DETERMINANTS OF MISSED OPPORTUNITIES FOR HIV TESTING AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE IN VIETNAM: A CROSS-SECTIONAL SURVEY

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Abstract

Objective: The aim of this study to identify the factors associated with the receiving of antenatal HIV testing in Vietnam. **Method:** We used data from the representative, cross-sectional round of Vietnam Multiple Indicator Cluster Survey conducted during 2010-2011. Women aged 15-49 who had a live birth within 2 years preceding the date of the interview were adopted as the subjects of our study (n=1363). The utilization of HIV testing during the last pregnancy were considered as main outcomes variable. Descriptive statistics and multivariate logistic regression methods were employed in the analysis. **Results:** The prevalence of receiving antenatal HIV testing among pregnant women was 28.8%. The factors were associated with HIV testing receiving: minority group (AOR 0.46, 95%CI0.24-0.90), having 4 times or more ANC visits (AOR 2.27, 95%CI 1.58-3.28), gave birth in government hospital (AOR 2.02, 95%CI 1.02-4.0). The women with middle and high HIV/AIDS related knowledge were more two times more likely to receive HIV testing. Women who had negative attitude towards partner violence were less likely to receive HIV testing. **Conclusions:** Developing strategies that include the above interventions could play a crucial role in achieving the increase the HIV test utilization among pregnant women in Vietnam.

Key words: *Missed opportunities, antenatal HIV testing, antenatal care, pregnant women, Vietnam*

1. INTRODUCTION

Globally, HIV/AIDS remains one of the most significant public health challenges, particularly in low- and middle-income countries. An estimated 3.3 million children and 16.7 million women are infected with HIV worldwide in the end of 2011 and of them an estimated 1.49 million pregnant women are form low- and middle-income countries [1]. Although, the prevalence of HIV among adults in the general population in Vietnam is decreasing from 0.50 % in 2007 to 0.45% in 2011[2], the HIV prevalence among pregnant women has increased rapidly. A sentinel surveys in Hanoi, the capital of Vietnam, showed that HIV prevalence among pregnant women has increased rapidly from 0.4% in 2001 to 1.25% in 2005[3]. Mother-to-Children transmission (MTCT) of HIV accounts for the majority of children living with HIV, where one thirds of them may be infected during pregnancy, two thirds at delivery and breastfeeding accounts for one third of cases of MTCT[4],[5].

HIV testing and counseling among pregnant women is a highly cost-effective intervention for reduction of HIV risk through MTCT and critical for identifying those in need of follow-up care and increasing coverage of subsequent interventions to reduce the risk of MTCT of HIV. This is even more important as too few pregnant women are aware of their HIV status.

Increasing body of evidence from different parts of the world identified various factors to be associated with HIV testing service utilization among antenatal care(ANC) attendees e.g., stigma, discrimination, empowerment, accessibility of the antenatal voluntary counseling and HIV testing (VCT) services, disclosure of HIV result, or

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perceived lack of benefits [6-10]. However, the role of these identified factors as determinants for receiving of HIV testing in Vietnam had not been studied previously. Therefore, we sought to identify the factors associated with the receiving of HIV testing among pregnant women during antenatal care in Vietnam.

2. METHODS

2.1. Data source

We used data from the representative, cross-sectional round of the 2011 Vietnam Multiple Indicator Cluster Survey (MICS 2011); the most recent national data set on the ANC voluntary counseling and HIV testing that is available. Among the women aged 15-49 years who were deemed eligible to complete the women's questionnaire, 11,663 out of 12,115 completed the questionnaire, yielding response rate of 96.3%. In our analyses, we included only women aged 15 to 49 years who had a live birth within 2 years preceding the date of the interview (n= 1363)[11].

2.2. Measurements

Utilization of HIV testing was the main outcome for this study. The independent variables included socio-demographic characteristics: age, marital status, religion, residence, wealth index, HIV/AIDS-related knowledge, HIV/AIDS-related attitudes, attitudes toward domestic violence, and ANC.

Child marriage is widespread and can lead to a lifetime of disadvantage and deprivation. Therefore, we classified current maternal age into empirically important groups: 15-19 group, 20-34 group, and 34-49 group.

HIV/AIDS-related knowledge was measured from the answers to six questions on knowledge of HIV prevention and three questions on HIV transmission from mother to children. Correct responses were given a value of "1" and incorrect responses were given "0". The sum was computed and categorized as low (score ≤ 5), middle (score 6-7), or high (score 8-9) knowledge. HIV/AIDS-related attitudes were measured by respondents' response to four questions. If the respondent agreed to positive statement, a score of "1" was given. If the respondent disagreed, not sure, a value of "0" was given. Respondents who had scored above the mean were regarded as having a positive attitude. Respondents who had scored below the mean were regarded as having negative attitude.

Regarding risky sexual behavior history, pregnant women were responded three questions related to their sexual behaviors. These were combined into a composite index of risky sexual behavior with three categories: "no risk" (score 0), "some risk" (score 1) and "high risk" (score ≥2). Attitude towards partner violence: Women were asked whether they think that a husband is justified in hitting or beating his wife under a series of circumstances, i.e., if his wife burns the food, argues with him, goes out without telling him, neglects the children or refuses sexual. If the respondents agreed to negative statement, a score "1" were given. If the respondent disagreed, or did not know, a value of "0" was given. The sum was computed and categorized as having attitude towards partner violence if respondents had scored above "1" and as no attitude towards partner violence if respondents had no scored.

2.3. Data analysis

The data were analyzed using SPSS version 18.0 (SPSS, Chicago, Illinois, United States of America). Frequencies were calculated for HIV testing and explanatory variables. Multivariate logistic regression methods were employed to assess the association between the selected explanatory variables and the main outcome. We entered all the covariates simultaneously in to the multiple regression models. The multicolinartity of the variables was checked by examining the variance inflation factors (VIFs), which was < 2.0. We estimated the adjusted odds ratios (AORs) to assess the strength of the associations and used the 95% confidence intervals (CIs) for significance testing.

2.4. Ethical consideration

This study was based on secondary data analyses of existing, publicly available survey data with all identifying information removed. Before participating in the survey, all participants were asked to provide their informed consent after being read a document emphasizing the voluntary nature of this survey, outlining potential risks, and explaining that the information gathered would be used to assess health needs and to plan health services. Each participant was allowed to withdraw from the study at any time. Confidentiality of the entire data set was maintained at all stages of data collection.

3. RESULTS

3.1. Descriptive statistics

The mean age of pregnant women was 27.4 years. Most of the participants were belonged to Kinh ethnicity (78.9%). The majority of pregnant women were from rural areas (60.2%), 99.5% were ever married, 78.4% had at least secondary

school level of education (Table 1). About 57.7% participants received 4 or above ANC visits as recommended by the UNICEF and WHO. A large proportion of the pregnant women in study (84.6%) reported that they gave birth in the government hospital. During the pregnancy, the rate of receiving antenatal HIV testing among pregnant women was only 28.9% (Table 1).

Almost (91.6%) pregnant women reported that they ever heard AIDS, and 52.9%, 29.6%, and 1.7.5% had high, medium, and low knowledge regarding HIV prevention and HIV transmission, respectively. Approximately 87% had knowledge that HIV can be transmitted during pregnancy, 72.9% knowing about HIV transmission during delivery and 53.3% knew that transmission can occurred through breastfeeding (Table 2).

Of the total sample, about 58.4% respondents had positive HIV/AIDS attitude. About 64% participants believed a female teacher living with HIV and who is not sick should be allowed to continue teaching was 64%. The most common discriminatory attitude was that women would want to keep secret that a family member got infected with HIV (40.1%). The most accepting attitude was willing care for a family member with HIV in own home (86.9%) and 59.4% accepting attitude in term of buying fresh vegetables from a shopkeeper or vendor living with HIV. The study showed that 77.8% and 16.7% pregnant women were engaged in high and some risky sexual behavior, respectively (Table 2).

Thirty-seven percent of pregnant women reported that they approved of their partner violence. Most of the participants agreed and justified violence in instances of when they neglect the children (28.2%), or argue with their husband/ partner (22.5%). Roughly 14.7% pregnant women believed that a husband/partner has a right to hit or beat his wife if she goes out without telling him, or if they refuse have sex with him (6.1%). Some women (2.6%) believed that a husband/partner is justified to hit or beat his wife for burning the food (Table 2).

3.2. Multivariate analysis

In the adjusted model, women from non-Kinh ethnicities were 0.46 times (95% confidence interval [CI] 0.24-0.90) less likely to receive antenatal HIV testing compared with women from Kinh Ethnicity (Table 3). Pregnant women who resided in Northern Central and Central Coastal Area and Central Highlands were 0.33 (95% CI 0.20-0.54) times and 0.13 times (95% CI 0.07-0.25), respectively, less likely to receive antenatal HIV testing, whereas women resided in South east region were 1.90 times more likely to receive antenatal HIV testing compared with those women who resided in Red river delta (Table 3). Those women who received ANC care 4 time or above were 2.27 times (95% CI 1.58-3.28) more likely to receive antenatal HIV testing compared with those women who received under 4 times.

Women who delivered their child at government hospital were 2.02 (95% CI 1.02-4.00) times more likely to receive antenatal HIV testing than those women who delivered their child at private clinics. Women who had middle or high level of HIV/AIDs related knowledge were 2.54 (95% CI 1.36-4.72) and 2.11 times (95% CI 1.15-3.89) more likely to receive antenatal HIV testing. Compared to women who did not engaged in risky sexual behavior, women who engaged in risky sexual behavior were less to receive antenatal HIV testing. Women who did not have supportive attitudes towards partner violence were 0.67 times (95% CI 0.48-0.93) less likely to receive antenatal HIV testing compared to women who had positive attitude towards partner violence (Table 3).

4. DISCUSSION

The objective of this paper was to identify the factors associated with the receiving of antenatal HIV testing among pregnant women in Vietnam. Findings from this large nationally representative survey indicate that, a large proportion of pregnant women (71.1%) did not take HIV testing during the ANC. Undoubtedly, this statistics shows that a large number of HIV infected women remain undetected. While the current policy in Vietnam is to provide services to anyone who volunteers for them, it is important that pregnant women be offered the services routinely in order to help prevent the MTCT of the HIV/AIDS virus. In spite of laws and regulations, the low usage of HIV testing services among pregnant women, reflects the widespread belief that the epidemic remains concentrated, as well as potential stigma associated with getting an HIV test [12, 13].

It was expected that sufficient number of ANC visits (4 times or more) would have a positive impact on the utilization of HIV testing services for the women. With sufficient number of ANC visits, mothers may become more aware of possible effects of the prevention of mother-to-child transmission. The present authors found that compared to those who received insufficient

number of ANC (<4), the odds of a mother who received four or more ANC visits were more than two times higher for receiving HIV testing. This finding is consistent with studies conducted in other developing countries[14-15].

In this study, women who had medium or high level of HIV/AIDs related knowledge were more likely to receive antenatal HIV testing. This finding is supported by the literature. A study from Zimbabwe found a positive correlation between HIV knowledge and willingness to be tested[16]. Another study from Tanzania showed that knowledge surrounding the prevention of mother-to-child transmission had increased, and they postulated that this knowledge may underlie the practically universal receiving of HIV testing during ANC in this context [17]. This finding strengthens the fact that awareness on HIV is critical in increasing receiving of HIV testing.

Consistent with previous other studies, the present study found that risky sexual behavior was significantly associated with HIV testing [18, 19]. Pregnant women who were engaged in some or high risky sexual behaviors were less likely to receive antenatal HIV testing. One explanation for the significant association could be due to the fact that, women who were engaged in risky sexual behavior may afraid off of detection of their disease, therefore such kind of stigma may less motivated them to be tested for HIV.

The study also provide the evidence that, those pregnant women who delivered in government hospitals were more likely to receive antenatal HIV testing than those who delivered their child in the private facilities. This could be explained by the fact that although, the Vietnam's law states that any pregnant woman who volunteers for HIV testing should be provided with a test at no charge[20], many of the private facilities do not provide HIV testing services without free of charge. Therefore, many of the women who delivered their child in the private clinics also may receive ANC from such facilities and they did not test for HIV.

This study also found that women from non-Kinh group were less likely to receive antenatal HIV testing compared with Kinh group. The result is expected because; in Vietnam there are substantial differences in living standards among Viet Nam's 54 officially recognized ethnic groups. Most lowland Vietnamese Kinh, who make up 84% of the population, have benefited greatly from economic reforms initiated since the late 1980s. However, most ethnic minority groups have gained less and are being left behind. Therefore, women from non-Kinh group may be less knowledgeable to receive HIV testing.

This study also found that, women from North Central and Central Coastal area, and Central Highlands were less likely to receive HIV testing, whereas, women from South East region were more likely to receive HIV testing. Possible explanation for such findings is that in the North Central and Central Coastal areas and Central Highlands where large proportion of ethnic minority people lives whereas South East region is mostly economically advantageous where most people are belongs to Kinh ethnic group also almost all the health facilities offered in this region free HIV testing during ANC[21].

Another new important finding of this study is that, women's non-supportive attitudes towards partner violence are associated with more uptake of HIV testing during ANC. Although no direct measure of intimate partner violence (IPV) is available in MICS data, however evidence indicate that the higher the women have agreement with justify for beating his wife the higher their chance that may place them in a position of inferiority relative to men, which probably makes them more susceptible to IPV. Evidence also shows that victims of IPV have a lower probability of decision making power, decreased freedom of movement and higher economic dependency [22-23], reducing a woman's ability to make decisions for herself and her family including the choice of receiving appropriate reproductive health care [24]. This could be one of the reasons, which explain why women who had agreement with partner violence justification were less likely to receive HIV testing.

Some limitations should be considered when interpreting our findings. First, our study is cross-sectional that involves reporting of past behaviors and therefore possible chance of recall bias. Second, the information in the survey was self-reported, so some degree of under-reporting of socially unacceptable behaviors and attitudes (such as stigma) and over reporting of socially desirable behaviors are likely. Third, because our selection of variables was constrained by the preexisting MICS data, we were unable to include additional, potentially important variables. Finally, data available from the MICS survey, unfortunately, do not allow us to assess the availability of HIV testing services at ANC clinics in Vietnam. It is

likely that the availability of such services remains limited, particularly at district or lower level health facilities. Notwithstanding these limitations, we believe that our study has very important findings for strengthening of HIV testing implementation during ANC in Vietnam.

5. CONCLUSIONS

In conclusion, the study highlights that a small proportion of pregnant women in Vietnam, received HIV testing during ANC, despite the fact that nearly all pregnant women obtain ANC services and they are among gatekeepers of the transmission of HIV virus to the general population. HIV/AIDS-related knowledge, sufficient number of ANC visits, attitude towards partner violence, risky sexual behavior were major factors affecting usage of HIV testing among pregnant women in Vietnam. Developing strategies that include the above interventions could play a crucial role in achieving the increase HIV test among pregnant women in Vietnam during their ANC. Future longitudinal studies however are needed to investigate causal mechanisms of such association.

Competing interests

The authors declare that they have no competing interests.

Financial Competing interests

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Authors' contributions

NHCD originated the study and contribute to study design, statistical analysis, and the writing of the article. NHMT contributed to analysis an interpretation of data, and to revision of the article. All authors read and approved the final manuscript.

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Ethical approval

MICS survey received ethical approval from Vietnam General Statistics Office ethnics committee. All participants provided informed consent. Each participant was allowed to withdraw from the study at any time. Confidentiality of the entire data set was maintained at all stages of data collection.

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Table 1. Socio-Demographic characteristics of pregnant women in Vietnam, 2011 (n=1363)

Characteristics	N	%
Age		
15-19 years	75	5.5
20-34 years	1133	83.1
35-49 years	155	11.4
Ethnic group		
Majority (Kinh)	1076	78.9
Minority (Non-Kinh)	287	21.1
Wealth index		
Poorest	327	24.0
Poorer	223	16.4
Middle	240	17.6
Richer	268	19.7
Richest	305	22.4
Education		
No education	90	6.6
Primary	204	15.0
Secondary	776	56.9
Higher	293	21.5
Area of residence		
Urban	542	39.8
Rural	821	60.2
Region		
Red River Delta	203	14.9
Northern Midlands and Mountain area	278	20.4
North Central and Central Coastal area	207	15.2
Central Highlands	272	20.0
South East	215	15.8
Mekong River Delta	188	13.8
Marital status		
Never married	7	0.5
Ever married	1356	99.5
ANC times		
Under 4 times	577	42.3
4 times or above	786	57.7
Place of delivery		
Private/others	210	15.4
Government hospital	1153	84.6
Receiving antenatal HIV testing last ANC		
No	969	71.1
Yes	394	28.9

Table 2. Descriptive of HIV/AIDS-related knowledge, HIV/AIDS-related attitude, Risky sexual behavior history, and Attitude towards partner violence among pregnant women in Vietnam, 2011 (n=1363)

Variables	N(%)
HIV/AIDS-related knowledge	
Ever heard of HIV/AIDS	1248 (91.6)
Level of HIV/AIDS-related knowledge	
Low	239 (17.5)
Middle	404 (29.6)
High knowledge	720 (52.9)
Knowledge indicator	
Reduce risk of getting AIDS virus by having only one faithful uninfected sex partner	1134(83.2)
Reduce risk of getting AIDS virus by using a condom every time	1132 (83.1)
HIV cannot be transmitted by:	
Mosquito bites	888 (65.2)
Witchcraft or supernatural means	1165 (85.5)
Share food with someone with HIV	1125 (82.5)
A healthy good looking can have HIV	979 (71.8)
AIDS virus can be transmitted:	
During pregnancy	1183 (86.8)
During delivery	994 (72.9)
By breastfeeding	727 (53.3)
HIV/AIDS-related attitude	
Negative attitude	567 (41.6)
Positive attitude	796 (58.4)
Attitude indicator	
A female teacher living with HIV and who is not sick should be allowed to continue teaching	872 (64.0)
Would buy fresh vegetables from a shopkeeper or vendor living with HIV	809 (59.4)
Would not want to keep secret that a family member got infected with HIV	546 (40.1)
Are willing to care for a family member with HIV in own home	1185(86.9)
Risky sexual behavior history	
Level of Risky sexual behavior history	
No risk	75 (5.5)
Some risk	227 (16.7)
High risk	1061 (77.8)
Risky sexual behavior indicators	
The first time of sexual intercourse without condom	1316 (96.6)
The last time of sexual intercourse without condom	1093 (80.2)
Have sexual intercourse with other person who not husband or cohabiting partner in the last 12 months	1 (0.1)
Attitude towards partner violence	
Positive	859 (63.0)
Negative	504 (37)
Attitude towards partner violence indicators	
Think that a husband is justified in hitting or beating his wife if:	
His wife burns the food	36 (2.6)
Argues with him	306 (22.5)

Variables	N(%)
Goes out without telling him	201 (14.7)
Neglects the children	385 (28.2)
Refuses sexual	83 (6.1)

Table 3. Adjusted odds ratio (AOR) and 95% CI of factors influencing usage of HIV testing during ANC, Vietnam, 2011 (n=1363)

Characteristics	HIV testing during ANC	
	Adjusted odds ratio (AOR)	95% confidence interval (CI)
Age		
15-19 years	1	--
20-34 years	2.49	0.95-6.50
35-49 years	2.29	0.81-6.49
Ethnic group		
Majority (Kinh)	1	--
Minority (Non-Kinh)	0.46	0.24-0.90
Wealth index		
Poorest	1	--
Poorer	0.84	0.46-1.54
Middle	0.92	0.51-1.66
Richer	1.22	0.67-2.23
Richest	1.77	0.91-3.40
Education		
No education	1	--
Primary	3.09	0.38-24.85
Secondary	4.19	0.53-32.98
Higher	5.22	0.64-42.44
Place of residence		
Urban	1	--
Rural	0.73	0.53-1.02
Region		
Red River Delta	1	--
Northern Midlands and Mountain area	0.66	0.40-1.09
North Central and Central Coastal area	0.33	0.20-0.54
Central Highlands	0.13	0.07-0.25
South East	1.90	1.22-2.95
Mekong River Delta	0.87	0.53-1.41
Marital status		
Never married	1	--
Ever married	0.45	0.48-4.40
ANC times		
Under 4 times	1	--
4 times and above	2.27	1.58-3.28
Place of delivery		
Private/others	1	--
Government hospital	2.02	1.02-4.00
HIV/AIDS-related knowledge		
Low	1	--
Middle	2.54	1.36-4.72
High knowledge	2.11	1.15-3.89

Characteristics	HIV testing during ANC	
	Adjusted odds ratio (AOR)	95% confidence interval (CI)
HIV/AIDS-related attitude		
Negative attitude	1	--
Positive attitude	1.05	0.76-1.44
Risky sexual behavior		
No risk	1	--
Some risk	0.45	0.22-0.94
High risk	0.44	0.23-0.85
Attitude towards partner violence		
Positive	1	--
Negative	0.67	0.48-0.93

Adjusted for women age, ethnicity, wealth index, education, place of residence, region, marital status, ANC times, place of delivery, HIV/AIDS related knowledge and attitude, risky sexual behavior, and attitude towards partner violence.