Association of HIV knowledge, testing attitudes and risk assessment with the acceptance rate of HIV counseling and testing among pregnant Filipino patients seen in a tertiary government hospital*

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ABSTRACT

Background: HIV counseling and testing (HCT) should be routinely offered to all pregnant patients since HCT is considered as a gateway to the access of treatment and prevention of spread to non-infected individuals.

Objective: This study aims to determine the association of HIV knowledge, testing attitudes and risk assessment for HIV with the acceptance of HIV counseling and testing among pregnant patients seen at the antenatal clinic of a tertiary government hospital.

Methods: A total of 293 respondents were included and asked to answer an investigator-guided self-administered questionnaire on HIV knowledge, testing attitudes, assessment of risk for HIV and acceptance of HIV counseling and testing. Results were analyzed using descriptive statistics and multiple logistic regression analysis.

Results: The respondents of this study were on average 28 years old, with a range of 15 to 44 years old, mostly Catholic and single, high school graduates who are currently unemployed. The respondents generally have low level of HIV knowledge, positive testing attitudes and assessed to be at low risk factors for HIV. The findings showed level of knowledge and condom use was not associated with acceptance of HIV counseling and testing.

Conclusion: Acceptance of HIV counseling and testing was significantly associated with positive testing attitudes, and low prevalence of risk factors such as, no history of multiple sex partners, no history of IV drug use, no history of imprisonment and no history of having sex in exchange for money or drugs.

Keywords: HIV knowledge, testing attitudes, HIV counseling and testing, pregnancy

INTRODUCTION

Human immunodeficiency virus (HIV) counseling and testing (HCT) is the first step to preventing mother to child transmission of HIV and instituting timely intervention. In the beginning of HIV epidemic which started in 1980's, debates over strategies to promote public health while protecting the human and legal rights of individuals aroused[1].

In 2013, almost 78 million people were recorded to have been infected with the HIV virus and about 39 million people have died. Globally, 35.0 million [33.2-37.2 million] people were living with HIV, where reproductive age groups (age 15-49) account for 0.8% of people living with HIV[2].

The Philippines is not exempted from the scourge of HIV infection. Currently, twenty new HIV cases are diagnosed each day. The Philippine HIV/AIDS registry reported 646 new seropositive diagnosed cases February this year. Such incidence is 33 percent higher than that of the diagnosed cases of the same month last year[3].

Concentrated epidemics occur in metropolitan areas with high tourist activities such as in the National Capital Region (NCR) with 293 (44%) cases, Region 4A with 92 (14%) and Region 7 with 68 (10%) cases. More than half of these individuals were ages 24-35 years old. The modes of transmission were still the following: sexual contact, intravenous drug use and mother to child transmission.[3]

The human rights paradigm was included in the early public health strategies to combat HIV AIDS because of emerging evidence that discrimination was driving people away from testing and treatment programs[4]. While human rights dictates that HCT should still be voluntary, it should be universally offered to all pregnant women by their healthcare providers because it is the entry point for pregnant HIV positive women to access treatment, other

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health services, including prevention of mother-to-child transmission (PMTCT), prevention and management of HIV-related illnesses, and social support. Finally, from a human rights perspective, HCT can play a role in addressing stigma and discrimination[5].

Antiretroviral treatment (ART) lowers HIV viral load, which leads to the reduction of risk for transmission to others.[6] Early referral to medical care and early ART could prevent HIV transmission in communities while reducing a person's risk for HIV-related illness and death.

The Philippine HIV-AIDS registry recorded a rising incidence of HIV infections. Cumulative data summed 24,376 cases since January 1984 up to March of this year. Eighty one percent in the rise in incidence was recorded in the last five years. Interventions to increase the awareness of the Philippine population on HIV and its management have been implemented. Treatment hubs were designated in the key areas, however, access to their services are still limited to persons who are living near the designated hubs. While counseling is offered free and testing is minimally charged, the conduct of the test is still done in voluntary basis. As the HIV epidemic continues to grow worldwide, women are increasingly and disproportionally affected. Of the more than 33 million people living with HIV/AIDS in 2007, half are women, and women and children (primarily infected through vertical transmission) together account for more than half of all cases.[7] With the introduction of anti-retroviral (ARV) medications that have been found to effectively prevent perinatal transmission of HIV; the approach to HIV testing in pregnant women has grown increasingly more controversial.

Significance of the Study

In the past five years there were 28,459 antenatal consults in our institution. However, less than ten percent was referred to the HIV/AIDS core team (HACT), in fact only 508 patients were actually counseled and tested and 18 were found reactive and positive. At present only patients with known risk factors for HIV are encouraged to undergo HCT. Patients who are confirmed positive for HIV and warrant antiretroviral (ARV) treatment for their own health, are given free antiretroviral drugs by the HIV/AIDS core team (HACT) and treatment hub. Despite the availability of these free services, the healthcare providers seldom offer pregnant patients HCT, except when risk factors for HIV are identified. The HIV positive pregnant women managed in our institution were usually referred from the barangay health centers that routinely offer HIV screening during antenatal care.

HIV screening is among the tests that should be routinely offered to women who are seeking antenatal care. This has been recommended by the Center for Disease Control and Prevention (CDC) and the World Health Organization (WHO) to decrease and prevent the maternal to child transmission of HIV. When a pregnant patient is identified as being HIV-positive, interventions such as antiretroviral drugs during pregnancy, cesarean delivery and appropriate infant feeding that reduces her risk for transmitting HIV to her child to 2% or less are instituted.[8]

The results of this paper could give valuable information on the acceptability of HIV counseling and testing as well as its association with the knowledge, testing attitude and risk assessment of pregnant women who wish to seek antenatal care. Any identified gap that would be identified should filled, in order to promote or increase HCT acceptability.

Review of Literature

Vast numbers of studies on the factors that influences and acceptability of HCT were done. Factors identified to have negative influence on HIV counseling includes: stress to deal with of a positive HIV result, fear of rejection, stigma and domestic violence. While one's belief of knowing HIV serostatus during pregnancy was beneficial and reduce the risk of transmission to unborn infant and strong provider endorsement influence high acceptance rate of HIV testing and counseling. Knowledge on HIV has no significant influence on the acceptability of HIV counseling and testing [9, 10, 11].

OBJECTIVES

General Objective

To determine the association of HIV knowledge, testing attitudes, and risk assessment for HIV with the acceptance of HIV counseling and testing among pregnant patients seen at the antenatal clinic of a tertiary government hospital

Specific Objectives

1. To describe the socio-demographic characteristics of pregnant women seen at a tertiary government hospital according to:
    a. Age
    b. Marital Status
    c. Educational Attainment
    d. Employment
2. To determine the level of HIV knowledge among pregnant patients
3. To determine the testing attitudes among pregnant patients
4. To assess the presence of known risk factors for HIV among pregnant patients
5. To determine the acceptance rate of HCT among pregnant patients

6. To determine the association of the levels of HIV knowledge, testing attitudes, risk assessment for HIV with the acceptance rate of HCT among pregnant women seen at the antenatal clinic of a tertiary government hospital

MATERIALS AND METHODS

Research Design

This is a cross-sectional analytic research design.

Study Setting

This study was conducted among pregnant patients seen at the antenatal clinic of a tertiary government hospital. The clinic caters to an average of fifty patients per day. HIV counseling and testing is recommended by Center of Disease Control and Prevention (CDC) and the World Health Organization to be part of routine prenatal laboratory tests, but is seldom offered, and only for patients with identified risk factors for HIV infection.

Population and Sampling Technique

The target population includes pregnant patients seen at the antenatal clinic of a tertiary government hospital. The appropriate sample size for this research study was calculated using EPI Info version 7. The minimum sample size required was 293, based on the alpha = 0.05, estimated proportion = 0.50 of the total obstetric admissions for the month of January 2015 which was 1,299, with margin of error of 5%.

The selection of study participants was done through simple random sampling technique. From the daily register of patients seen at the antenatal clinic, patient hospital numbers were used to randomly select patients invited to participate in the study.

Inclusion and Exclusion Criteria

Inclusion Criteria:

- Pregnant patients seen at the antenatal clinic of a tertiary government hospital

Exclusion Criteria

- Patients with non-viable pregnancies such as abortion, ectopic pregnancies and hydatidiform moles
- Patients who decline to provide informed consent to participate in the study
- Illiterate patients who have nobody to help them answer the survey questionnaire
- Mentally handicapped patients who may be unable to comprehend the survey questions

Ethical Considerations

The investigator-guided self-administered questionnaire was developed by the investigator, adapted with permission from a similar research (Madamba and Bravo, 2012, unpublished data). Permission to perform this study was obtained from the Institutional Review Board after technical review by the Research Committee of the Training and Research Division. Data collection was started upon the approval of the technical and ethical review boards.

Data Collection Procedures

The research instrument was an investigator-guided self-administered questionnaire. It has five parts: socio-demographic profile, HIV knowledge, testing attitudes, assessment of risk for HIV and acceptance of HIV counseling and testing. The questionnaire was translated to the local dialect and back translated to English. The questionnaire was pre-tested on 30 pregnant patients seen at the antenatal clinic to evaluate for clarity and brevity. Further, the internal consistency of questions to measure knowledge and attitude was tested using Cronbach's alpha. The Cronbach's alpha for knowledge is 0.78 while 0.91 for the attitude. The final questionnaire was administered to the study population by the primary investigator. Any clarifications or questions were entertained by the investigator. This was done to ensure that the survey questionnaires were completely filled and that the respondents understood the questions being asked.

Potential respondents were randomly selected from the daily register of pregnant patients consulting at the antenatal clinic, and were invited to participate in the study. The potential respondents were gathered in a room. They were given an information sheet written in the local dialect that explained the purpose, procedure, and duration of participation in the study. The respondents were assured of the confidentiality of their responses. They were given ample time to ask questions and clarifications regarding the survey questionnaire. Those who consented to participate in the study were asked to sign informed consents. For pregnant patients who were less than nineteen (19) years old, but were willing to participate in the study, the informed consent forms were filled-up and signed by their parents or legal guardians, while the respondents signed the informed assent form. The questionnaire was coded using the patient's hospital number. Names and other identifiers were omitted. The respondents simultaneously answered the given questionnaire.

Data Processing Analysis

The completed questionnaire results were encoded using Microsoft Excel and analyzed using STATA SE version 13. Quantitative variables were summarized and presented as mean and standard deviation while qualitative variables

were tabulated as frequency and percentage. The association between knowledge, testing attitude and risk assessment, and acceptance to HIV counseling and testing was analyzed using multiple logistic regression analysis. The level of significance was set at 0.05.

RESULTS

Demographic Characteristics (Table 1)

There were 330 pregnant women enrolled in the study. However, only 293 were included, while 37 were dropped-out due to incompletely filled questionnaire.

The mean age of this population was 28.69 with age range of 15 to 44 years old. Ninety percent (90%) of these women were Catholic. Fifty five (55%) percent were single, while forty-three (43%) percent were married. Majority (56%) obtained secondary level of education followed by those who attended tertiary education (19.8%). Of these women, only 26% were currently employed.

Knowledge on HIV (Table 2)

On the respondent's background on HIV, 270 (92.15%) have heard about HIV, 65% of which the source of information was the television. Physicians still play a role in dissemination of information on HIV, as 38 (12.98%) reported physicians as their source of information. The level of knowledge on HIV among the respondents was generally low. Of the 293 participants, only 52 (17%) had high level of knowledge, and 241 (82.25%) had low level of knowledge.

The knowledge questions with the lowest correct response were on the following issues: HIV is transmitted only among intravenous drug users, 42 (14.33%); HIV is transmitted only among commercial sex workers, 43 (14.68%); HIV can be transmitted through kissing, 50 (17.06%); HIV can be transmitted through sharing of utensils, 74 (25.26%).

On the other hand, the following questions regarding the fatality and major route of transmission of HIV were answered correctly by majority of the participants: HIV can be transmitted through sexual intercourse, 248 (84.64%); HIV can be fatal and may lead to death, 239 (81.57%); HIV can be transmitted or acquired through blood transfusion, 216 (73.72%); Males who have sex with males are at higher risk of acquiring HIV, 213 (72.70%); HIV can be transmitted from mother to child during pregnancy, 190 (64.845).

Table 1. Demographic Profile of the Respondents

Characteristic (N = 293)		Mean ± SD
Age (years)		28.69± 6.72
Religion	Catholic	266 (90.78%)
	Christian	12 (4.10%)
	Iglesia ni Cristo	5 (1.71%)
	Protestant	4 (1.37%)
	Jehova's Witness	1 (0.34%)
Educational Attainment	None	4 (1.37%)
	Some Elementary	12 (4.10%)
	Elementary Graduate	25 (8.53%)
	High School Level	2 (0.68%)
	High School Graduate	164 (55.97%)
	College Level	58 (19.80%)
	College Graduate	28(9.56%)
Employment Status	Unemployed	216 (73.72%)
	Employed	77 (26.28%)
Civil Status	Single	163 (55.63%)
	Married	127 (43.34%)
	Separated	3 (1.02%)

Table 2. HIV knowledge among pregnant women seen at an antenatal clinic

Items	n = 293	Mean ± SD
Fatality of HIV Infection	239	81.57
Shaking hands*	126	43.00
Using toilets*	86	29.35
Sharing food with HIV positive people*	82	27.99
Sharing utensils*	74	25.26
Kissing*	50	17.06
Sexual intercourse	248	84.64
Sharing unsterilized needles	210	71.67
Blood transfusion	216	73.72
From mosquito bite*	91	31.06
Mother to baby during pregnancy	190	64.85
Mother to baby through breastfeeding	156	53.24
General appearance*	154	52.56
Use of condoms as protection against HIV	157	53.58
Among family members*	78	26.62
Among men having sex with men	213	72.70
Among low class only*	115	39.25
Among commercial sex workers only*	43	14.68
Among intravenous drug users only*	42	14.33
Medicine to reduce maternal to child HIV transmission	131	44.71
High level of knowledge	**52**	**17.75**
Low level of knowledge	**241**	**82. 25**

*negative/false statements

Testing Attitudes (Table 3)

Of the 293 population, 274 (93.52%) had positive testing attitudes while 19 (6.48%) had negative testing attitudes. Among the attitude questions, Statements on the acceptance of medications to lower the risk of an infant to acquire HIV had the highest positive attitude score of 263 (89.76%). On the other hand, only 125 (42.67%) respondents would agree to be tested if they had to pay for it.

Table 3. Testing attitudes among pregnant patients seen at an antenatal clinic

Respondents with positive HIV testing attitude	274 (93.52%)
Respondents with negative HIV testing attitude	19 (6.48%)
Total	293 (100%)

Assessment of Risk Factors for HIV (Table 4)

The prevalence of high risk behaviors or practices were significantly low among the study population. Among the 293 respondents, only 73 (25%) have had multiple sexual partners, 250 (85.32%) do not use condoms during sexual contact, 31 (10%) have had history of IV drug use, 29 (10%) report ever being in jail, and 25 (8.5%) have had history of sex in exchange for money and drugs.

Table 4. Assessment of Risk factors for HIV among pregnant patients seen at an antenatal clinic

Risk Factors (N = 293)	No (Low Risk)	Yes (High Risk)
History of Multiple Sex Partners	73 (24.92%)	220 (75.09%)
No condom use during sexual intercourse	250 (85.32%)	43 (14.68%)
IV drug use	31 (10.58%)	262 (89.42%)
History of imprisonment	29 (10.58%)	264 (90.10%)
Sex in exchange for money or drugs	25 (8.52%)	268 (91.47%)

Acceptance rate of HIV Counseling and Testing (Table 5)

A total of 141 (48%) respondents had indicated acceptance of HIV counseling and testing, 33 (11%) declined, while 119 (40%) were still undecided.

Association of levels of HIV knowledge, testing attitudes, and assessment of risk factors of HIV with acceptance of HIV counseling and testing (Table 6)

Result of the analysis showed that acceptance of HCT was significantly associated with positive testing attitudes (p value 0.004), no history of multiple sex partners (p value 0.029), no history of IV drug use (p value 0.001), no history of imprisonment (p value 0.003) and no history of having sex in exchange for money or drugs (p value 0.002).

Table 5. Acceptability of HIV counseling and testing among pregnant patients seen at an antenatal clinic

(N = 293)	n (%)
Yes	141 (48.12%)
No	33 (11.26%)
Undecided	119 (40.61%)

DISCUSSION

Knowledge on HIV

Findings in this study show that there is generally low level of knowledge of HIV, its transmission, and options for treatment. The result was comparable to the study of Villanueva (2000) wherein, 79.5% felt that they have inadequate knowledge while 12.9% admitted to have absolutely no knowledge on HIV.[11] In many studies previously conducted, uptake of HCT were not influenced by high level of knowledge. [9, 10, 11]

Testing Attitudes

Majority of respondents in this study show positive testing attitudes that are also associated with the acceptance to be tested. Factors that influenced positive attitude of the respondents were however not explored.

Acceptance of HIV counseling and testing

Half, 141 (48%), of respondents agreed to HCT. However 152 (51.88%) of the respondents were not willing or undecided. Some of the reasons given for either declining HCT or indecision included the need to consult their partners, and others were in a hurry and could not afford the time to be consumed by counseling. These findings were also evident in some studies exploring the factors that affect HCT acceptance.

Association of levels of HIV knowledge, testing attitudes, and assessment of risk factors of HIV with acceptance of HIV counseling and testing

The current practice is to offer HCT to pregnant patients with high risk factors for HIV so that early diagnosis can lead to timely intervention. However, the target is to achieve universal screening of pregnant patients for HIV since pregnancy is an evidence of unprotective penetrative sexual intercourse, which is the most common mode of HIV transmission. Findings of the study show that patients with no risk factors for HIV are more likely to accept HIV counseling and testing, because they are probably

Table 6. Association of HIV knowledge, testing attitudes and low risk factors for HIV with acceptance of HIV counseling and testing among pregnant patients seen at an antenatal clinic

Variables	HCT Accepted N = 141 n (%)	HCT Not Accepted N = 152 n (%)	Odds Ratio	P- Value
High level of Knowledge n = 52	29 (20.53)	23 (15.13)	1.21	0.225
Positive testing attitudes n = 274	139 (98.58)	135 (88.52)	8.75	0.004
No history of multiple sexual partners n = 220	114 (80.85)	106 (69.74)	1.83	0.029
Condom use during sexual intercourse n = 43	18 (12.76)	25 (16.44)	0.74	0.375
No History of drug use n = 262	136 (96.45)	126 (82.89)	5.61	0.001
No history of imprisonment n = 264	135 (95.74)	129 (84.87)	4.01	0.003
No history having sex in exchange for money or drugs n = 268	137 (97.16)	131 (86.18)	5.50	0.002

confident that they will test negative. Of those patients who refused or undecided to undergo HCT, reasons given were: self perception of low risk of acquiring the infection, lack of time to undergo the procedure. [9, 10, 11]

Conversely, level of knowledge was not associated with acceptance of HIV counseling and testing. Those with low level of HIV knowledge were more likely to accept HCT compared to those with high level of HIV knowledge, however the difference is not statistically significant.

Condom use, which is considered protective against HIV transmission, is not associated with acceptance of HIV counseling and testing. Condom use is low among pregnant patients included in this study, 43 (14.67%) compared to those who reported to never having used condoms during sexual intercourse 250 (85.32%), but the difference is not statistically significant. Out of 293 respondents, 220 (75.09%) reported to have one single non-promiscuous sex partner. They believe that they are not at high risk for HIV, hence do not feel the need for condoms during sexual intercourse.

CONCLUSION

The respondents of this study were on average 28 years old, with a range of 15 to 44 years old, mostly Catholic and single, high school graduates who are currently unemployed. The respondents generally have low level of HIV knowledge, positive testing attitudes and assessed to be at low risk for HIV infection. The findings showed level of knowledge and condom use were not associated with acceptance of HIV counseling and testing. Acceptance of HIV counseling and testing was significantly associated with positive testing attitudes, and low prevalence of risk factors such as, no history of multiple sex partners, no history of IV drug use, no history of imprisonment and no history of having sex in exchange for money or drugs.

LIMITATIONS

Patients seen at this tertiary government hospital are residents from nearby cities and municipalities in the province and even from distant areas in the region. Many, if not all of these patients are impoverished and are dependent on government health insurance. Because of this, there might be selection bias towards patients with low socio-economic profiles.

This study does not aim to evaluate the program on prevention of mother to child transmission (PMTCT) of HIV infection, but to investigate factors that can be addressed to improve uptake of HCT among pregnant patients.

RECOMMENDATIONS

Based on the outcome of this study recommendations include the following:

1. To conduct a similar study among pregnant women with non-viable pregnancies.
2. To conduct this study at the community level.
3. Health education on HIV should be discussed among pregnant women and their partners during the antenatal visit.
4. Health education among postpartum women will also be conducted to correct the misconceptions on the mode of transmission.

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