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## Research Article

### DESCRIPTIVE STUDY ON KNOWLEDGE AND ATTITUDE TOWARDS PREVENTION AND MANAGEMENT OF PARENT TO CHILD TRANSMISSION OF HIV AMONG NURSES IN A TERTIARY CARE HOSPITAL, NEW DELHI

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#### ABSTRACT

Parent-to-child-transmission (PTCT) of HIV is the transmission of HIV from an HIV positive mother to her child during any stage of pregnancy, labour, delivery or breastfeeding. It is necessary to ensure that the nurse/midwife has adequate knowledge about the strategies for the prevention of vertical transmission of HIV in order to target safe, rational and effective intervention to reduce PTCT of HIV. In this context present study is aimed to assess the knowledge and attitude regarding prevention and management of PTCT of HIV among nurses working in a tertiary care hospital. The study was conducted using a cross sectional descriptive design on hundred nurses in a tertiary care hospital in Delhi, India by convenient sampling method. Self administered structured questionnaire and rating scale were used. Most of the nurses (60%) had only fair knowledge but majority (82%) had positive attitude on prevention and management of PTCT of HIV. Nurses' knowledge and attitude are correlated to each other at  $p < 0.01$ . Nurses' knowledge score had a significant association with designation at  $p = 0.004$  level. Grade I nurses had a better mean knowledge as compared to ANS and Grade II. The mean attitude score of senior nurses (51-60 years) was the highest. There was no significant association found with other demographic variables, education and experience of nurses with knowledge and attitude. There are gaps in the knowledge and attitude level of nurses which need structured educational intervention.

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## INTRODUCTION

Human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) grows as a major public health problem that requires a priority attention worldwide. Nearly 1800 new HIV infections occur in children under 15 years of age every day. According to the current status, every day 1400 children under 15 years of age die of an HIV-related illness. Parent to Child Transmission (PTCT) is the result of a chain of events that most often involves an HIV-infected man infecting his female partner through unprotected sexual activity, and the partner infecting her next baby, and potentially subsequent babies, during the remainder of her reproductive life.

In India, total of 1.42 lakh children (0 to 14 years) are estimated to be living with HIV with about 14000 new HIV infections annually. This transmission is known to occur at any time during pregnancy, delivery and breast-feeding period with almost equal frequency. Nearly 90% of the newly infected children with HIV are due to PTCT. In the absence of any intervention, the risk of PTCT ranges from 30% to 45%. This

risk can be decreased to 2 to 5% in non-breastfeeding and breastfeeding women respectively with treatment of antiretroviral (ARV) and adequate measures. Without such intervention, it is estimated that about a third of HIV-infected children would die before the first year of life, and a half would die before two years of age. According to the guidelines of WHO, the first step in prevention of mother to child transmission (PMTCT) of HIV is to identify the pregnant mothers who are HIV infected. In order to achieve this, the Department of AIDS Control (DAC) has decided to provide lifelong ART for all pregnant and breast feeding women living with HIV, in which all pregnant women living with HIV receive a triple-drug ART regimen (TDF+3TC+ EFV) regardless of CD4 count or clinical stage, both for their own health and to prevent vertical HIV transmission and for additional HIV prevention benefits. Safe childbirth practices reduce infant exposure to HIV in maternal blood and genital secretions during labor and delivery. The general recommendations from WHO is that HIV-infected mothers should give either exclusive breastfeeding or exclusive

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replacement feeding to their babies for six months. The replacement feed should follow the AFASS (acceptable, feasible, affordable, sustainable, and safe) criteria.

A lot of fear in the mind of health workers especially nurses and midwives have been generated due to the issues relating to HIV/AIDS. Some people act inappropriately towards HIV positive clients and this makes one wonder if they had adequate knowledge about mode of transmission of HIV and skills to prevent it. A study conducted in Nigeria to examine the knowledge and behavior of prevention of vertical transmission among nurse/midwives and to determine their behavior related to knowledge revealed that they are aware of vertical transmission of HIV and majority (60.3%) became aware through workshop/seminar attendance for the first time and only 41% received lectures as students. Still, there existed many gaps in the knowledge of HIV as over 50% of respondents could not correctly answer the items on pathophysiology, diagnostic tests, and factors that influence vertical transmission. Awareness and knowledge about health services are indirect indicators of utilization of services for the population where Parent to Child Transmission (PTCT) of HIV is predominant. Research studies focusing on the knowledge and attitude level of PPTCT have been performed worldwide, but are mostly concentrated in the African continent. A study carried out in the Indian context among women attending an antenatal clinic in Kolkata reported that just 6.8% of participants had heard of PTCT of HIV whereas in rural South India, 48% pregnant women did not know the means to prevent PTCT. There is evidence to suggest that the patient-provider relationship may have an effect on decision-making during the antenatal period, and on the uptake of PPTCT interventions. In this context, nurses play an important role in providing PPTCT services.

Studies on knowledge and attitude of nurses regarding prevention and management of PTCT of HIV in Indian scenario are very less. It is necessary to ensure that the nurse/midwife has adequate knowledge about the strategies for the prevention of vertical transmission of HIV in order to target safe, rational and effective intervention to reduce PTCT of HIV. Studies have shown that there existed many gaps in the knowledge and misconceptions regarding prevention and management of PTCT of HIV among nurses. In this context, the present study is designed to find out the knowledge, attitude and existing gaps and need for further training among nurses regarding prevention and management of PTCT of HIV.

## **METHODOLOGY**

A descriptive cross sectional study was conducted in selected units of All India Institute of Medical Sciences (AIIMS), New Delhi. Nurses who are working in selected units of the main hospital like maternity and neonatal areas (obstetrics & gynaecology wards, Labour room, Gynaecology OPD, neonatal ICU) and General wards were the sample. Convenience sampling method was used to enroll 100 nurses who met the inclusion criteria from the selected units during the study period (July 2014 to November 2014). Ethical clearance to conduct the study was obtained from the ethical committee of AIIMS. Based on the objectives of the study, a self administered structured questionnaires and rating scale were

developed. A blueprint of the tool was developed based on the different aspects of prevention and management of PTCT of HIV such as pathophysiology of HIV, risk factors for PTCT of HIV, means of preventing and managing PTCT of HIV, PPTCT guidelines of WHO 2013, ethical and legal concerns regarding PPTCT of HIV. The tool consists of 3 sections;

**Section A** (subject data sheet): The subject data sheet is structured and contains 10 demographic variables and selected information of nurses including age, sex, religion, educational qualification, designation, area of work, work experience in maternity and neonatal areas and questions related to previous education and experiences on management and prevention of PTCT of HIV such as source of information on HIV, managed a pregnant women with HIV, training program on HIV and year of attending the training.

**Section B** (knowledge assessment questionnaire): To assess the nurses' knowledge on prevention and management of PTCT of HIV. Thirty multiple choice questions were formulated based on different aspects of PPTCT of HIV. These questions were distributed under three sub-domains of cognitive domain such as recall, application and comprehension in the blueprint. Each item has one correct response and awarded one score. The maximum possible score is 30 and minimum score is zero. The questionnaire takes approximately 15 to 20 minutes to complete. Based on the total score knowledge level was graded as

- Excellent (score between 26 - 30)
- Good (score between 21 - 25)
- Fair (score between 15 - 20)
- Poor (score of <15 )

**Section C** (attitude assessment scale): To assess the nurses' attitude towards prevention and management of PTCT of HIV. A five point Likert scale with 15 statements (8 positive statements and 7 negative statements) was developed. The statements were distributed under affective domain in the blueprint. Each statement can be related through a maximum score of five and minimum score of one through responses like "strongly agree", "agree", "not sure", "disagree" and "strongly disagree". In case of negative statements, the score is in reverse order. Total attitude score ranges with maximum possible score of 75 to a minimum possible score of 15. The scale takes approximately 15 to 20 minutes to complete. Based on total score obtained, the participants' attitude was graded as:

- Positive (score between 56-75)
- Neutral (score between 36-55)
- Negative (score of 35)

The content validity and reliability of the tool were established. (Knowledge assessment questionnaire; Cronbach's alpha= 0.88. Attitude assessment scale; Cronbach's alpha= 0.89). A pilot study was conducted among 15 nurses from maternity, neonatal areas and general wards in the main hospital AIIMS to ascertain the feasibility of main study prior to the actual data collection. The findings reaffirmed the feasibility of the study.

## **Data Analysis**

Data analysis was done using SPSS version 16. Both descriptive and inferential statistics were used for analysis.

Descriptive statistics used include frequency, percentage, and measures of central tendency for describing the demographic variables and Pearson correlation test to find out the correlation between knowledge and attitude scores. The Independent sample 't' test and one way ANOVA with Bonferroni corrections were used to find out the association between knowledge and attitude with selected variables. p value of <0.05 was taken as statistically significant.

**RESULTS**

**Table 1** Demographic profile of nurses N=100

Demographic variables	Mean ± SD	Median	Min-Max
Age (years)	35.14 ± 10.15	32	23-59
Year of experience in maternity and neonatal areas(years)	67.68 ± 80.42	32	2-360
	<b>Percentage</b>		
Age (years)	21-30		44
	31-40		27
	41-50		19
	51-60		10
Gender	Male		9
	Female		91
Religion	Hindu		44
	Non-Hindu		56
Professional qualification	Diploma		42
	Degree		58
	Sister grade II (Junior Staff nurse)		62
Designation	Sister grade I(Senior Staff Nurse)		29
	ANS(Assistant Nursing Superintendent)		9
	Maternity and neonatal area		54
Area of work	General ward		46
	>10 years		54
Year of experience in maternity and neonatal areas	3-10 years		29
	<3 years		17
Managed a pregnant women with HIV	Yes		64
	No		36

As the **table 1** shows, the median age of nurses was 32. Most (44%) of the nurses were in the age group of 20-30 years. Majority (91%) were females and non Hindus (56%). Most (58%) of the nurses were graduates and 62% of them belonged to Sister Grade II. More than half of them (54%) were working in maternity and neonatal areas.

**Table 2** Nurses' education on prevention and management of PTCT of HIV

N=100

	Percentage	
Source of information	Lecture	52
	Training	48
	Magazines	0
	Attended	48
Training program on HIV	Not attended	52
	2009	7
Year of attending the training	2010	15
	2011	7
	2012	19

As shown in **table 2**, 52% of the participants obtained their knowledge on prevention and management of PTCT of HIV by lectures only during their diploma or undergraduate program and the remaining reported that they have undergone training programs on HIV. Nearly half (48%) of the participants had undergone a 5 days training program under GFATM program. Among them 19% attended the training in 2012, 15% of the

nurses attended the training in 2010 and others (14%) attended in 2009 and 2011 respectively.

**Table 3** Knowledge of nurses on prevention and management of PTCT of HIV

Knowledge on prevention and management of PTCT of HIV			
	Frequency	Mean ± SD	Min-Max
Excellent	0	0	0
Good	33	21.96 ± 0.95	21-25
Fair	60	17.76 ± 1.55	15-20
Poor	7	13.28 ± 0.95	12-14
Overall knowledge score	100	18.9 ± 2.9	12-25

As shown in **table 3**, nurses' over all knowledge score was in the category of fair knowledge with a mean of 18.9 ± 2.9. Most (60%) of the nurses' had only fair knowledge regarding prevention and management of PTCT of HIV with a mean score of 17.76 ± 1.55 and 33% of the nurses had good knowledge with a mean score of 21.96 ± 0.95, while 7% of the nurses' had poor knowledge with a mean of 13.28 ± 0.95. None of the nurses had excellent score on prevention and management of PTCT of HIV.

**Table 4** Attitude of nurses towards prevention and management of PTCT of HIV

Attitude on prevention and management of PTCT of HIV			
	Frequency	Mean ± SD	Min-Max
Positive	82	62.40 ± 3.98	56-74
Neutral	18	50.88 ± 3.14	44-55
Negative	0	0	0
Overall attitude score	100	60.3 ± 5.9	44-74

As shown in **table 4**, nurses' overall attitude score was in the category of positive attitude with a mean of 60.3 ± 5.9. Majority (82%) of the nurses had a positive attitude on prevention and management of PTCT of HIV with a mean score of 62.40 ± 3.98. Rest of the participants had a neutral attitude towards prevention and management of PTCT of HIV. None of them had a negative attitude on prevention and management of PTCT of HIV.

**Table 5** Correlation between knowledge and attitude of nurses

N= 100

Variable	Mean ± SD	Range	Correlation Coefficient	p value
Knowledge	18.9 ± 2.9	12 - 25	0.259	0.009**
Attitude	60.3 ± 5.9	44 -74		

Pearson correlation \*\*p<0.01

**Table 5** shows that nurses' knowledge and attitude are correlated to each other at p<0.01. The value of correlation coefficient comes in small positive category (0.1 to 0.3) which indicates as the knowledge increases, the attitude also improves. This supports Launialas' KAP model.

Nurses' knowledge score had a significant association with designation at p<0.004 level. Grade I nurses had a better mean knowledge score of 20.20 ± 2.22 as compared to ANS (19.22 ± 2.68). Grade II nurses had less mean knowledge score (18.15 ± 2.87) as compared to Grade I and ANS. Gender, professional qualification, area of work , experience in maternity and neonatal areas, and other demographic variables were not associated with nurses' knowledge on prevention and management of PTCT of HIV.

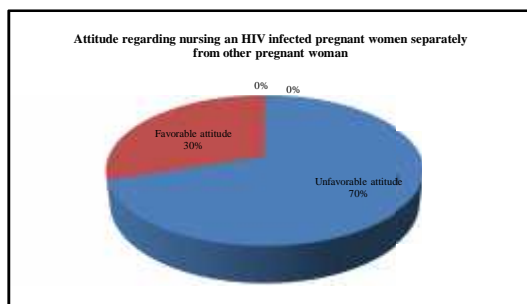
Nurses' attitude towards prevention and management of Parent to Child Transmission of HIV had a significant association with age ( $p < 0.031$ ). The mean attitude score of senior nurses (51-60 years) was the highest ( $63.10 \pm 5.28$ ) followed by younger nurses (21-30 years) with a mean attitude score of  $61.27 \pm 5.65$ . The mean attitude score of middle aged nurses (41-50 years) was  $57.26 \pm 6.94$ . A borderline insignificance was found between the mean attitude score of senior (51-60 years) and middle aged (41-50 years) nurses. Other demographic factors were not significantly associated with the attitude level of nurses.

**Table 6** Areas of gaps in the knowledge which need immediate refresher training

Areas of gaps in knowledge levels of nurses	Percentage of wrong answers
ART drugs for PPTCT of HIV according to the WHO 2013 guidelines	88
Percentage of risk reduction of PTCT by PPTCT package	73
Mode of feeding to be avoided in a baby born to an HIV infected mother	68
Means of preventing PTCT of HIV by pregnancy termination, and avoidance of invasive tests	66
Accurate timing of HIV antibody testing to a baby born to HIV infected mother	63
Normal CD4 count	61
Duration of ART according to the new PPTCT guideline of WHO	61
Most significant route of HIV transmission under 15 years of age	57

As shown in **Table 6**, majority(88%) of the nurses were not aware about the ART drugs recommended in the current guideline of WHO (2013). Only 27% of nurses knew the percentage of risk reduction of PTCT by Prevention of Parent to Child Transmission of HIV (PPTCT) package. Most (68%) of the nurses did not know the mode of feed to be avoided in an infant born to a HIV infected women. More than half (66%) of the nurses were not aware about various means of preventing PTCT of HIV by termination and pregnancy and avoidance of invasive tests and 63% did not know the accurate timing of HIV antibody testing to a baby born to an HIV infected women. Moreover, majority of the nurses (61%) were not aware about normal CD4 count and duration of ART according to the new PPTCT guideline of HIV. Most (57%) of the nurses did not know that the most significant route of transmission under 15 years of age is vertical transmission. In the light of these findings, it is concluded that nurses though moderately knowledgeable still had gaps in certain areas.

Figure 1 describes the area of gap in the attitude of nurses towards prevention and management of PTCT of HIV



**Figure 1** Area of gap in the attitude among nurses which needs immediate further training

**Figure 1** shows the attitude of nurses regarding nursing an HIV infected pregnant women separately from other pregnant woman. Majority (70%) of the nurses agreed with this statement. Only 30 % of the nurses had favorable attitude towards this.

## DISCUSSION

In the present study, the mean knowledge score of the nurses was 63%. This finding is almost consistent with a previous study finding by [Theresa Nkole \(2011\)](#), and [Chizoma M. Ndikom, et al \(2007\)](#), who reported that the mean knowledge score of nurses was moderate. While a conflicting finding was reported in [Mfalamagoha Johari \(2011\)](#), that nurses had a moderately higher knowledge (75%) on prevention and management of PTCT of HIV. This can be justified by considering the area of work of the nurses. The present study included nurses from various departments of the hospital including general wards.

Majority (82%) of the nurses in the present study had a positive attitude towards prevention and management of PTCT of HIV and rest of the participants had neutral attitude. This finding is in agreement with [Theresa Nkole \(2011\)](#), revealed that midwives showed a positive attitude (95%) towards PMTCT services. This finding is also in line with [Mfalamagoha Johari \(2011\)](#) and [A.S Muula et al \(2007\)](#). This shows that majority of the nurses have a favorable attitude towards prevention and management of PTCT of HIV.

Nurses' knowledge on prevention and management of PTCT of HIV had a significant association with designation. Highest mean knowledge score was reported from Grade I followed by ANS (Assistant Nursing Superintendent) and Grade II nurses. This can be because of the increased experience as well as exposure to clinical care of Grade I nurses. This result is not in agreement with the findings of [Y. Ogbolu et al, \(2012\)](#), that professional ranks do not have significance with knowledge level of health workers.

Nearly half (48%) of the nurses in the present study have undergone a 5 days training program under GFATM on HIV. More than half nurses were working in maternity and neonatal areas. Majority had more than 10 years of experience in maternity and neonatal areas and 64% of the nurses have managed pregnant women with HIV. But the present study does not show any significant association of knowledge and attitude with the variables like training on HIV, area of work, year of experience in maternity and neonatal areas and chance for managing a HIV infected pregnant women. This finding is incongruent with the results of [Chizoma M. Ndikom, et al \(2007\)](#), that there was a significant difference in the knowledge of nurse/midwives who had experience in managing pregnant women living with HIV/AIDS and those who did not. None of the previous studies revealed the other results. This can be justified by the lack of direct involvement of nurses in various PPTCT services including voluntary counseling and testing, follow up services of post natal mothers and infants with HIV etc and absence of refresher training programs based on updated guidelines on prevention and management of PTCT of HIV.

Majority (88%) of the nurses were not able to identify the recommended ART drugs and 39% did not correctly report the duration of ART in pregnant woman according to new guideline. Moreover, 63 % of the nurses were not aware about the follow up pattern of infants born to HIV infected women. Only 27% of the nurses were correctly reported the percentage of risk reduction by effective PPTCT package. No previous studies have revealed this result. This suggests the lack of updating knowledge among nurses and need of reviewing HIV related training for midwives. WHO has revised the guideline on PPTCT in 2013. Findings of the present study emphasize the importance of updating the current guidelines among the nurses.

#### Limitations of the study

- Small sample size
- Study was restricted to selected areas of AIIMS main hospital
- Self developed questionnaire was used
- Participation of senior nurses was less in number
- As there was no negative marking, there are chances of guessing.
- Attitude was assessed through rating scale. So there is a chance to follow a professionally acceptable standard by hiding their real attitude.

#### CONCLUSION AND IMPLICATIONS

The study concludes that nurses have only fair knowledge with positive attitude on prevention and management of PTCT of HIV. As knowledge increases, the attitude level of nurses becomes more favorable. There are gaps in the knowledge and attitude level of nurses which need structured educational intervention. The study indicates the need of nursing curriculum to be updated on according to the new WHO guidelines. Students should be sensitized to provide PPTCT services during their postings in ANC clinic, maternity and neonatal areas. In service education programs and refresher training should be conducted for the nursing personnel on prevention and management of PTCTC of HIV. Nurses working in clinical areas need to be updated on current guidelines of prevention and management of PTCT of HIV. Moreover, the role of nursing personnel in PPTCT services should be extended and specified.

#### Recommendations for Future Research

- Large scale studies can be conducted on a large sample.
- Practices of nurses in PPTCT services can be assessed.
- Identify motivating factors and hindering factors towards positive behavioral change in delivering PPTCT services.
- Role of nursing personnel in PPTCT services need to be emphasized.
- A qualitative approach can elucidate deeper issues existing in the areas of prevention and management of PTCT of HIV.

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