *PLoS One.* 2024;19(5): e0302251.
4. Ramoshaba R, Maputle MS. Knowledge and Awareness of MTCT and PMTCT Post-Intervention amongst Post-Natal Mothers at a Selected Hospital in Limpopo Province, South Africa. *Open AIDS J.* 2017; 11:36-46.
5. Deshpande S, Nimbalkar A, Patel D, Patel V. Awareness, knowledge and prevention of mother to child transmission of human immunodeficiency virus in pregnant women: a descriptive study. *Int J Reprod Contracept Obstet Gynecol.* 2016;5(7):2205-9.
6. Htay M, Hlaing T, Lwin T. Awareness, attitude and practice on prevention of mother to child transmission of human-immunodeficiency virus among pregnant women in Taungoo Township, Myanmar. *Int J Community Med Public Health.* 2022;9(7):2653-8.
7. Eshetu HB, Asefa A, Tesema GA, Tessema ZT, Yeshaw Y, Alamneh TS, et al. Knowledge of prevention of mother-to-child transmission of HIV/AIDS and its associated factors among reproductive-age women in high HIV/AIDS prevalent countries in sub-Saharan Africa: A multilevel analysis of recent Demographic and Health Surveys. *PLoS One.* 2023;18(10):e0292885.
8. Teasdale CA, Goga AE, Jackson DJ, et al. HIV: prevention of mother-to-child transmission. *Int J STD AIDS.* 2011;22(5):285–90. doi: 10.1258/ijsa.2011.011271.
9. Birhane T, Tessema F, Fikre-Mariam M. Knowledge of Pregnant Women on Mother-to-Child Transmission of HIV and its Prevention in Axum Town, North Ethiopia. *J AIDS Clin Res.* 2015;6(2):427.
10. Lwanga SK, Lemeshow S. Sample size determination in health studies: A Practical Manual. Geneva: World Health Organization; 1991. p. 2.
11. Edward S. Awareness of HIV/AIDS among the pregnant women and their husbands attending ANC clinic in a tertiary care centre in Chennai. *Int J Community Med Public Health.* 2017;4(11).
12. Shrotri A, Shankar AV, Sutar SS, et al. Awareness of HIV/AIDS and household environment of pregnant women in Pune, India. *Int J STD AIDS.* 2003;14(12):814-20.
13. Firth J, Jeyaseelan L, Christina S, Vonbara V, Jeyaseelan V, Elan S, et al. HIV-1 seroprevalence and awareness of mother-to-child transmission issues among women seeking antenatal care in Tamil Nadu, India. *J Int Assoc Physicians AIDS Care (Chic).* 2010;9(4):206–13. doi: 10.1177/1545109710368700.
14. Yadav SB, Makwana NR, Vadera BN, Dhaduk KM, Gandha KM. Awareness of HIV/AIDS

- among rural youth in India: a cross-sectional study. *J Infect Dev Ctries*. 2011;5(10):711-6.
15. Manisha, Yadav R, Shaheen R. Knowledge, attitudes and practices regarding HIV/AIDS among pregnant females, Jodhpur. *Int J Reprod Contracept Obstet Gynecol*. 2023;12(7):2140-5.
 16. Reja R, Bhatnager R, Gupta A, Singh A. Correlates of awareness and attitude regarding HIV/AIDS in pregnant females, Southern Rajasthan. *Natl J Community Med*. 2019;10(6):342-7.
 17. Parmar M, Aherwar R, Jawade S. Awareness, knowledge and prevention of mother-to-child transmission of HIV in pregnant women. *Int J Reprod Contracept Obstet Gynecol*. 2016; 5(8): 2770-4.
 18. George KM, Joseph M, Bijoy R, et al. Awareness of HIV and prevention of parent-to-child transmission among antenatal mothers, Karnataka. *Int J Reprod Contracept Obstet Gynecol*. 2024;13(10):2694-9.
 19. Gupta R, et al. Knowledge, attitude and perception of HIV/AIDS among antenatal women, Northern India. *J Family Med Prim Care*. 2021;10(10):3831-7.
 20. Baveja S, et al. Mother-to-child HIV transmission and its correlates in India: systematic review and meta-analysis. *BMC Pregnancy Childbirth*. 2020; 20:509.
 21. Raval G, et al. HIV/AIDS knowledge and awareness among rural youth, Gujarat. *Indian J Public Health*. 2012;56(1):44-6.