RESEARCH PAPER

A Study To Evaluate The Effectiveness Of Prevention Of Mother To Child Transmission Of HIV Module On Knowledge Among Nursing Officers At Selected Hospitals Of District Kapurthala, Punjab

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ABSTRACT

Background: Mother-to-child transmission (MTCT) of HIV remains an important public health concern, as the virus can be transmitted from an HIV-positive mother to her child during pregnancy, childbirth, or breastfeeding. Despite considerable progress in antiretroviral therapy and preventive strategies, effective PMTCT services may still be affected by gaps in HIV testing, treatment adherence, safe delivery practices, infant prophylaxis, appropriate infant feeding, early diagnosis, and follow-up care. Nursing officers have a vital role in delivering these services through maternal and newborn care, counselling, infection prevention, treatment support, and continuity of care. However, inadequate knowledge and inconsistencies in clinical practices may affect the effective implementation of PMTCT interventions. Therefore, structured and evidence-based educational programs are important for strengthening nursing officers' knowledge and practices and improving the overall quality of PMTCT-related care. Therefore, this study aimed to evaluate the effectiveness of prevention of mother to child transmission of HIV module on knowledge and practice among nursing officers at selected hospitals of District Kapurthala, Punjab.

Method: A quantitative research approach with a quasi-experimental two-group pre-test post-test control group design was adopted to assess the effectiveness of prevention of mother to child transmission of HIV module among nursing officers. A total of 220 nursing officers who fulfilling the predetermined inclusion criteria were selected using a non-probability consecutive sampling technique and allocated equally into experimental and control groups. Baseline information was collected using a socio-demographic questionnaire, the structured knowledge questionnaire (SKQ) and the Practice Assessment Check-list (PAC) before implementation of the intervention. The experimental group received a prevention of mother to child transmission (PMTCT) of HIV module following a standardized protocol, whereas the control group received no intervention. Post-test assessment was conducted using the same standardized instruments. The collected data were analyzed using descriptive and inferential statistics, including frequency, percentage, mean, standard deviation, t-test, Pearson's correlation coefficient, and Chi-square test at the 0.05 level of significance.

Results: It was revealed that the majority of nursing officers in both the experimental and control groups had inadequate knowledge and poor practice regarding PMTCT of HIV during the pre-test assessment. Following administration of the PMTCT Module, a substantial improvement in both knowledge and practice was observed among participants in the experimental group, whereas only minimal changes were observed in the control group. The mean knowledge score of the experimental group increased significantly from 13.826 ± 2.057 to 37.184 ± 1.128, whereas only a marginal change was observed in the control group (12.608 ± 2.293 to 13.714 ± 1.964). Similarly, the mean practice score of the experimental group increased significantly from 10.871 ± 1.152 to 29.618 ± 0.954, whereas only a minimal change was observed in the control group (9.841 ± 1.471 to 10.942 ± 1.162). The mean gain scores for knowledge and practice were considerably higher in the experimental group (23.358 ± 0.929 and 18.747 ± 0.198) compared with the control group (1.106 ± 0.329 and 1.101 ± 0.309), respectively. Statistical analysis demonstrated highly significant differences in the gain scores between the groups ($t=19.813$ for knowledge and $t=14.682$ for practice, $p<0.001$), confirming the effectiveness of the PMTCT Module in improving the knowledge and practice of nursing officers regarding prevention of mother-to-child transmission of HIV.

Conclusion: The study concluded that PMTCT Module is an effective intervention for enhancing the knowledge level and improving the practice level of nursing officers regarding prevention of mother to child transmission of HIV.
Key words: Nursing officers; prevention of mother to child transmission of HIV; PMTCT; knowledge; practice.

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INTRODUCTION

Mother-to-child transmission (MTCT) of Human Immunodeficiency Virus (HIV) remains an important public health concern and is one of the major routes through which children acquire HIV infection.(1) HIV can be transmitted from an infected mother to her child during pregnancy, labour and delivery, or breastfeeding. Although advances in HIV screening, antiretroviral therapy, maternal care, safe delivery practices, and infant prophylaxis have considerably reduced the risk of vertical transmission, preventable transmission continues to occur.(2) Effective prevention therefore requires timely identification of HIV infection and appropriate interventions throughout pregnancy, childbirth, and the postnatal period.(3)

Prevention of Mother-to-Child Transmission (PMTCT) of HIV involves a comprehensive range of preventive and therapeutic measures designed to protect both the mother and the child.(4,5) Important components include early HIV testing during pregnancy, timely initiation and continuation of antiretroviral therapy, monitoring of maternal health and viral load, appropriate management during labour and delivery, newborn prophylaxis, safe infant-feeding practices, early infant diagnosis, and continued follow-up care.(2,6) Proper implementation of these measures can substantially reduce the possibility of HIV transmission from mother to child and contribute to improved maternal and neonatal health outcomes.(7,8)

Nursing officers have an important role in the successful implementation of PMTCT services because they remain closely involved with women during antenatal, intrapartum, postnatal, and newborn care.(9,10) Their responsibilities include providing health education and counselling, supporting HIV testing, promoting adherence to antiretroviral therapy, maintaining infection-prevention practices, assisting in safe delivery, educating mothers regarding infant feeding, facilitating newborn prophylaxis and early infant diagnosis, maintaining documentation, and ensuring continuity of follow-up care. Consequently, adequate and updated knowledge regarding PMTCT is essential for nursing officers to perform these responsibilities effectively.(11,12)

Despite their significant responsibilities, gaps in knowledge regarding PMTCT may exist among nursing personnel. Inadequate understanding of the routes and timing of HIV transmission, antiretroviral therapy, viral load suppression, safe obstetric practices, newborn prophylaxis, infant-feeding recommendations, early infant diagnosis, and follow-up requirements may affect the quality of care provided.(13,14) Limited exposure to specialized training, lack of regular updates, changing recommendations, and inadequate access to current guidelines may further contribute to variations in knowledge among nursing officers.(15,16)

Knowledge is therefore an important component of professional competence in the delivery of PMTCT services. Nursing officers with adequate knowledge are better prepared to provide accurate information to pregnant women and mothers, support adherence to treatment, implement recommended preventive measures, recognize situations requiring timely intervention, and provide appropriate counselling and follow-up. Updated knowledge may also enable nurses to communicate confidently with women living with HIV and contribute effectively to multidisciplinary efforts aimed at preventing vertical transmission.(17–21)

Structured educational interventions can provide an effective means of improving and updating professional knowledge among nursing personnel. A systematically developed educational module can organize essential information in a clear and sequential manner and provide nursing officers with an opportunity to strengthen their understanding of current PMTCT recommendations.(22–24) Such education may cover HIV transmission, antenatal care, antiretroviral therapy, safe delivery practices, infant feeding, newborn prophylaxis, early infant diagnosis, infection prevention, counselling, documentation, and specific nursing responsibilities related to PMTCT.(25,26)

However, structured and standardized educational programs specifically addressing PMTCT-related knowledge may not be routinely available to nursing

officers in all healthcare settings. Considering their frontline role in maternal and newborn care and the importance of maintaining current knowledge regarding HIV prevention, strengthening PMTCT-related education among nursing officers is essential. Therefore, the researcher conducted the study with following objective.

Objectives: To evaluate the effectiveness of prevention of mother to child transmission of HIV module on knowledge among nursing officers at selected hospitals of District Kapurthala, Punjab.

Materials and Methods: The present study adopted a quantitative research approach with a quasi-experimental two-group pre-test–post-test control group design. The study was conducted among nursing officers working at selected hospitals of District Kapurthala, Punjab. A total of 220 nursing officers who fulfilled the predetermined eligibility criteria were recruited using a non-probability consecutive sampling technique. Following recruitment, participants were allocated equally into experimental and control groups through simple randomization, resulting in 110 participants in the experimental group and 110 participants in the control group. The sample size was determined through a priori power analysis using G*Power, considering an effect size of 0.5, significance level of 0.05, and statistical power of 0.95.

For the knowledge variable, the research instruments consisted of a socio-demographic questionnaire and a Structured Knowledge Questionnaire (SKQ) for assessing knowledge regarding prevention of mother-to-child transmission of HIV among nursing officers. The SKQ consisted of 40 multiple-choice questions, with a total possible score ranging from 0 to 40. The reliability coefficient of the SKQ was reported as 0.86, demonstrating acceptable reliability of the instrument. Knowledge was assessed on the basis of correct responses provided by the participants and the obtained scores were recorded and categorized according to the predetermined criteria.

The experimental group received the structured Prevention of Mother-to-Child Transmission (PMTCT) of HIV Module, whereas the control group received no structured intervention. The module included information regarding HIV transmission, antenatal care, antiretroviral therapy, safe delivery practices, infant feeding, newborn prophylaxis, early infant diagnosis, infection prevention, counselling, documentation, and nursing responsibilities related to PMTCT. The intervention was organized into four structured sessions of approximately 30 minutes each, with one session delivered weekly for four consecutive weeks.

Pre-test knowledge was assessed among participants in both groups using the SKQ. Following completion of the four-week PMTCT Module in the experimental group, post-test knowledge was assessed in both experimental and control groups using the same Structured Knowledge Questionnaire. The data were analysed using appropriate descriptive and inferential statistics to determine the effectiveness of the PMTCT Module on knowledge among nursing officers.

Results and Discussion: Obtained information were analyzed and grouped as per objectives of the study. The result reflected in tabular form as follows:

Table-1 Frequency and Percentage Distribution of Socio-Demographic Variables:

N-220

Socio-demographic Profile		**Experimental group (N=110)**		**Control group (N=110)**		**Chi-square**	**p-value**
		F	**%**	**F**	**%**		
Age in years	< 25 years	6	5.45	11	10	4.628	0.819
	26-30 years	32	29.09	37	33.63		
	31-35 years	**59**	**53.63**	**54**	**49.09**		
	> 35 years	13	11.81	8	7.27		
	Male	21	19.09	16	14.54	1.927	0.471

Gender	Female	**89**	**80.9**	**94**	**85.45**		
Marital Status	Married	**106**	**96.36**	**102**	**92.72**	3.088	0.846
	Unmarried	3	2.72	8	7.27		
	Divorced	1	0.9	0	0.0		
Religion	Hindu	**57**	**51.81**	**61**	**55.45**	4.915	0.758
	Sikh	34	30.9	28	25.45		
	Muslim	3	2.72	4	3.63		
	Christian	16	14.54	17	15.45		
Type of family	Joint family	39	35.45	48	43.63	1.527	0.728
	Nuclear family	**71**	**64.54**	**62**	**56.36**		
Residential area	Urban	**78**	**70.9**	**86**	**78.18**	2.419	0.381
	Rural	32	29.09	24	21.81		
Educational status	GNM	**76**	**69.09**	**89**	**80.9**	6.824	0.429
	B.Sc. Nursing	18	16.36	13	11.81		
	Post Basic B.Sc. Nursing	15	13.63	8	7.27		
	M.Sc. Nursing	1	0.9	0	0.0		
Professional Designation	Nursing officer	**103**	**93.63**	**105**	**95.45**	3.927	0.816
	In-charge	6	5.45	4	3.63		
	ANS/DNS	1	0.9	1	0.9		
Year of experience	< 2 years	7	6.36	13	11.81	3.728	0.937
	2-5 years	29	26.36	38	34.54		
	5-7 years	**63**	**57.27**	**56**	**50.9**		
	> 7 years	11	10	3	2.72		

Type of hospital	Private	**72**	**65.45**	**79**	**71.81**	2.571	0.694
	Government	38	34.54	31	28.18		
Previous training on PMTCT of HIV	Yes	0	0.00	0	0.00	1.628	0.791
	No	**110**	**100**	**110**	**100**		

Table 1 reflected that, in both the experimental and control groups, the majority of participants were aged 31–35 years (53.63% and 49.09%, respectively), were female (80.90% and 85.45%), married (96.36% and 92.72%), and belonged to the Hindu religion (51.81% and 55.45%). Most participants belonged to nuclear families (64.54% and 56.36%) and resided in urban areas (70.90% and 78.18%). Regarding professional characteristics, the majority had completed GNM (69.09% and 80.90%), were working as nursing officers (93.63% and 95.45%), had 5–7 years of professional experience (57.27% and 50.90%), and were employed in private hospitals (65.45% and 71.81%). None of the participants in either group had received previous training on PMTCT of HIV. The obtained p-values for all socio-demographic variables were greater than 0.05, indicating that the experimental and control groups were homogeneous and comparable at baseline.

Table:2 Comparison of distribution of Knowledge level among participants before and after PMTCT Module among both groups:

N=220

Knowledge Level	**Experimental group (N=110)**				**Control group (N=110)**			
	Pre-test		**Post-test**		**Pre-test**		**Post-test**	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Inadequate Knowledge	**88**	**80**	02	1.81	**92**	**83.63**	**90**	**81.81**
Moderate Knowledge	19	17.27	11	10	13	11.81	15	13.63
Adequate Knowledge	03	2.72	**97**	**88.18**	05	4.54	05	4.54

Table 2 presented that at pre-test, the majority of nursing officers in both the experimental and control groups had inadequate knowledge (80% and 83.63%, respectively). Following the PMTCT Module, 88.18% of participants in the experimental group achieved adequate knowledge, compared with only 4.54% in the control group, where 81.81% continued to have inadequate knowledge. These findings indicate a marked improvement in knowledge among nursing officers in the experimental group following the PMTCT Module.

Table:3 Effectiveness of PMTCT Module on Knowledge among nursing officers:

Groups	Experimental group		Control group	
	Pre-test	Post-test	Pre-test	Post-test
Mean	13.826	37.184	12.608	13.714
Standard Deviation	2.057	1.128	2.293	1.964
t-test	31.839		11.296	
P value	<0.001		0.715	

Table 3 presented that the mean knowledge score in the experimental group increased substantially from 13.826 ± 2.057 in the pre-test to 37.184 ± 1.128 in the post-test, with a statistically significant difference ($t = 31.839$, $p < 0.001$). In contrast, the control group showed only a slight increase from 12.608 ± 2.293 to 13.714 ± 1.964, which was statistically non-significant ($t = 11.296$, $p = 0.715$). These findings indicate that the PMTCT Module was effective in improving knowledge regarding prevention of mother-to-child transmission of HIV among nursing officers.

Table:4 Effectiveness of PMTCT Module on knowledge among nursing officers by comparing among both groups:

Groups	Mean Gain score	SD	Mean difference	t-value	p-value
Experimental group	23.358	±0.929	22.252	19.813	<0.001
Control group	1.106	±0.329			

Table 4 stated that the experimental group demonstrated a substantially higher mean gain in knowledge score (23.358 ± 0.929) compared with the control group (1.106 ± 0.329), with a mean difference of 22.252. The difference between the groups was statistically significant ($t = 19.813$, $p < 0.001$), confirming the effectiveness of the PMTCT Module in improving knowledge regarding prevention of mother-to-child transmission of HIV among nursing officers.

DISCUSSION:

The study findings clearly stated that at post-intervention level the knowledge of parents of children undergoing surgery was increased at experimental group while control group with no intervention remain unchanged. A similar finding was presented by Begum et al (2026) who has communicated their findings in support of present study findings and revealed that staff nurses were having inadequate knowledge before intervention regarding PMTCT and after intervention majority of staff nurses found with adequate level of knowledge.(27) Another study by T. Roopa G. (2026) also supported the present findings as they found that nursing participants knowledge enhanced after intervention regarding PMTCT of HIV.(28) An investigation by Verma Aruna et al (2025) supported the findings of the present study as they divulged that maximum of nurses were having inadequate level of knowledge regarding PMTCT of HIV.(14) A study by Boakye et al (2023) has favored the findings as they revealed that max number of nursing officers were having good knowledge.(29)

Meilani et al (2019) has found similar kind of outcome, in which Midwife's were found with limited knowledge regarding PMTCT of HIV and after structured training the level of midwives enhanced.(30) A study by Mulenga & Naidoo (2017) has supported present study findings by stating that nurses were found with poor knowledge and need an intervention to enhance it.(31) Pokharel Neha (2019) also favored present study findings as they also found that nurses are struggling with the adequate knowledge regarding PMTCT of HIV and need an intervention to enhance their

knowledge.(32) These all evidences are strengthening the evidence that nurses are having limited knowledge regarding PMTCT of HIV, therefore PMTCT module is very impactful for nurses to enhance their knowledge level.

Limitations of the study

- The quasi-experimental design may limit the establishment of a definite causal relationship between the PMTCT Module and study outcomes.
- The study was limited to 220 nursing officers from selected hospitals of District Kapurthala, Punjab, which may restrict generalizability.
- The absence of long-term follow-up limited assessment of the sustained improvement in knowledge.
- The study included only nursing officers; therefore, the findings may not be generalized to other healthcare professionals involved in PMTCT services.

CONCLUSION:

The findings of the present study revealed that the majority of nursing officers had inadequate knowledge regarding the prevention of mother-to-child transmission (PMTCT) of HIV before the intervention. Following implementation of the structured PMTCT Module, a marked improvement in knowledge was observed among nursing officers in the experimental group, whereas the control group showed minimal change. The significantly higher post-test knowledge and mean gain scores in the experimental group demonstrated the effectiveness of the module in enhancing PMTCT-related knowledge. Overall, the study concludes that a structured PMTCT Module is an effective educational strategy for improving knowledge among nursing officers, thereby strengthening their understanding and preparedness for delivering appropriate PMTCT services.

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REFERENCES:

1. Chiabi A, Bongakeh AV, Puepi Fokam YD, Ngum EN, Angwafor S, Nforniwe DN. Mother-to-Child Transmission of Human Immunodeficiency Virus and Its Determinants: Lessons Learnt from the Test and Treat Strategy at a Regional Hospital in Cameroon. Turkish Arch Pediatr. 2025 May;60(3):301–6.

2. Fleșeriu T, Meliț LE, Mărginean CO, Pop AV, Văsieșiu A-M. Maternal HIV Infection and Antiretroviral Therapy in Pregnancy: Implications for Vertical Transmission, Fetal Safety, and Long-Term Infant Outcomes. Pathog (Basel, Switzerland). 2025 Aug;14(8).

3. Kreitchmann R, Duarte G, Milanez H, Travassos AG, Traina É, Miranda AE, et al. Update on HIV prevention and management in pregnancy Number 10 - 2025. Rev Bras Ginecol e Obstet Rev da Fed Bras das Soc Ginecol e Obstet. 2025;47.

4. Ghoma Linguissi LS, Sagna T, Soubeiga ST, Gwom LC, Nkenfou CN, Obiri-Yeboah D, et al. Prevention of mother-to-child transmission (PMTCT) of HIV: a review of the achievements and challenges in Burkina-Faso. HIV AIDS (Auckl). 2019;11:165–77.

5. Ganyo Donkor D, Senoo-Dogbey VE. Prevention of mother to child transmission of Human Immunodeficiency virus (HIV): What do Ghanaian Midwives know? Int J Africa Nurs Sci. 2023;19:100610.

6. Obeagu E. Preventing HIV in Infancy and Early Childhood: The Role of Maternal Health and Infant Care. Int J Curr Res Chem Pharm Sci. 2025 Sep 30;12:67–74.

7. Dong Y, Guo W, Gui X, Liu Y, Yan Y, Feng L, et al. Preventing mother to child transmission of HIV: lessons learned from China. BMC Infect Dis [Internet]. 2020;20(1):792. Available from: https://doi.org/10.1186/s12879-020-05516-3

8. SeyedAlinaghi S, Mehraeen E, Ahmadi S, Yarmohammadi S, Parmoon Z, Abiri A, et al. Prevention of mother-to-child transmission of HIV in the MENA region: A systematic review with comparative evidence from Sub-Saharan Africa. Infect Med. 2026 Mar;5(1):100240.

9. Mangoejane L, Ramukumba MM. Implementation of postnatal care for HIV-positive mothers in the Free State: Nurses' perspectives. African J Prim Heal care Fam Med. 2019 Apr;11(1):e1–8.

10. Abraham SA, Clow SE. Nurse-patient relationship and its implications for retention in the PMTCT of HIV programme in Ghana: an appreciative inquiry. BMC Nurs. 2023 Nov;22(1):450.

11. Segala FV, Veronese N, Sugandhi N, Putoto G, Kasirye I, Saracino A, et al. Interventions to support breastfeeding among mothers living with HIV: A systematic review and meta-analysis of randomized controlled trials. Int J Infect Dis IJID Off Publ Int Soc Infect Dis. 2025 Oct;159:108018.

12. Aphane RL, Mazibuko K, Dlamini Y, Mndebele T, Beza A, Musie MR. Midwives' views regarding implementation on prevention of vertical transmission HIV programme at Tshwane antenatal clinics. Int J Africa Nurs Sci [Internet]. 2025;22:100846. Available from: https://www.sciencedirect.com/science/article/pii/S2214139125000332

13. Mabuka S, Lowane MP, Nesengani T V, Simbeni T V. Adherence, perceptions and knowledge of an HIV PMTCT programme: A mother-baby pair study. South Afr J HIV Med. 2025;26(1):1648.
14. Verma A, Bharti R, Kashyap M. Knowledge, Attitude and Practice Regarding HIV/AIDS Among Antenatal Women Attending a Tertiary Care Center in Western India. Cureus. 2025 Aug;17(8):e90932.
15. Qtait M. Nurses' Knowledge, Attitudes, and Implementation of Evidence-Based Practice Comparative Study. SAGE open Nurs. 2025;11:23779608251343612.
16. Hayek M, Ghoul I, Abdullah A, Said N, Alkaissi A, Alshawish E, et al. Barriers and facilitators to patient education from nursing perspectives in West bank hospitals: a Cross-sectional study. BMC Nurs. 2025 Jul;24(1):741.
17. Yusuf K, Extension KP. Enhancing Utilization of PMTCT Services: Investigating Knowledge Factors Among Pregnant and Breastfeeding Mothers at Kiryandongo General Hospital, Western Uganda. NEWPORT Int J Res Med Sci. 2024 Jan 28;5:79–94.
18. Bello Umar A, Abubakar Waziri I, Argungu Z, Abdulrahman Kombo S, Mohammad Sani S. Knowledge, Attitude, and Practice Towards PMTCT of HIV/AIDS among HIV-Positive Mothers in PHC Minna, Niger State. Nurs Heal Sci J [Internet]. 2024 Dec 19;4(4 SE-Articles):415–22. Available from: https://www.nhs-journal.com/index.php/nhs/article/view/385
19. Tessema LW, Chekol YM, Fentie EA, Gelagay AA. Knowledge of Prevention of Mother-to-Child Transmission of HIV and Associated Factors Among Pregnant Women in Debre Birhan, Ethiopia: A Community-Based Cross-Sectional Study. Heal Sci reports. 2026 Sep;9(9):e73164.
20. Moyo I, Mavhandu-Mudzusi AH. A model for enhancing prevention of mother to child HIV transmission in a low resource setting. Int J Africa Nurs Sci [Internet]. 2021;15:100359. Available from: https://www.sciencedirect.com/science/article/pii/S2214139121000822
21. Yeshaneh A, Abebe H, Tafese FE, Workineh A. Knowledge, attitude, and practice towards prevention of mother-to-child transmission of HIV among antenatal care attendees in Ethiopia, 2020. PLoS One. 2023;18(2):e0277178.
22. Portela O, Melly P, Hilfiker R, Giacomino K, Perruchoud E, Verloo H, et al. Effectiveness of Educational Interventions to Increase Skills in Evidence-Based Practice among Nurses: The EDITcare Systematic Review. Healthcare. 2022 Nov 2;10:2204.
23. Verloo H, Melly P, Hilfiker R, Pereira F. Effectiveness of Educational Interventions to Increase Knowledge of Evidence-Based Practice Among Nurses and Physiotherapists in Primary Health Care: Protocol for a Systematic Review. JMIR Res Protoc. 2020 Nov;9(11):e17621.
24. Portela Dos Santos O, Melly P, Hilfiker R, Giacomino K, Perruchoud E, Verloo H, et al. Effectiveness of Educational Interventions to Increase Skills in Evidence-Based Practice among Nurses: The EDITcare Systematic Review. Healthc (Basel, Switzerland). 2022 Nov;10(11).
25. Njom Nlend AE. Mother-to-Child Transmission of HIV Through Breastfeeding Improving Awareness and Education: A Short Narrative Review. Int J Womens Health [Internet]. 2022 May 13;14(null):697–703. Available from: https://www.tandfonline.com/doi/abs/10.2147/IJWH.S330715
26. Aliyu MH, Blevins M, Audet CM, Kalish M, Gebi UI, Onwujekwe O, et al. Integrated prevention of mother-to-child HIV transmission services, antiretroviral therapy initiation, and maternal and infant retention in care in rural north-central Nigeria: a cluster-randomised controlled trial. lancet HIV. 2016 May;3(5):e202-11.
27. Begum MS, Rawat D, . L, Jacob S, Sahadevan S, Deori P, et al. Effectiveness Of Self-Instructional Module On Knowledge Of Prevention Of Maternal To Child Transmission (Pmtct) Of Hiv Among Staff Nurses In Selected Hospitals. Int J Drug Deliv Technol. 2026;16(36s):147–56.
28. Roopa GT. A Study to Evaluate the Effectiveness of Self- Instructional Module (SIM) on Knowledge Regarding Prevention of Mother to Child Transmission of HIV among B . Sc .(N) IV-Year Students in Selected Colleges of Nursing at Hassan. Int J Sci Res. 2026;15(7):1458–62.
29. Boakye DS, Konadu E, Mavhandu-Mudzusi AH. Sociodemographic determinants of knowledge, attitude and practices of Ghanaian nurses towards persons living with HIV and AIDS in Kumasi. Int J Africa Nurs Sci [Internet]. 2023;18:100519. Available from: https://www.sciencedirect.com/science/article/pii/S2214139122001263
30. Meilani N, Setiyawati N, Barasa SO. Midwife's role in the mother-to-child transmission prevention program in primary health care in Yogyakarta. Kesmas. 2019;14(2):88–94.
31. Mulenga C, Naidoo JR. Nurses' knowledge, attitudes and practices regarding evidence-based practice in the prevention of mother-to-child transmission of HIV programme in Malawi. Curationis. 2017 Apr;40(1):e1–8.

32. Pokharel N. P2.159 Knowledge and Practice of Nurses in the Prevention of Vertical Transmission of HIV in Selected Hospital of Eastern Region of Nepal. Sex Transm Infect. 2013 Jul 13;89:A136–A136.