

Original Research Article

Study on HIV prevalence in pregnant women and association of risk factors favoring its transmission

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Abstract: HIV (Human Immunodeficiency Virus) among pregnant women became a challenging public health aspect in the whole world. HIV testing has to do in the first trimester itself immediately after confirmation of pregnancy to take necessary precautions to avoid mother to child transmission and also to reduce the viral load in pregnant women. The present study is to know the prevalence of HIV among pregnant women and assessment of various risk factors which favors HIV transmission. Pregnant women attending to ICTC (Integrated Counseling and testing center) tested for Human Immunodeficiency virus, both HIV 1 and HIV 2 using 3 kits supplied by NACO (National AIDS Control Organization). Out of 1437 HIV positive adult patients, 83 adults were pregnant women, about 5.77%. All the pregnant women were heterosexuals. Most of the pregnant women who are HIV positive were married about 95.1%. Unemployment among HIV positive pregnant women about 81.9%. One case (1.2%) of pregnant women with HIV-TB Dual infection was observed. 60.2% of HIV positive pregnant women has sexually transmitted infections. Most of the patients were in the upper lower socioeconomic status about 68.6%. Pregnant women with HIV should diagnose as soon as possible to reduce mother to child transmission. Most of the members in this study were heterosexuals, unemployed belonging to upper lower socioeconomic status with sexually transmitted infections. Patients should educate about basic hygiene and safe sex practices. HIV pregnant women should extensively counsel about significance of ART should also explain about its benefits and teratogenic potential.

Keywords: Human Immunodeficiency Virus, Pregnant women, sexually transmitted infections.

INTRODUCTION:

Human Immunodeficiency Virus (HIV) is posing a greatest public health challenge now-a-days. HIV is a highly mutable virus, exhibits frequent antigenic variation as well as differences in other features such as nucleotide sequences, cell tropism, growth characteristics and cytopathology [1].

Clinical manifestations in HIV infections are due not primarily to viral cytopathology but are secondary to the failure of immune response. This renders patients susceptible to opportunistic infections and malignancies.

HIV causes various clinical manifestations from asymptomatic carriers to Acquired immunodeficiency syndrome (AIDS) complex. The former grow slowly and infect only peripheral blood lymphocytes, while the latter grow faster and yield high titers in established cell lines of lymphoid and monocytoid origin. AIDS is only the last stage in the

wide spectrum of clinical features in HIV infection. The emergence and pandemic spread of the Acquired Immunodeficiency Syndrome (AIDS) has posed the greatest challenge to public health in modern times.

HIV among pregnant women became a challenging public health aspect in the whole world. Each year approximately 1.4 million women are becoming pregnant. In 2013 around 2,40,000 children were newly infected with HIV [2]. In 2010, HIV affected 30% of all pregnancies. 50% of deaths were noted due to HIV among under five children [3]. Most of the HIV infections among children were due to mother to child HIV transmission (MTCT) during pregnancy, delivery or breast feeding [4]. Mortality of HIV infected pregnant women estimated was 7 to 21% by Model based estimates [5].

Infection with HIV/AIDS is not a contraindication to pregnancy. Women, who desire to pregnant, should start antiretroviral therapy (ART) as

early as possible [6]. During labor and delivery there is increased mother to child transmission of HIV infection. The risk factors which increase HIV transmission during pregnancy were smoking, Substance abuse, Vitamin A deficiency, Malnutrition, Infections such as STDs, Clinical stage of HIV (Viral load), Factors related to labor and childbirth, breast feeding. With the appropriate treatment mother to child transmission can be reduced to below 1% [7], without transmission risk is 15-45% [8].

HIV testing has to do in the first trimester itself immediately after confirmation of pregnancy to take necessary precautions to avoid mother to child transmission and also to reduce the viral load in pregnant women. Despite guidelines recommending repeat HIV testing during the third trimester or at delivery in settings where the HIV epidemic is generalized [9,10], repeat testing is rarely implemented or documented [11,12].

The present study is to know the prevalence of HIV among pregnant women and assessment of various risk factors such as contraception, unemployment, socioeconomic status, sexually transmitted infections, smoking which increase the risk of HIV transmission.

MATERIALS AND METHODS:

This is an observational study done in the year 2012 among pregnant patients attending ICTC (Integrated Counseling and testing center) at a tertiary care hospital, Vijayawada. Consent has taken from the patients before HIV testing.

All pregnant women attending government general hospital, Vijayawada were selected to do this study. Even though patients were negative in first or second trimester they were again tested in third trimester.

Pregnant women attending to ICTC tested for Human Immunodeficiency virus, both HIV 1 and HIV 2 using 3 kits (2 sensitive and 1 specific test) supplied by NACO (National AIDS Control Organization). A Venous sample about 3 ml collected from each patient by taking aseptic precautions and personal protective equipment. Pre and Post test counseling has given to all patients by ICTC counselors. The tests done were:

1. HIV Triline test
2. HIV Tridot test
3. HIV Combaids test

HIV strategies were followed to interpret HIV test results, which were suggested by NACO for further management. The results which were in determinate referred to higher centers for confirmation of HIV using western blot.

All the data regarding patients at ICTC were saved and kept unlinked anonymously.

RESULTS:

A total of 1437 HIV positive adult patients were selected to do this study. Among them total number of females were 754 and males were 683.

Out of 1437 HIV positive adult patients, 83 adults were pregnant women, about 5.77%. All the pregnant women were in the age group of 25-40 years.

Data related to HIV positive pregnant women has depicted in Table No:1. All the pregnant women were heterosexuals. Most of the pregnant women who are HIV positive were married about 95.1%. Unemployment among HIV positive pregnant women about 81.9%. Only one pregnant woman has a habit of alcohol and smoking.

Table No: 1 Demographic data regarding HIV positive pregnant women

| Demographic data | No. of HIV positive Pregnant women |
|--|------------------------------------|
| Marital status | |
| Married | 79 |
| Widowed | 3 |
| Single | 1 |
| Entry point (Services referring for HIV care) | |
| PPTCT | 36 |
| VCTC | 33 |
| Other NGOs | 9 |
| Others | 5 |
| Unemployed | 68 |
| Contraception | |
| Condoms | 18 |
| None | 65 |

PPTCT - Prevention of Parent to Child Transmission; NGOs - Non Government organizations;

One case (1.2%) of pregnant women with HIV-TB Dual infection was observed. HIV positive pregnant women associated with sexually transmitted

infections (STI) were noted (Fig No: 1). 60.2% of HIV positive pregnant women have sexually transmitted infections.

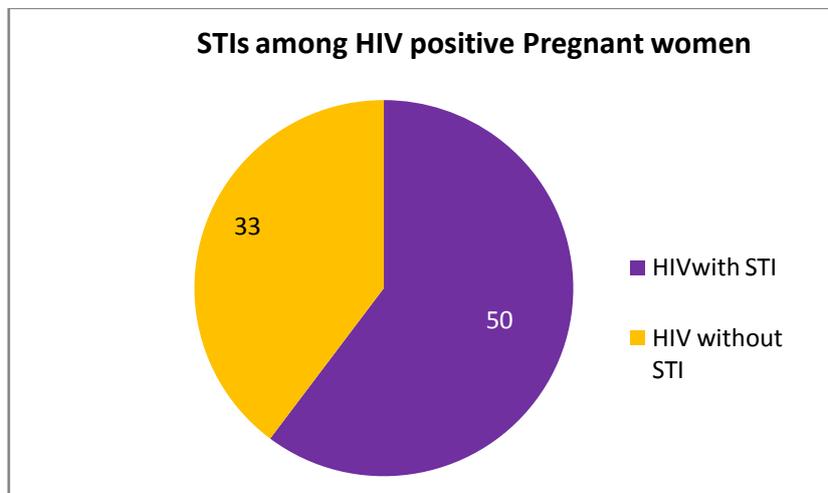


Fig 1: Prevalence of HIV pregnant women with STI

Socioeconomic status has assessed using Kuppuswamy's scale by noting the educational status, occupational status and monthly income of all HIV positive pregnant women. The score attained by

kuppuswamy scale was tabulated in Table No:2. Most of the patients were in the upper lower socioeconomic status about 68.6%.

Table No: 2 Assessing Socioeconomic statuses using Kuppuswamy scale

| Socioeconomic class | Total Score | Number of Patients |
|---------------------|-------------|--------------------|
| Upper (I) | 26-29 | 0 |
| Upper Middle (II) | 16-25 | 0 |
| Lower Middle (III) | 11-15 | 10 |
| Upper Lower (IV) | 5-10 | 57 |
| Lower (V) | <5 | 16 |

DISCUSSION:

Knowing HIV status earlier in pregnant women will help in many ways and gives more time to take decision. Decision taking will help to decrease the HIV viral load in mothers by taking ART (Antiretroviral therapy) earlier and help to reduce the transmission of HIV infectious agent from mother to child by elective cesarean section and avoiding breast feeding. Breast feeding is not recommended for patients on Antiretroviral Therapy (ART) [13, 14]. So that protecting their babies from becoming infected.

Transmission of HIV from mother to child occurs mainly during delivery and postpartum period through placental breakage, tissue damage in genital tract, during breast fed and feeding baby with pre chewed foods by mother. HIV cannot pass through placenta, so there is lesser chance of acquiring HIV to fetus during pregnancy. However protection by placenta may reduce by intrauterine infections, a recent HIV infection, advanced HIV infection or malnutrition. But the mechanism of in utero infection is still under

controversial, few studies given that during pregnancy infected maternal secretions may cross the placenta [15].

Out of 1437 HIV positive adult patients, 83 adults were pregnant women, about 5.77% in the present study. Drake AL *et al.*; [4] documented that pooled incidence rate among pregnant women and post partum women was 4.7 per 100 person-years and 2.9 per 100 person-years respectively. The Centers for Disease Control and Prevention (CDC) recommends routine third-trimester screening in women with high-risk behaviors or who exhibit signs or symptoms of the disease [16].

In this study all the pregnant women were heterosexuals. Most of the pregnant women who are HIV positive were married about 95.1%. Unemployment among HIV positive pregnant women about 81.9%. Only one pregnant woman has a habit of alcohol and smoking. One case (1.2%) of pregnant women with HIV-TB Dual infection was observed.

60.2% of HIV positive pregnant women has sexually transmitted infections. Most of the patients were in the upper lower socioeconomic status about 68.6%.

Sexually transmitted infections favor transmission of HIV and its increase in incidence mainly due to not following contraception in about 78.3%. As mainly HIV has detected positive in lower socioeconomic status patients, they has to educate about safe sex and basic hygienic practices.

HIV pregnant women should take anti HIV medications regardless of CD4 counts and viral load to reduce HIV viral load and mother to child transmission. The earlier ART is initiated; the more likely the viral load is to be suppressed by the time of delivery [17].

During labor and delivery also pregnant women should continue anti HIV medications because the chances of vertical transmission are more almost 70%. Few anti HIV medications may cause some problems like drug toxicities to babies which are concerned by some women. However, delay in ART initiation may prove less effective in reducing infection transmission [25]. According to March of Dimes, new treatments can reduce the risk of a treated mother passing HIV to her baby to a 2 percent or less chance [18]. Drake AL *et al.*; [4] observed that among pregnant and postpartum women, pooled MTCT rate was about 22.7%

The risk of mother to child transmission is directly related to HIV viral load of the mother. The risk of mother to child transmission of HIV is low for women who take anti-HIV medications during pregnancy and have a viral load less than 1000 copies/mL near the time of delivery [6]. Currently, no vaccine is available for HIV; therefore, prevention is crucial to decreasing the risk of transmission [13].

CONCLUSION:

Pregnant women with HIV should diagnose as soon as possible to reduce mother to child transmission. Many risk factors such as smoking, not using contraception, coexisting infections like STD (Sexually transmitted diseases), tuberculosis favor transmission of HIV infection among pregnant women. Most of the members in this study were heterosexuals, unemployed belonging to upper lower socioeconomic status with sexually transmitted infections. Patients should educate about basic hygiene and safe sex practices and also avoiding donation of blood and organs. HIV pregnant women should extensively counsel about significance of ART should also explain about its benefits and teratogenic potential.

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REFERENCES:

1. Ananthanarayan, Paniker; Textbook of Microbiology. Arti Kapil, 9th edition, University press, 2013.
2. Children and Pregnant women living with HIV. http://www.unaids.org/sites/default/files/media_asset/09.
3. "WHO; eliminating mother to child HIV transmission in South Africa". www.who.int. Retrieved 2015-11-20.
4. Drake AL, Wagner A, Richardson B, John-Stewart G; Incident HIV during Pregnancy and Postpartum and Risk of Mother-to-Child HIV Transmission: A Systematic Review and Meta-Analysis. PLoS Med, 2014; 11(2).
5. Basia Zaba, Clara Calvert, Milly Marston, Raphael Isingo, Jessica Nakiyingi-Miuro, Tom Lutalo *et al.*; Effect of HIV infection on pregnancy-related mortality in sub-Saharan Africa: secondary analyses of pooled community-based data from the network for Analysing Longitudinal Population-based HIV/AIDS data on Africa (ALPHA). The Lancet, 2013 May; 381 (9879):1763-1771.
6. Department of Health and Human Services (HHS) Panel on Treatment of HIV-infected Pregnant Women and Prevention of Perinatal Transmission, a working group of the Office of AIDS Research Advisory Council (OARAC). <http://aidsinfo.nih.gov/>. Reviewed Aug 2015. Developed by U.S.
7. Coutsoudis A, Kwaan L, Thomson M; "Prevention of vertical transmission of HIV-1 in resource-limited settings". Expert Review of Anti-infective Therapy, 2010;8(10):1163-75.
8. "Mother to child transmission of HIV". World Health Organization. Retrieved 2015-11-18.
9. Perinatal HIV prevention aims for elimination. AIDS Read 12: 146, 150.
10. Branson BM, Handsfield HH, Lampe MA, Janssen RS, Taylor AW; Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. MMWR Recomm Rep, 2006; 55: 1-17.
11. Moodley D, Esterhuizen TM, Pather T, Chetty V, Ngaleka L; High HIV incidence during pregnancy: compelling reason for repeat HIV testing. AIDS, 2009; 23:1255-1259.