



School of Public Health
Independent University, Bangladesh

**Study to determine the levels of knowledge regarding mother to
child transmission of HIV/AIDS during pregnancy among women in
Bangladesh**

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A thesis submitted by

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in consideration of the partial fulfillment of the requirements for the degree of
Master of Public Health (MPH)

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Declaration

I, Dr Rafique-Us-Saleheen, declare that this systematic review is my own unaided work and that I have acknowledged all sources to the best of my knowledge. This systematic review is being submitted in partial fulfillment of the degree of Master of Public Health (MPH) at the Independent University, Bangladesh (IUB). It has not been submitted before for any degree or examination at this or any other university.

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Dedication

*I dedicate this thesis to my parents who have always been my
nearest.*

Acknowledgement

First of all, I am grateful to the almighty to establishing me to complete this dissertation.

I wish to express my sincere thanks to my supervisor Mr. Rajib Chowdhury for his thoughtful supervision and correcting various documents of mine with attention and care. He has taken pain to go through the dissertation and make necessary correction as and when needed.

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I also thank to my beloved parents and other family members for their unceasing encouragement and support.

Dr Rafique-Us-Saleheen

This is to certify that Dr Rafique-Us-Saleheen worked for “**Study to determine the levels of knowledge regarding mother to child transmission of HIV/AIDS during pregnancy among women in Bangladesh**” under my supervision. I have gone through the paper. It is up to the mark and to my full satisfaction.

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Contents

Abstract	ii
Introduction.....	1
Literature Review.....	3
Methods.....	8
Results.....	11
Discussion.....	16
Limitation of the Study	18
Conclusion	19
Recommendations.....	20
References.....	21

Abstract

Introduction: Although declining, incidence of HIV remains a major cause of child morbidity in resource poor countries. Despite of having low prevalence of HIV/AIDS in Bangladesh, evidence shows new cases are on rise, especially among key population caused by various misconception, stigma, social taboo and lack of proper knowledge among Bangladeshi population about mothers to child transmission of HIV. The objective of the study was to assess the extent of knowledge among women in Bangladesh regarding pregnant mother to child transmission of HIV

Methods: Using dataset from Bangladesh Demographic Health Survey 2014, descriptive analysis were done individually for both dependent and independent variables. Multivariate analysis was done by the logistic regression model to find the most dominant factors for having knowledge about mother to child transmission of HIV during pregnancy.

Results: Participants who belong to 25-29 age group constitute highest (20.72%) portion of participants with correct knowledge, while people from 45-49 age group falls in the least (8.03%) portion. Higher portion of rural people have correct knowledge about mother to child transmission of HIV compared to people from urban areas (40.59%). While participants from Dhaka division have higher knowledge (19.09%), Chittagong (16.21%), Khulna (16.16%), Rajshahi (13.25%), Barisal (12.46%), Rangpur (12.36%) with Sylhet having least portion of people with appropriate knowledge on parents to child transmission of HIV. Association of living in Chittagong with knowledge on child to mother's transmission of HIV transmission have reached significance level while living on Dhaka, Khulna, Rajshahi, Rangpur and Sylhet have not reached desired significance level. Similarly living in urban and rural area are not associated with correct

knowledge on child to mother's transmission of HIV. Although, completing secondary level education is significantly associated with correct knowledge, having completed primary education or higher education didn't reach statistical significance. Likewise, participants economic condition also is not associated with correct knowledge on mother to child transmission of HIV.

Conclusion: The research findings are consistent with other similar studies which suggest that urban residence and higher level of education in are significantly associated with a high HIV knowledge level. Mass awareness raising campaign needs to be strengthened to break the barrier of social taboo which restricts people access to knowledge about HIV/AIDS and other sexually transmitted diseases.

Keywords: HIV, AIDS, PMTCT, Bangladesh, ART.

Introduction

Acquired immune deficiency syndrome (AIDS), prior to Covid-19 outbreak, is an illness caused by the human immunodeficiency virus (HIV) is one of the world's most serious healthcare challenges (Haque et al., 2018). AIDS was first recognized internationally in 1981 (Sharp and Hahn, 2011). Epidemiological studies have since identified the main routes of transmission of HIV to be unsafe sexual intercourse, intravenous injections with contaminated needles, unscreened or contaminated blood transfusions, and transmission from an infected mother to her child during pregnancy, delivery, or breastfeeding (Little et al., 2012).

Despite of the fact that, there has been significant change and HIV infection among children have decline significantly by 70% between 2000 and 2015 (UNAIDS, 2021), HIV remains a major cause of child morbidity in resource poor countries. As of 2020, there are 37.7 million people living with HIV among which 1.7 million are children of 0 to 14 years old [4]. Although, rate of mothers to children transmission of HIV/AIDS is comparatively low in Bangladesh (Azim et al., 2008), in sub-Saharan Africa (SSA) 90 percent of babies acquired HIV/AIDS from infected mothers (Ubesie, 2012). According to UNAIDS statistics, the risk of mothers to child transmission is 5% or less when mother has access to effective antiretroviral therapy during pregnancy, delivery, and breastfeeding (UNAIDS, 2021). Although incidence of HIV/AIDS is low in Bangladesh, there remains a group of at-risk key population who can contribute to a possible outbreak in Bangladesh. Besides, there is a significant social and religious stigma surrounding HIV/AIDS. Despite of the fact that there are lot of literature about HIV/AIDS in Bangladesh, literature and study about

mother to child transmission of HIV/AIDS is very limited. So, this study aims to assess status of knowledge of Bangladeshi people about mothers to child transmission of HIV/AIDS.

Literature Review

In 2020, 690,000 people died from HIV-related causes and there were approximately 37.6 million people living with HIV globally (UNAIDS, 2021). Sub-Saharan Africa is the most infected region, with 25.6 million people living with HIV (UNAIDS, 2021). Furthermore, million people becoming newly infected with HIV worldwide in 2020. From these, Sub-Saharan Africa accounts about 58% infections and an estimated 63%0% of people living with HIV are women and children, mostly in the reproductive age group globally (UNAIDS, 2021). In 2019, about 12.85 million pregnant women were living with HIV among which 1.1 million were receiving antiretroviral therapy among which more than 93% were from Africa region (WHO, 2021). In Ethiopia 710,0002 people were living with HIV/AIDS and estimated 77% of pregnant women with known HIV Status (WHO, 2017).

Though the HIV prevalence rate is less than 0.1% in Bangladesh, but evidence shows new cases are on rise, especially among key population e.g., female sex workers and injecting drug users (UNICEF, 2021). Globally, in 2016 there were an estimated 17.8 million women living with HIV (15 and older), constituting 52 per cent of all adults living with HIV (UNAIDS, 2018). In South and South-East Asia, 40% of all young people living with HIV infection among girls are rapidly outstripping the rate among boys (Sultana, 2017). In Bangladesh, as of 2018, a total 14000 people are living with HIV with an estimate 1600 new infection and total 580 HIV related death (AIDS Data Hub, 2021). The same report states that 130 pregnant women were living with HIV in 20218 in Bangladesh, only 28% of them received treatment for prevention of parent to child transmission. In Bangladesh, HIV/AIDS is still considered as social taboo and stigmatized, 34.6% of women

aged 15 to 49 reported discriminations against people living with HIV/AIDS, 5% of people living with HIV/AIDS were denied of services because of their HIV/AIDS status, and 5% reported a healthcare professional told about their HIV status to others. (UNAIDS, 2019). Limited access to knowledge, unsafe sex practices, and less sexual autonomy make women more susceptible to HIV/AIDS. Women compared to men are four times more likely to contract HIV.

The Government of Bangladesh has developed and approved a comprehensive policy on issues relating to HIV and AIDS and sexually transmitted infections (STIs) in 1997. The first National Strategic Plan (NSP, 1997-2002) and the second National Strategic Plan (2004-2010) have been developed and approved. The NSP provides the framework to guide response to the HIV epidemic (Azim, 2008).

Bangladesh has been implementing HIV prevention programs through awareness-raising activities since 1987. The program has increased its coverage of most-at-risk populations, which now include young people. There have been various efforts to prevent HIV transmission, such as public health education through the media and program activities, particularly with groups considered to be at high risk for transmission of HIV/AIDS. In addition, adolescent and young people age between 11-24 have been targeted through providing life-skills training to peer leaders. Integrating life-skills based education in secondary school curriculums is a major accomplishment to reach adolescents with messages on HIV/AIDS prevention (BDHS, 2014).

Mother-to-child transmission (MTCT) of human immune deficiency virus (HIV) infection is the transmission of the virus from an HIV-infected mother to her child during pregnancy, labor,

delivery or breastfeeding. Prevention of MTCT of an HIV infection is a politically accepted approach to reduce the impact of HIV, especially on children (Connor, 1994). The prevention of MTCT plays a major role in limiting the number of children being infected by HIV to less than 2%. Without antiretroviral therapy, 15–30% of babies born to HIV positive women are infected during pregnancy and delivery, while a further 5–20% become infected through breastfeeding (Muyunda, 2020).

Our socio-cultural situation makes a conservative atmosphere for women where they have few options to know sex-related information. Societal people have negative conception regarding discussions about safe-sex and gender issue; it is almost a taboo. Due to lack of knowledge and imbalance power relations, women are biologically more vulnerable to HIV/AIDS. The consequences of gender inequalities in terms of low socio-economic and political status, unequal access to education and fear of violence add to the greater biological vulnerability of women and girls being infected with HIV (Sultana, 2017).

Despite the well-acknowledged gender aspects of the epidemic, and the possibility of spread of HIV epidemic, more extensive and strategic efforts to promote knowledge and awareness regarding HIV among women in Bangladesh are warranted. Given the relatively low HIV morbidity and mortality rate in Bangladesh, which is similar to other the South Asian countries, there seems to be an apparent oversight of the possibility of its future expansion (Yaya, 2016).

From the perspective of its ease of transmission, level of personal knowledge and awareness are crucial elements for prevention of transmission irrespective of the performance of the healthcare

system. Lack of knowledge is usually associated with stigma and leads to poor health seeking behavior, and thus increases the chances of going undiagnosed. The future direction of this pandemic depends on the level of knowledge of how the virus is spread and changes in sexual behavior and attitudes.

Levels of knowledge and awareness largely contribute to the prevalence of the HIV epidemic and its consequences. So, it is required to conduct studies based on most recent data to explore the determinants of HIV awareness. Therefore, we aimed to find the awareness level and factors influencing HIV related awareness regarding pregnant mother to child transmission among the married women in Bangladesh. I used data from 2014 Bangladesh Demographic and Health Survey (BDHS, 2014).

The Demographic and Health Surveys (DHSs) are nationally representative surveys, which were designed to collect data from households to monitor and evaluate the nutrition, population and health status of developing countries. The BDHS 2014 survey is based on a two-stage stratified sample of households. The data were collected from seven administrative divisions: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Rangpur, and Sylhet.

This study aims to contribute towards increased knowledge and understanding about people's knowledge and perception about mother to child transmission of HIV/AIDS and thus contribute towards future program and policy development. My main objective was to assess the extent of knowledge among women in Bangladesh regarding pregnant mother to child transmission of HIV.

I also aimed at finding the spans where further improvement is required to enhance the consciousness about HIV knowledge.

METHODS

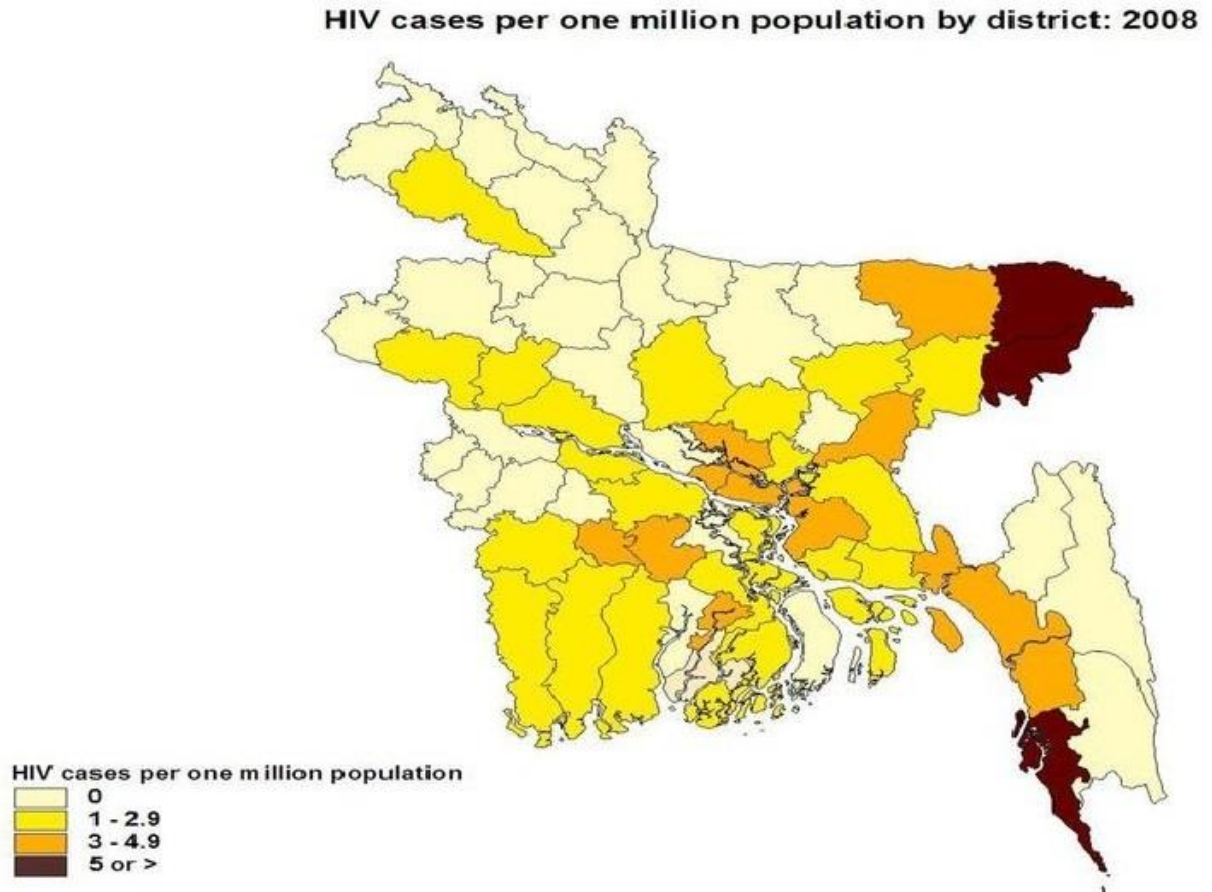


Figure 1: Map of Bangladesh with prevalence of HIV/AIDS from where BDHS 2014 data were collected

In this analysis, the data from the Bangladesh Demographic and Health Survey (BDHS) 2014 was used. BDHS 2014 was chosen because of its easily available data set about key indicators of knowledge about mother to child transmission of HIV/AIDS which are drugs to avoid HIV transmission to baby during pregnancy; HIV transmitted during pregnancy; HIV transmitted during delivery; and HIV transmitted by breastfeeding. The information on socioeconomic characteristics of individual women in the reproductive ages were collected.

Overall a total of 12591 females were selected for this analysis. Dependent variable is the knowledge level about mother to child transmission of HIV during pregnancy. The independent contributing variables affecting are Respondent's age, Age in 5-year groups, Division, Type of place of residence, educational level and Wealth index.

As described in the BDHS 2014, wealth index was calculated in three steps. "In the first step, a subset of indicators common to urban and rural areas is used to create wealth scores for households in both areas. Categorical variables are transformed into separate dichotomous (0-1) indicators. These indicators and those that are continuous are then examined using a principal components analysis to produce a common factor score for each household. In the second step, separate factor scores are produced for households in urban and rural areas using area specific indicators. The third step combines the separate area-specific factor scores to produce a nationally applicable combined wealth index by adjusting area-specific scores through a regression on the common factor scores. This three-step procedure permits greater adaptability of the wealth index in both urban and rural areas. The resulting combined wealth index has a mean of zero and a standard deviation of one. Once the index is computed, national-level wealth quintiles (from lowest to highest) are obtained by assigning the household score to each de jure household member, ranking each person in the population by his or her score, and then dividing the ranking into five equal categories, each comprising 20 percent of the population." (BDHS, 2014).

A Descriptive analysis (Sample number, Frequency percentage, mean, Standard deviation) done individually for both dependent and independent variables.

Multivariate analysis was done by the logistic regression model to find the most dominant factors for having knowledge about mother to child transmission of HIV during pregnancy.

Analysis was done by following a step-by-step procedure and we will include the factors in the logistic regression model those were found to be statistically significant 95% CI ($p < 0.05$) by using the statistical software 'R-Studio'.

RESULTS

Table 1 below show distribution of socio-economic characteristics and correct knowledge about child to mother transmission of HIV during pregnancy. As shown below, correct knowledge on mother to child transmission of participants are varied by different socio-economic characteristics. Comparatively, younger generation have more correct knowledge on mother to child transmission. Participants who belong to 25-29 age group constitute highest (20.72%) portion of participants with correct knowledge, while people from 45-49 age group constitute least (8.03%) portion of participants with correct knowledge. Higher portion of rural people have correct knowledge about mother to child transmission of HIV compared to people from urban areas (40.59%). Participants correct knowledge on mother to child transmission of HIV don't vary much across seven administrative division of Bangladesh. While participants from Dhaka division have higher knowledge (19.09%), Chittagong (16.21%), Khulna (16.16%), Rajshahi (13.25%), Barisal (12.46%), Rangpur (12.36%) with Sylhet having least portion of people with appropriate knowledge on parents to child transmission of HIV.

Table 1: Sociodemographic and wealth index of women from seven administrative division of Bangladesh

Variable	Category	Number of women having knowledge of HIV Transmission	Percentage
Age	15-19	1462	11.61
	20-24	2456	19.51
	25-29	2609	20.72
	30-34	2180	17.31
	35-39	1518	12.06

	40-44	1355	10.76
	45-49	1011	08.03
	Total	12591	100
Residence	Urban	5123	40.69
	Rural	7468	59.31
	Total	12591	100
Division	Barisal	1569	12.46
	Chittagong	2041	16.21
	Dhaka	2403	19.09
	Khulna	2035	16.16
	Rajshahi	1669	13.25
	Rangpur	1556	12.36
	Sylhet	1318	10.47
	Total	12591	100
Education	No education	1713	13.63
	Primary	3319	26.35
	Secondary	5862	46.55
	Higher (above secondary)	1697	13.47
	Total	12591	100

Wealth Index	Poorest	1413	11.22
	Poorer	1900	15.09
	Middle	2600	20.65
	Richer	3083	24.49
	Richest	3595	28.55
	Total	12591	100

Table 2 : Multivariate Logistics regression analysis of knowledge about mother to child transmission of HIV during pregnancy

	Estimate	Std. Error	P	OR	95% CI	
					Lower	Upper
(Intercept)	1.36995	0.39426	0.000511 ***	3.935	1.817	8.522
<u>Age</u> Mean : 31.02 SD : 9.221	0.03015	0.02034	0.138129	1.030	0.990	1.072
<u>Division</u>						
Barisal (Reference)				1		
Chittagong	0.30009	0.11164	0.007186 **	1.349	1.085	1.68
Dhaka	0.18264	0.10596	0.084777 .	1.200	0.975	1.477
Khulna	0.07203	0.10573	0.495692	1.075	0.874	1.322
Rajshahi	0.13892	0.11199	0.214830	1.149	0.923	1.431
Rangpur	-0.17008	0.10747	0.113519	0.844	0.683	1.041
Sylhet	-0.02258	0.11614	0.845834	0.978	0.779	1.025
<u>Residence</u>						
Urban (Reference)				1		
Rural	-0.08549	0.06576	0.193569	0.918	0.807	1.044
<u>Education</u>						
No education (Reference)				1		
Primary	0.04894	0.09318	0.599432	1.050	0.875	1.261
Secondary	0.28376	0.09582	0.003064 **	1.328	1.101	1.603
Higher	0.15939	0.12083	0.187144	1.173	0.925	1.486
<u>Wealth Index</u>						
Poorest (Reference)				1		
Poorer	-0.09025	0.10722	0.399942	0.914	0.740	1.127
Middle	0.02128	0.10485	0.839182	1.022	0.832	1.255
Richer	0.02084	0.10604	0.844163	1.021	0.829	1.257
Richest	-0.06464	0.11573	0.576461	0.937	0.747	1.176

Table 2 demonstrates multivariate analysis that examined the degree of the association between different socioeconomic variables such as participants age, geographical location, residence, education status, economic condition, and correct knowledge of respondents on about child to mother transmission of HIV during pregnancy. Multivariate regression results are adjusted for odds ratios, 95% confidence intervals and percentages. Association of living in Chittagong with knowledge on child to mother's transmission of HIV transmission have reached significance level while living on Dhaka, Khulna, Rajshahi, Rangpur and Sylhet have not reached desired significance level. Similarly living in urban and rural area are not associated with correct knowledge on child to mother's transmission of HIV. Although, completing secondary level education is significantly associated with correct knowledge, having completed primary education or higher education didn't reach statistical significance. Likewise, participants economic condition also is not associated with correct knowledge on mother to child transmission of HIV.

Discussion

Although there is increasing concern about mothers to child transmission of HIV/AIDS in Bangladesh, there are widespread wrong conception about HIV transmission. This study aimed to explore socio-demographic factors affecting misconceptions about mother to child transmission of HIV in Bangladesh. The study focused on four indicators of knowledge about mothers to child transmission, drugs to avoid HIV transmission to baby during pregnancy; HIV transmitted during pregnancy; HIV transmitted during delivery; and HIV transmitted by breastfeeding.

The study findings confirms that higher percentage of young mother's aged 25 to 29 have proper knowledge about mother to child transmission of HIV.

Similarly, higher portion of urban people tend to have correct knowledge on HIV/AIDS transmission from mother to child. Sanni et al., 2016 also confirmed that being an urban residence in Bangladesh is significantly associated with a high HIV knowledge level (Sanni et al., 2016)

However, people's knowledge does not vary much across different divisions of Bangladesh, with Dhaka constitute with highest portion of people with proper knowledge. Living at Chittagong division, and having completed secondary level education are associated with correct knowledge. A comprehensive analysis about knowledge on HIV/AIDS among Bangladeshi women by Tuhin et,a. in 2017 have similar findings. Their findings suggests that, compared to Barisal division respondents from Dhaka and Khulna are 1.3 and 1.8 time more like to have accurate understanding of HIV/AIDS (Tuhin et,a. 2017).

Haque et.al. also confirmed that respondents education is significantly associated with respondent's proper knowledge of HIV/AIDS (Haque et al., 2018).

Previous studies also highlighted that some sociodemographic factors are related to misconceptions about HIV transmissions but did not find a significant proportional difference (Tenkorang, 2013; Letamo, 2007) which is similar to findings of this study.

This study result suggests that chances of having misconceptions were higher among women who are older, less educated, and live-in rural areas. Some other studies also support the findings of this study.

Limitation of the Study

The main limitation of this study is using secondary data from BDHS 2014 as due to time and resource constraint I could not collect primary data from household level. Besides, BDHS only has data about four indicators e.g., drugs to avoid HIV transmission to baby during pregnancy; HIV transmitted during pregnancy; HIV transmitted during delivery; and HIV transmitted by breastfeeding. Other valuable indicators like social and religious factor could not be incorporated.

Conclusion

Before the incidence of Covid 19, HIV/AIDS was considered one of the deadliest infectious diseases in modern times. Millions of people across the world have suffered from this deadly disease. Although low incidence, Bangladesh has several key population groups highly population risk of HIV/AIDS, especially increasing LGBTI practice which can spread HIV among mass population silently. Therefore, the right conception about HIV transmission and ways to prevent it are the basic requirements for HIV prevention. Different factors such as education, living in urban areas, and age are associated with correct knowledge of mother to child prevention of HIV/AIDS. Further detailed and in-depth research is required in this field. Besides, mass awareness raising campaign needs to be strengthened to break the barrier of social taboo which restricts people access to knowledge about HIV/AIDS and other sexually transmitted diseases.

Recommendations

Considering the fact that prevalence of HIV/AIDS in Bangladesh is very low, I would suggest integrating mothers to child transmission issue into other sexuality education program, especially for adolescent boys and girls. Besides, all exclusive breastfeeding program, ANC/PNC health education program should carefully incorporate these issues. Furthermore, testing for HIV/AIDS for pregnant mothers should be made easily available through referral.

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