Predictors for the Transmission of Human Immunodeficiency Virus (HIV) and other Sexually Transmitted Diseases (STDs) Among Filipino Women

Ma. Elinor S. Sunico, MSc; Mary Ann D. Lansang, MD, MSc;
Mari Rose A. Aplasca, MD; Angelita C. Balis; and Ma.Nonita A. Cerillo

ABSTRACT

This study aimed to identify high risk groups in the transmission of HIV/STDs among Filipino women of reproductive age. The 1993 Philippine Safe Motherhood Survey (SMS) data from 8,481 women with at least one pregnancy outcome and relevant National Demographic Survey (NDS) data were analyzed. The presence of self-reported abnormal vaginal discharge (AVD) served as the surrogate marker of STDs. The overall estimated STD (as reflected by AVD) prevalence rate is 2.0%. Except for Central Luzon, Western and Central Mindanao, the odds ratios based on the region-specific prevalence rates of AVD were statistically significant in all regions relative to the Bicol region. Using multivariate analysis, the significant predictors of having AVD: respondent's occupation, higher monthly income, lower monthly coital frequency, husbands/partners who had sex with other women/men before their current partners, and non-prenatal consultation. These determinants imply institution of an STD intervention program. The NDS and SMS data included information which may be useful for STD morbidity rates estimation and risk factor determination. Our findings underscore the need for the health policy makers to vigorously promulgate policies and guidelines for the rapid implementation of an effective national STD prevention and control program under a concerted effort of both government and non-government organizations.

INTRODUCTION

The most recently recognized sexually transmitted disease (STD) is the acquired immunodeficiency syndrome (AIDS) caused by the retrovirus, the human immunodeficiency virus (HIV) (Braunwald, 11th ed.: 506). In the Philippines, the HIV/AIDS Registry of the Department of Health had reported that the number of HIV seropositive individuals from 1984 to August, 1995 was 668, of which 300 (44.9%) cases were female, most of whom were aged 20-39 years (Asia-Pacific Venearologist, 1995: 11). The Department of Health has estimated that this may be underestimated by 10-100 times. Heterosexual transmission, which accounted for 51.2% of these cases, was the major route of transmission. It is the dominant mode, and STDs enhance the transmission.

Biologically, women are more prone to HIV infection than men (Lamptey, 1994). They tend to have undetected and untreated STDs, rendering them at greater risk of

contracting HIV infection (Lamptey, 1994; Clottey and Dallabetta, 1993). The major factors that predispose them to greater risk are social and economic, such as poverty, gender discrimination, lack of power in negotiating sex, and lack of educational and economic opportunities (Lamptey, 1994). Another reason for concern about female infection is the risk of perinatal transmission.

In the Philippines, there are substantial levels of HIV with low condom use, implying increasing risk. STD diagnostics are limited and reporting poor, even though these can even further increase HIV risk. But because of the HIV epidemic trend which is rapidly increasing through heterosexual transmission, specific prevention strategies must be developed and implemented.

There are few population-based studies on STDs among Filipino females. Factors such as the social, demographic and economic profiles, sexual behavior patterns, health-care seeking practices and exposure to the mass media as possible sources of information or education are among the aspects of STDs that have not been fully explored. Identification of the significant determinants of AIDS/STDs may support the early recognition of vulnerable female populations other than commercial sex workers (CSWs). In the Philippines, most of the studies conducted on AIDS have focused on the homosexual/bisexual males, CSWs, overseas contract workers, health workers, and students. However, because of the nature and rapid transmission of these diseases in the general population, females who are sexually active and women who are married to men with premarital or extramarital affairs should be characterized relative to the risks of disease transmission.

The 1993 National Demographic Survey (NDS) and the Philippine Safe Motherhood Survey (SMS) include nationwide, population-based information that may prove helpful in identifying determinants of STD risk among Filipino women. A review and analysis of this database would be very useful in determining more focused approaches to the prevention and control of STDs and HIV infection and in suggesting specific areas of investigation and evaluation. To our knowledge, our study would be the first multivariate analysis of the determinants of transmission among Filipino women. Our study, therefore, aims to identify factors influencing the transmission of STDs among Filipino women of reproductive age. The specific objectives are: (1) to identify an outcome measure which may serve as the surrogate marker for sexually transmitted diseases; (2) to attempt to estimate prevalence of symptomatic STDs based upon self-reported experience with symptoms which may be indicative of STD infection; and (3) to determine the significant predictors in the transmission of STDs among the Filipino women using multivariate analysis.

METHODS

Setting

The study was conducted in the Philippine archipelago, which is situated strategically within the arc of nations that sweeps southeastward from mainland Asia to Australia (NSMS Report, 1994).

Study Population and Sample

The subjects include the sample from the 1993 SMS, consisting of 15,029 women aged 15-49 years who were nationally representative of ever-pregnant women of

reproductive age. The respondents were composed of more than 8,400 women (specified absolute precision (d) is 1% at 95% confidence level and estimated population proportion (P) of 50%). This was based on the number of women in a follow-on survey to the NDS. These women were successfully interviewed during the 1993 NDS and had reported at least one pregnancy outcome. The inclusion criteria into the NDS were: all female members and female visitors of the sample households aged 15 to 49 years, regardless of marital status. Those who were not regular household members who stayed in the sample household the night before the day of interview were considered as eligible female visitors (NSMS Report, 1994).

This study was conceptualized after the NDS and upon the announcement and invitation of the Population Institute, College of Social Sciences and Philosophy, University of the Philippines for a research grant on an extended data analysis. The East-West Center Program on Population, located in Honolulu, Hawaii, United States of America, expressed the availability of the nationwide dataset for the elucidation of specific health concerns.

Sampling Design

The regions are smaller geographical groupings of the three major islands: Luzon, Visayas, and Mindanao for administrative reasons. In each of the 14 regions, the NDS household sample was self-weighted but not at the national level. The weights in the SMS were the same as those in the NDS, with adjustment for non-response. The sampling was done using a two-stage sample design:

barangays were initially selected, followed by the selection of households from those barangays. The total household sample in each barangay formed a cluster. Barangays are the smallest political subdivisions in the country and generally correspond to a census enumeration area. However, the barangay population size varied widely; some included more than 1,000 households. In case of a very large size, the barangay was partitioned into smaller enumeration areas (NSMS Report, 1994).

Statistical Analysis

For the univariate analysis, the weighted (an adjustment for the sampling design effect) frequency distributions of the nominal variables were generated. Too many missing observations were assumed biased. Variables on sexual behavior with response of "Don't Know" were included to determine the prevalence of the disease in women who were unaware of their health risk. To estimate the risk-specific prevalence rate, cross-tabulations were done for each independent variable and one of the three dependent variables. Standard Chi-square tests and kappa statistics were used. Overall, probability values less than 0.05 (p<0.05) were considered as statistically significant.

To adjust for the confounding effects of the covariates, we used unconditional multiple logistic regression using backward elimination procedure as the method of selection. The significance level for removal from the model of the non-significant factors was set at 0.1. Of the three clinical manifestations considered, i.e., presence of abnormal vaginal discharge (AVD), painful sexual intercourse (PI), and painful urination (PU),

the event considered was AVD because, being a common manifestation of gonococcal infection (Braunwald, 11th ed:506; CDC, STD Summary), it is the most typical symptom of STDs. Dummy variables were created, where appropriate, considering the following social, demographic, and economic factors: information about the respondent, e.g., type of place of residence (i.e., urban/rural), marital status (i.e., live-in/not live-in), media exposure (i.e., not exposed/partially exposed/ fully exposed), age at the time of interview, religion (i.e., Christian/Muslim), education (i.e., number of years of schooling), occupation (i.e., white-collar/blue-collar/ jobless), and monthly income. Information about the respondent's husband/partner were also considered, such as age at the time of interview, education, occupation, and monthly income.

On the other hand, the following behaviors were included in the full model: age at first sexual intercourse, usual coital frequency per month, number of sexual partners in the last year, number of sexual partners in whole life, condom use during last sex, husband/partner had sex with other women/men during the course of the relationship husband/partner had sex with other women/men before the relationship, and husband/partner had ever paid other women to have sex with him.

Birth delivery is an inevitable event and the place of delivery usually depends on the economic status of the women, that is, if not on an emergency basis. Women of low socioeconomic status are more likely to deliver at home than in a health facility. Hence, prenatal consultation during pregnancy was the factor included in the multivariate model.

Limitations of the Study

The 1993 NDS and the SMS were conducted by interviewing the respondents using a structured questionnaire. There were no physical and laboratory examinations done by a physician or a trained health worker to confirm the diagnosis of STDs. Surrogate markers were used as the tool to measure presence of STD. The validity of the available data ultimately depends on the respondent's claim of the clinical manifestations based on their actual experiences. Population-based sample surveys on STDs have the advantage of producing estimates that represent the general population, but may have the disadvantage of measurement errors related to self-reporting of diseases (Anderson et al., 1994). Furthermore, data from these surveys can help us to better understand the extent and correlates of STDs in a population (Anderson et al., 1994). However, HIV infection can be asymptomatic but contagious for a significant length of time. In this case, using STD symptoms such as AVD must definitionally have some limitations in the study of HIV among women. This study, however, is not looking at HIV, but risk behaviors of women and their husbands/partners which may place women at risk of HIV.

All respondents for this study were women with at least one pregnancy outcome. Sexually active women who had never experienced pregnancy were not represented in the study sample. Married women predominantly constituted the sample, but

these were not a representative group for the study of HIV spread. Sexually active unmarried and/or nulliparous women who belonged to the high risk group were not included in the survey. In addition, HIV infection can be acquired through modes of transmission other than sexual.

RESULTS

General Description

A total of 8,481 respondents were included in this study. The respondents were classified according to their residence: urban/rural. The characteristics of these two groups are presented in Tables 1.1 and 1.2. Half of the respondents were residents of urban communities. Almost 50% were below 35 years old. Significant differences between urban and rural areas were found relative to the number of years of schooling (p<0.0001), religion (p<0.0001), mass media exposure (p<0.0001), and occupation (p<0.0001). The urban and rural women did not differ as to marital status. The majority of the respondents had no income. There were more pregnant women residing in the rural area than in the urban area (p<0.0001). Three percent of the urban women and 5% of the rural women had their first sexual intercourse at 9-14 years old. On the other hand, a majority of the women residing in either the urban (94.1%) or rural (93.4%) areas had their first sex experience at 15-29 years old. The majority of the respondents said that their husbands/

partners did not use condom during their last sexual intercourse. There were more non-users of condoms in the rural area than in the urban area (p<0.0001).

Risk-Specific Prevalence Rates of Abnormal Vaginal Discharge

The overall prevalence of symptomatic STDs, as indicated by AVD as a surrogate marker, was 2.0% among the women interviewed. Although the rates tended to vary, no statistically significant differences were found in all social, demographic, and economic factors studied, except for the regional prevalence rates (p=0.041). The Ilocos Region had the highest rate (3.3%), followed by the Cordillera Administrative Region (2.9%). The Bicol Region and the Western and Central Mindanao Regions, on the other hand, had considerably lower rates relative to the rates in the other regions. Table 2 shows the unadjusted odds ratios of having AVD among these women by their region of residence. With the Bicol Region as the reference, all the regions had significant odds ratios of more than 4 except for the Western and Central Mindanao and Central Luzon Regions. The highest odds ratio was in Ilocos (9.1), followed by that in the Cordillera Administrative Region (8.1). The geographic distribution of the region-specific prevalence rates of AVD in the Philippines is shown in Figure 1.

Table 1.1 PERCENT DISTRIBUTION OF THE RESPONDENTS BY THEIR
BACKGROUND CHARACTERISTICS AND TYPE OF PLACE OF
RESIDENCE

BACKGROUND CHARACTERISTICS	TYPE OF PLACE OF RESIDENCE		TOTAL n = 8,481
	URBAN n = 4,383	RURAL n = 4,098	
(1) AGE GROUP (years)			
15-19	1.3	1.5	1.4
20-24	9.7	11.7	10.7
25-29	18.2	17.5	17.9
30-34	21.7	19.8	20.8
35-39	19.5	19.8	19.6
40-44	16.8	16.6	16.7
45-49	11.5	11.8	11.7
50-over	1.2	1.4	1.3
(2) NUMBER OF YEARS OF SCHOOLING *			
No schooling	0.1	0.1	0.1
1-6	30.7	54.9	42.3
7-10	38.4	30.5	34.6
11-15	30.8	14.4	23.0
(3) RELIGION *			
Roman Catholic	85.8	80.0	83.0
Protestant	2.0	3.7	2.8
Iglesia ni Kristo	2.8	3.1	2.9
Aglipay	1.2	1.9	1.6
Islam	2.4	4.4	3.4
Other religion	5.8	6.7	6.3
None	0.0	0.1	0.1
(4) MARITAL STATUS			
Married	86.8	87.5	87.1
Living together	7.6	7.4	7.5
Widowed	2.9	3.1	3.0
Divorced	0.1	0.2	0.1
No longer together	2.7	1.8	2.3
(5) MEDIA EXPOSURE *			
Fully exposed	65.3	36.5	51.7
Partially exposed	32.6	56.0	43.7
Not exposed	2.0	7.4	4.6

* Statistically significant (p<0.0001)

Table 1.2   PERCENT   DISTRIBUTION OF THE RESPONDENTS BY THEIR
            BACKGROUND CHARACTERISTICS AND TYPE OF   PLACE OF
            RESIDENCE

BACKGROUND CHARACTERISTICS	TYPE OF PLACE OF RESIDENCE		TOTAL n = 8,481
	URBAN n = 4,383	RURAL n = 4,098	
(6) OCCUPATION *			
Professional/Technical	6.9	3.4	5.2
Administrative/Executive	0.7	0.2	0.4
Clerical	6.4	2.0	4.2
Sales	20.6	15.5	18.1
Service	8.9	6.4	7.7
Agri/Animal Hus/Fores/Fish/Hunt	3.6	15.8	9.5
Production/Transportation	8.9	6.7	7.9
Unclassifiable	0.3	0.02	0.2
Non-gainful activities	0.1	0.1	0.1
Jobless	43.8	50.0	46.8
(7) MONTHLY INCOME (peso) *			
No income	43.8	50.0	46.8
<P2,000	0.3	0.02	0.2
P2,000-P4,000	33.1	37.7	35.3
>P4,000	22.8	12.3	17.7
(8) CURRENTLY PREGNANT *			
Yes	6.7	9.7	8.2
No	92.8	89.7	91.3
Unsure	0.5	0.7	0.6
(9) TOTAL CHILDREN EVER BORN *			
1	15.4	12.2	13.8
2-3	37.3	31.0	34.2
4-5	27.0	26.3	26.7
>=6	20.3	30.6	25.3
(10) EVER BEEN MARRIED OR LIVED WITH A MAN			
Yes	99.6	99.6	99.6
No	0.4	0.4	0.4
(11) AGE AT FIRST SEX (years) *			
9-14	3.2	4.6	3.9
15-29	94.1	93.4	93.8
30-over	2.7	2.0	2.3
(12) PARTNERS USED CONDOM DURING LAST SEX *			
Yes	3.4	1.7	2.6
No	96.6	98.3	97.4

* Statistically significant (p<0.0001)

Table 2:   REGION-SPECIFIC PREVALENCE RATES, UNADJUSTED ODDS RATIOS
AND THEIR 95% CONFIDENCE INTERVALS (C.I.) OF HAVING AVD IN
FILIPINO WOMEN

REGION	PREV. RATE (%)	UNADJ. ODDS RATIO	95% C.I.
Metropolitan Manila	2.2	6.1	1.4, 25.7 *
Cordillera Administrative	2.9	8.1	1.5, 43.4 *
Ilocos Region	3.3	9.1	2.1, 39.8 *
Cagayan Region	2.4	6.4	1.4, 30.5 *
Central Luzon Region	1.4	3.9	0.9, 17.1
Southern Tagalog	2.1	5.6	1.3, 23.7 *
Western Visayas	2.6	7.0	1.6, 30.2 *
Central Visayas	2.4	6.6	1.5, 28.7 *
Eastern Visayas	2.7	7.4	1.6, 33.9 *
Western Mindanao	0.9	2.3	0.4, 12.8
Northern Mindanao	2.4	6.6	1.5, 29.9 *
Southern Mindanao	2.1	5.7	1.3, 25.4 *
Central Mindanao	0.9	2.4	0.4, 13.1
Bicol Region	0.4	1.0	REFERENCE REG.

* Statistically significant

When the regions were combined into the three major Philippine Islands, Visayas had the highest prevalence (2.5%), followed by Luzon (2.0%), and Mindanao (1.6%). The differences in the rates, however, were not statistically significant. The prevalence rate of AVD among Filipino women was higher in the urban areas (2.2%) than in the rural areas (1.8%).

Of the health-care seeking behaviors studied, prenatal consultation during pregnancy was statistically significant (p=0.005). Women who did not consult anyone were found to have a higher prevalence rate (3.7%). The difference was significant as compared to those who sought medical (1.8%) and non-medical (0.9%)
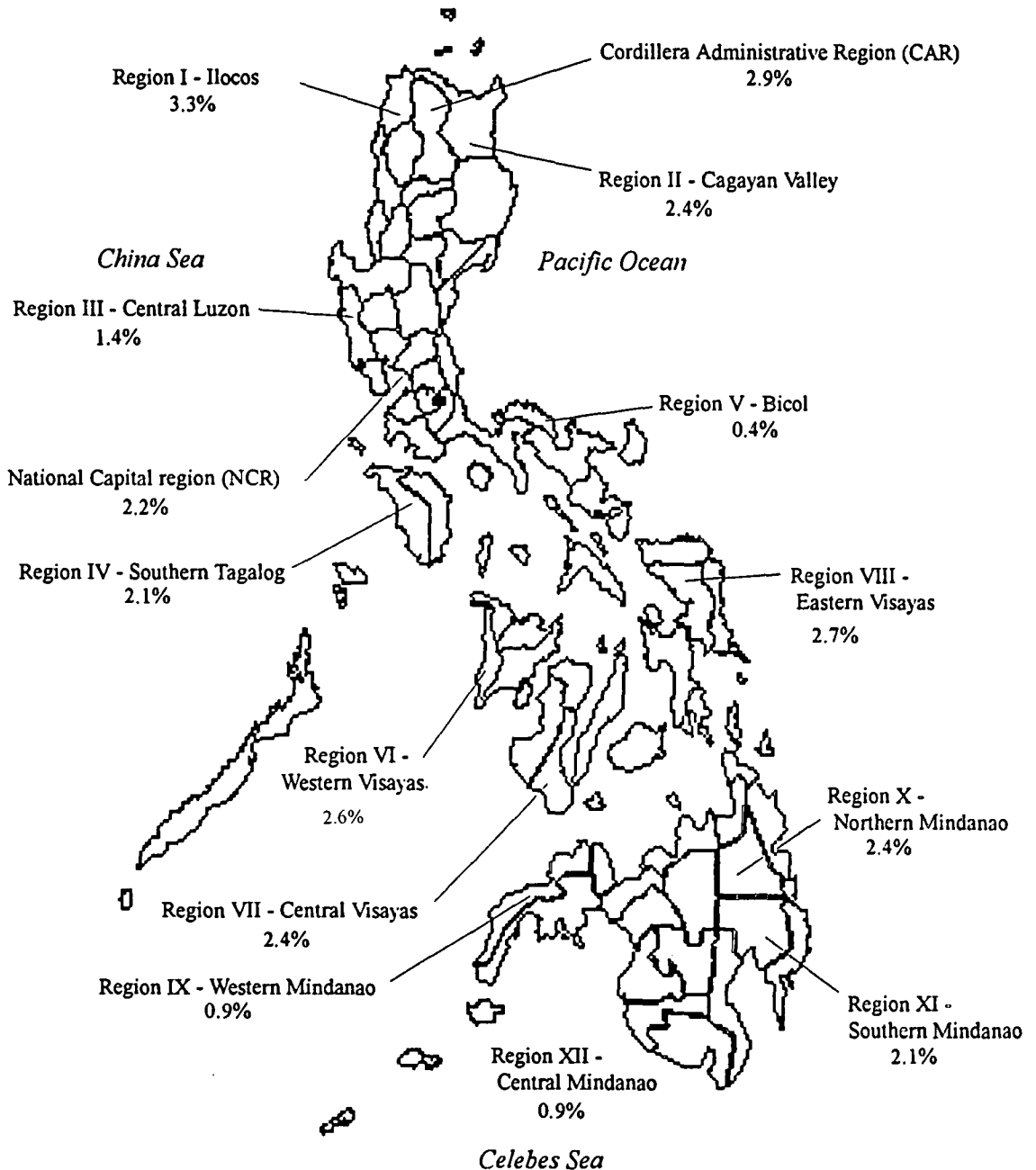
consultations. On the other hand, among the 193 condom users (based on last sex), 4% used condom to protect themselves from contracting STDs, 15% both to protect themselves from contracting STDs and to prevent pregnancy, and 81% to prevent pregnancy (p<0.0001).

The 170 women with AVD were classified by type of advice or treatment sought: medical (41.1%), non-medical (11.8%), self-medication (6.3%), and those who did not seek advice or treatment at all (40.8%). Among the 69 women who did not seek advice or treatment at all, the most frequent reason given for non-consultations was their assessment that the AVD was not serious enough to warrant attention (45.5%).

Figure 1

REGION-SPECIFIC PREVALENCE RATES (%) OF ABNORMAL VAGINAL DISCHARGE IN THE PHILIPPINES

Region I - Ilocos
3.3%

Cordillera Administrative Region (CAR)
2.9%

Region II - Cagayan Valley
2.4%

China Sea

Pacific Ocean

Region III - Central Luzon
1.4%

Region V - Bicol
0.4%

National Capital region (NCR)
2.2%

Region IV - Southern Tagalog
2.1%

Region VIII -
Eastern Visayas
2.7%

Region VI -
Western Visayas.
2.6%

Region X -
Northern Mindanao
2.4%

Region VII - Central Visayas
2.4%

Region IX - Western Mindanao
0.9%

Region XI -
Southern Mindanao
2.1%

Region XII -
Central Mindanao
0.9%

Celebes Sea

Other reasons given were: no time (12.7%), too expensive (10.6%), afraid/embarrassed (5.9%), didn't think it would help (1.1%), combination of reasons (17%), and other reasons (7.2%)

Surrogate Markers for STDs

There were three clinical manifestations which were potential surrogate markers for STDs: AVD, PI, and PU. A poor agreement was found between AVD and PI (kappa = 0.13), as well as between AVD and PU (kappa = 0.12). This result confirmed the clinical observation that the two manifestations did not measure STDs at a comparable level. PU and PI may signify other gynecological problems, not necessarily STDs. There was a poor agreement between PU and PI (kappa = 0.18). PU measures the disease which differs from that measured by PI.

Other clinical manifestations associated with AVD (n=170): bad odor in the vaginal area (58.6%), itchiness or irritation (52.8%), any severe lower abdominal pain not related to menstruating (42.2%), and fever (12.2%).

Multivariate Analysis of Predictors of Having AVD among Sexually Active Women

The multivariate analysis was done to identify the significant predictors of having AVD while controlling for the effect of the confounders. The combined effects of the social, demographic, economic, sexual behavior, as well as the health-care seeking behavior, factors were assessed for goodness-of-fit by multiple logistic regression model. Results showed that the effect of sexual behavior in the full model was distinctive statistically (-2 Log L = 1470.224 and p-value =0.0001). Similar factors as in the partial models were found to be significant, namely: respondent's occupation, monthly income, usual coital frequency per month, the husband/partner having sex with other women/men before becoming partners, and prenatal consultation during pregnancy. The results of the final model, which includes all the main effects of the significant predictors of having AVD, are presented in Table 3.

The adjusted odds ratios (ORs) for the occupation in the combined logistic model were 0.29 and 0.44 for the white-collar and blue-collar jobs, respectively. These improvements were due to the confounding effects of the factors related to the sexual behavior. For the monthly income, the effect is the reduction of the odds ratio from 1.27 to 1.24. However, there was no remarkable change in the odds ratio for the factors related to the sexual behavior.

When controlling for the effects of all the study variables included in the model, the respondent's occupation, monthly income, usual coital frequency per month, partners having sex with other women or men before becoming partners, and prenatal consultation during pregnancy remained in the model. The variation of these predictor variables was fully explained by the significant fit of the multiple logistic model.

As explained in the partial model of the social, demographic, and economic indicators, having an occupation had a protective effect against AVD. The apparent protective association was higher among those with white-collar job (OR = 0.29) than

among those with blue-collar job (OR = 0.44), as compared to women who had no job. An odds ratio of 1.24 for the respondent's monthly income indicated that the odds of the women having AVD was increased by 1.24 for every P1,000 increase in the monthly income. The increased odds of having AVD among women who had higher monthly income may be due to the higher estimated incomes for the administrative, executive, and managerial workers, as well as for the production-related workers, of which high risk-specific prevalence rates of AVD were noted. The value for the income was not based on the individual interview. Data were estimated based on the average monthly income by type of occupation obtained from the 1993 Yearbook of Labor Statistics. Hence, the result should be interpreted with caution and should be studied further. Among the 170 STD/HIV infection cases, 30 (17.6%) of the respondents were sales workers and 21 (12.4%) women were engaged in production work (as tailors, dressmakers, sewers, or upholsterers). Of those with white-collar jobs, most were teachers (38.5%).

The monthly coital frequency could be used as a measure of exposure to having STDs among women. The odds of having AVD increased with less frequent coitus. The variables on sexual behavior had similar OR s to the partial model. On the other hand,

Table 3: SIGNIFICANT PREDICTORS OF HAVING AVD AMONG SEXUALLY ACTIVE FILIPINO WOMEN

VARIABLE	REGRESSION COEFFICIENT	STANDARD ERROR	ADJUSTED ODDS RATIO	95% CI (OR)
Intercept	-3.9352	0.1741		
Respondent's Occupation				
White-collar job	-1.2306	0.5656	0.29	0.10 - 0.88 [c]
Blue-collar job	-0.8268	0.4158	0.44	0.19 - 0.99 [c]
Jobless [a]			1.00	
Respondent's Monthly Income	0.00021	0.0001	1.24 [b]	1.01 - 1.51 [c]
Usual coital frequency/month	-0.0455	0.0201	0.96	0.92 - 0.99 [c]
Partner had sex with other women or men before becoming partners				
Yes	0.9567	0.1629	2.60	1.89 - 3.58 [c]
Don't know	-0.1390	0.2586	0.87	0.52 - 1.44
No [a]			1.00	
Prenatal consultation during pregnancy				
No one	0.6775	0.2626	2.11	1.25 - 3.56 [c]
Non-medical	-0.6817	0.5501	0.51	0.17 - 1.49
Medical [a]			1.00	

[a] Reference Category Level

[b] Regression coefficient & its standard error for income were multiplied by P1000.

[c] Statistically Significant

non-consultation for prenatal check-up during pregnancy put the woman at twice the risk (OR = 2.11, 95%; CI = 1.25 - 3.56) relative to the woman who sought prenatal examination.

DISCUSSION AND POLICY IMPLICATIONS

The estimated prevalence rate of AVD, i.e., 2%, can approximate the magnitude and extent of the health problem on STDs in the general female population in the Philippines. Our estimate, however, should be viewed as very conservative. STD, particularly in women, has been documented as asymptomatic in some cases of gonococcal and chlamydial infection (STD Summary, CDC). Furthermore, persons with HIV infection may remain symptomless for many years (STD Summary, CDC). Prevalence of STDs may be a good sentinel marker for HIV infection. Most persons with genital discharge, lesions, or pain cease sexual activity and seek health care (although not necessarily medical care), such as the practice in the Philippines. Accordingly, those who transmit infection usually are among the minority who are infected but asymptomatic, or who do not understand the implications of their symptoms (Braunwald, 11th ed.).

Although STDs, as manifested by AVD, were generally found in all regions of the Philippines, urban women were more likely to contract the disease than the rural women. This trend is similar to the report done by Mabey (1994). Low prevalence rates in some areas such as Central Luzon and Bicol could be due to possible underreporting, whereas those from the Western and Central Mindanao Regions could be a mixed influence of complex socio-cultural, religious, and political factors. Although polygamy is an acceptable norm, committing adultery under the Islamic law entails capital punishment.

The respondent's type of occupation and monthly income were found to be the significant socioeconomic predictors of AVD. Interpretation of the model, however, should be made with caution. It may imply that women who had no occupation tend to have AVD. However, having a high income is not a guarantee of being spared from having STDs. We suggest that information on income, at least, be included in the succeeding NDS as an economic indicator. On the other hand, the socioeconomic status of husbands/partners primarily reflects the household's socioeconomic condition. Low socioeconomic status has been implicated to be an important factor in communicable disease transmission. A national policy that will require the local health officials to develop and implement various income-generating activities involving women as potential sources of funds for outreach health services, including incentives for the volunteers, is a potential socioeconomic intervention.

In several studies, heterosexual transmission has been documented as the most predominant mode of transmission of STD/HIV infection (Berer, 1993; Monzon et al., 1989; Monzon, 1993; Kallings, 1993; Schnittmann and Fauci, 1994). In the Philippines, although the husband and the wife share authority (egalitarian family) (Panopio, 1994), dutiful wives are supposed

to satisfy the sexual needs of their husbands/partners. Submissiveness of the wives to their husbands is also a common teaching in Christianity, which is the predominant religion in the country. In this context, sexual promiscuity of the males is likely to cause disease transmission among their sex partners when the women do not question the men's previous sex experiences. The results of this study suggest that extramarital sexual intercourse by husbands increases the likelihood of STD infection.

The number of sex partners was not found to be a significant predictor probably because the women in this study generally had a small number of sex partners. The lower coital frequency being associated with higher STD risk lends itself to a plausible explanation: wives of men who are having sex outside of marriage are less likely to demand sexual services at home, thereby reducing coital frequency within the marital relationship. It should be noted, however, that the adjusted OR for this variable was only 0.96 (95% C.I. = 0.92 - 0.99). Several studies have reported that heterosexual intercourse with multiple partners in a short time period is a high-risk behavior for the acquisition and transmission of STDs (Seidman et al., 1994; Prins et al., 1994).

Although age at first sexual intercourse has been indicated by Greenberg et al., (1992) as a useful marker for risky sexual behavior and history of STD, this observation was not confirmed in the present multivariate model. Women's risk in the Philippines comes not from their own behavior, typically, but instead from that of their partners. Thus, it doesn't show up as significant in the models. Furthermore, it

could be that the majority of the respondents (93.8%) had their first sexual intercourse at 15-29 years old. Thus, there was no remarkable variation in this characteristic. The mean and median age at first sexual intercourse were 20.0 and 19.0 years old, respectively, with a standard deviation of 4.0 years.

The condom is not a popular contraceptive method in the Philippines and, least of all, as a preventive measure against STDs. This observation was based on the result of this survey in which 97.4% did not use condom during the last sexual intercourse. The low status of women is another factor that renders them unable to negotiate with their partners for safer sex such as condom use. While condom has been shown to decrease the risk of HIV transmission, its widespread promotion in the Philippines to prevent HIV infection has remained controversial (Dayrit, 1989). The Catholic Church has opposed artificial birth control (Dayrit, 1989; Pope Paul VI, 1968), and the condom is considered one such contraceptive device. On the other hand, Dayrit (1989), in his paper, mentioned that "the use of condoms in the prevention of HIV infection is justifiable within the moral principle of the 'lesser of two evils'; this means that using condoms is the lesser evil than contracting HIV infection in a real life situation where the risk of transmission is high."

Despite the promulgation by the Philippine Department of Health of the National Policy Guidelines for AIDS Control which includes guidelines on condom use, the utilization rate for condoms remains very low. This profile necessitates a policy that will urge the concerned health-oriented

sectors of the society to conduct more extensive health educational campaign on condom use at the grassroots level. Health workers, whether government or non-government, voluntary health workers, and even traditional healers in the barangays, can be trained on the issues of appropriate condom use. These workers will serve as health educators for couples through focus group discussions or couple counseling.

A policy which will encourage social scientists to do qualitative studies on condom use like improved condom marketing as well as distribution strategies. Knowledge, attitudes, and practices related to female-controlled barrier methods are a priority in the field of applied social research (Temmerman, 1994). If periodic continence is found to be difficult to practice, monogamy is the option. Among CSWs, there remains no better alternative protection than condom use.

Regarding health-care seeking behavior, only prenatal consultation during pregnancy and birth delivery had a significant association with the presence of AVD. However, prenatal consultation during pregnancy is the more relevant indicator of STD treatment consultation than birth delivery. Prenatal consultation is suggestive of the woman's attitude towards her general health condition. Results of this study show that non-consultation poses twice the risk of contracting STDs among women than those who sought medical consultation. Non-medical consultation, i.e., traditional healing, was not found to be predictive of risky health-care seeking behavior.

On the other hand, 40.8% of the women who had AVD did not seek advice or treatment for various reasons, such as perception that the illness is serious, lack of time for health care, and expense of consultation and treatment. This attitude, if not changed, can enhance the likelihood of disease. Even worse, perinatal transmission of infection from mother to child may ensue. It has been estimated that HIV-infected women who become pregnant have a 30% probability of transmitting the infection to their child (Monzon, 1994). In addition, untreated STDs will result in serious complications such as pelvic inflammatory disease (PID), infertility, low birth weight, prematurity, congenital anomalies in children, ectopic pregnancy, and other adverse outcomes of pregnancy.

Women with STDs had lower rates of utilization of health services, despite their availability through government and private sources. The accessibility of health services was seen as a primary constraint. Traditional healers, who are readily accessible in the community, need to be a central part of any scheme to reduce the incidence of STDs (Wang et al., 1993). Improved case management of STDs in health centers and dispensaries may also have a substantial impact on the incidence of STDs (Newell et al., 1993; Van der Veen et al., 1994). On the other hand, because STD clinic patients are at high risk of HIV infection, HIV antibody testing, with appropriate referral of patients who test positive, and risk reduction education should be made routinely offered to all STD patients, with or without HIV-associated risk exposures (Hoxie et al., 1993). The persistence of STDs in a community is a measure of STD non-awareness among the women and, therefore, needs proper attention

and immediate action by the local health officials.

Barangay health centers should be manned by competent and skilled health workers with rapport and credibility among the community residents. The development of a policy which facilitates the upgrade of the diagnostic laboratory facilities, availability of antimicrobial agents, availability of condoms, training of health personnel on appropriate STD/HIV infection case management, and referral systems, as well as training of voluntary health workers on case finding is imperative.

The National Demographic and Safe Motherhood Survey data included information which may be useful for estimation of morbidity rates of STDs and associated risk factors. For this study, the specific-prevalence rates of STDs were estimated at a national and regional scale. Nationwide, the estimated prevalence of STD, as measured by AVD self-reports, was 2%. STDs were found to be distributed in almost all regions of the Philippines.

It appears that women of low socio-econimic status were more likely to contract the disease, most likely from their promiscuous husbands/partners. Furthermore, there was a considerable percentage (18%) of Filipino pregnant women who did not avail themselves of pre-natal check-ups, i.e., medical attention, despite the availability and accessibility of health services in their community. Many women who manifested abnormal vaginal discharge did not perceive the clinical symptom as serious enough to be treated. Others resorted to non-medical, i.e. traditional healing, treatment and to some extent, self-medication. In effect, non-medical treatment and self-medication may result in increase in the number of resistant strains causing STDs (STDs Guide, '985). Untreated STDs will facilitate the transmission of HIV.

Behavior change remains the most effective means to prevent the spread of HIV and other sexually transmitted diseases (Temmerman,1994; Padian et al., 1993; Kapiga et al., 1991; Kallings, 1993). This strategy should also be targeted at women who, because of their biological make-up or their current low status, are vulnerable to HIV infection and STDs. Couple counseling in combination with social support has been documented as an effective means to promote and sustain behavior change among HIV-infected individuals and their heterosexual partners (Padian et al., 1993). Counseling must be done concurrently after diagnosis and treatment at the clinic (Zaldivar, 1994) and should be an integral part in the management of STDs. The focus of counseling should be on how to purchase, store, and use condoms, refraining from the practice of anal sex, choosing abstinence, and monogamy (Padian, 1993). Practicing safe sex should be the goal of the counseling (Padian, 1993). Other measures should include contact tracing and ensuring compliance to medications of patients. Peer counseling (Berer, 1993) may also be considered as an effective preventive tool, especially in a community where there is a shortage of professional manpower. Counseling may be an effective preventive strategy against STDs among Filipinos because it provides information and education in a personal manner (Zaldivar,

1994, and confidentiality can be assured by the counselors.

A policy on the availability of free quality condoms at the government health centers, including social hygiene clinics and family planning clinics, hospitals, community outreach services and of condoms sold in pharmacies, groceries, supermarkets, as well as retail stores should be drafted. However, among Catholics, whose condom use is proscribed, issues on avoidance of premarital sex among single individuals and monogamy among married couples should be advocated. CSWs, on the other hand, may be asked to undergo STD/HIV screening test and if found to be positive, should undergo treatment accordingly.

Issues that should be addressed in a public health education program are: symptoms of STDs and consequences if kept untreated, early recognition and prompt treatment of STDs/HIV infection, protective measures during sex, availability of quality condoms and skills on appropriate use, availability of accurate, simple, inexpensive, and rapid diagnostic tests for STDs/HIV infection in the health services (Daly, 1994), advantages of the medical versus non-medical treatment and consequences of self-medication, awareness and utilization of the available and accessible health services in the community and development of general health-consciousness. Effective education programs should be given regularly if the effect is to be sustained (Santana et al., 1992). It should be incorporated in the health or sex education curriculum at the first level of high school, i.e., the period of puberty. Teaching, however, should be handled discreetly to avoid malicious perception or misinterpretation by the youth.

Our findings, therefore, underscore the urgent need for the government health policy and decision makers to vigorously promulgate policies and guidelines for the rapid implementation of an effective national STD prevention and control program. A policy on appropriate resource allocation for the STDs/AIDS prevention program should be implemented and enforced. Health education on STD prevention, including improved health-care seeking behavior, as well as early case detection and treatment and contact tracing should be the primary focus of this program. Moreover, government health facilities should be expanded and should offer free services and drugs. The management of HIV/STDs should be integrated in other health care services such as family planning, antenatal, maternal and child health services, etc.. STD surveillance should be conducted in places where rates of infection can be monitored. Testing centers/services for HIV should be made available and accessible to the general population who voluntarily submit themselves for testing. Counseling services should also be made available at the testing centers. Finally, we would also emphasize the need for a concerted effort of both government and non-government organizations in implementing preventive and control measures for STDs/AIDS.

REFERENCES

Anderson, J.E., McCormick, L., and Fichtner, R. 1994. Factors associated

with self-reported STDs: data from a national survey. *Sexually Transmitted Diseases.* 21(6), November-December: 303-308.

Asia-Pacific Venearologist. 1995. 3(1), January: 11.

Berer, Marge. 1993. *Women and HIV/AIDS.* An international resource book. Pandora, Great Britain.

Braunwald, Isselbacher, et al., *Harrison's Principles of Internal Medicine.* Eleventh edition, p. 506.

Clottey, C. and Dallabetta, G. 1993. Sexually transmitted diseases and human immunodeficiency virus: epidemiologic synergy? *Sexually Transmitted Diseases in the AIDS Era.* 7(4):753-770.

Daly, C.C., Maggwa, N, Mati, J.K., et al. 1994. Risk factors for gonorrhoea, syphilis, and trichomonas infections among women attending family planning clinics in Nairobi, Kenya. *Genitourinary Medicine.* 70(3):155-161. June 1994.

Dayrit, Manuel M. 1989. Of prostitutes, condoms, and a papal encyclical: the politics and policies of AIDS control. *Phil. J. Microbiol. Infect. Dis.* 18(1), January-June: 2-4.

Greenberg, J., Magder, L. and Aral, S. 1992. Age at first coitus: A marker for risky sexual behavior in women.

Sexually Transmitted Diseases. 19(6), November-December: 332-334.

Guide to the diagnosis, treatment, and control of sexually transmitted diseases. 1985. Franklin Scientific Publications. Pfizer International Inc.

Hoxie, N.J., Vergeront, J.M., Schlenker, T., et al. 1993. HIV seroprevalence among patients attending a Milwaukee clinic for sexually transmitted diseases: findings from four annual surveys, 1988-1991. *Winconsin Medical Journal.* 92(2), February: 61-65.

Kallings, L.O. 1993. HIV infection in the nineties. Global Programme on AIDS. World Health Organization, Geneva, Switzerland. *Vaccine.* 11(5):525-528.

Kapiga, S.H., Nachtigal, G., and Hunter, D.J. 1991. Knowledge of AIDS among secondary school pupils in Bagamoyo and Dar-Es-Salaam, Tanzania. *AIDS.* 5(3), March: 325-328.

Lamptey, Peter. 1994. Slowing AIDS: Lessons from a decade of prevention efforts. *AIDS Captions, Family Health International.* 1(3), August: 2-4.

Mabey, David. 1994. Patterns of sexual behavior. *Current AIDS literature.* 7(11), November.

Monzon, O.T. 1993. HIV infection: HIV efforts and scope of the problem.

Hospital Journal, Philippines. 25(2), April-June: 2-28.

Monzon, O.T. 1994. Ethico-legal implications of AIDS. (A paper presented to the seminar-workshop on "AIDS counseling: A humanistic approach.") RITM Training Center, November 9-11.

Monzon, O.T., Capellan, J.M., Balis, A. et al., 1989. Risks for HIV infection in a low prevalence country. *Phil. J. Micro. Inf. Dis.* January-June: 5-9.

National Safe Motherhood Survey Report: 1993. 1994. National Statistics Office, Manila, Philippines and Macro International, Inc., Calverton, Maryland, U.S.A.. October.

Newell, J., Senkoro, K., Mosha, F, et al. 1993. A population-based study of syphilis and sexually transmitted disease syndromes in North-Western Tanzania. 2. Risk factors and health seeking behavior. *Genitourinary Medicine.* 69(6), December: 421-426.

Padian, N.S., O'Brien, T.R., Chang, Y.C., Glass, S. and Francis, D.P. 1993. Prevention of heterosexual transmission of human immunodeficiency virus through couple counseling. *J. Acquired Immune Deficiency Syndromes.* 6(9): 1043-1048

Panopio, I.S., Cordero-MacDonald, F.V., and Raymundo, A.A. 1994. *General*

sociology focus on the Philippines. Third Edition.

Pope Paul VI. 1968. Encyclical letter on the regulation of birth. *Humane Vitae.* Monograph published by St. Paul Publications, Pasay City, Philippines, July: 12.

Prins, M., Hooykaas, C., Coutinho, R.A., Van Doornum, G.J., Van den Hoek, A.J. 1994. Incidence and risk factors for acquisition of sexually transmitted diseases in heterosexuals with multiple partners. *Sexually Transmitted Diseases.* 21(5), September-October: 258-267.

Santana, R.T., Monzon, O.T., Mandel, J., et al. AIDS education for hospital workers in Manila: effects on knowledge, attitudes, and infection control practices. *AIDS.* 1992. 6 (11): 1359-1363.

Schnittman, S.M., Fauci, A.S. 1994. Human immunodeficiency virus and acquired immunodeficiency syndrom: an update. *Advances in Internal Medicine.* 39:305-355.

Seidman, S.N., Mosher, W.D. and Aral, S.O. 1994. Predictors of high-risk behavior in unmarried American women: adolescent environment as risk factor. *J. Adolescent Health.* 15(2), March: 126-132.

Sexually Transmitted Disease Summary: based upon STD Summary. Center for

Disease Control, Division of STD/HIV Prevention. U.S. Health Department and Human Services.

Temmerman, M. 1994. Sexually transmitted diseases and reproductive health. *Sexually Transmitted Diseases.* 21 (2 Suppl); March-April: S55-58.

Wang, Q., Liang, G., Ye, S., and Shao, C. 1993. Prevalence and epidemiologic correlates of sexually transmitted *Chlamydia trachomatis* infection in a selected population. *Chinese Medical Sciences Journal* 8(2), June: 107-110.

Van der Veen, F.H., Ndoye, I., Guindo, S., et al. 1994. Management of STDs and cost of treatment in primary health care centres in Pikine, Senegal. *International Journal of STD and AIDS.* 5(4), July-August: 262-267.

Zaldivar, S. 1994. Counseling in HIV Medicine. (A paper presented to the seminar-workshop on "AIDS Counseling: A humanistic approach." RITM Training Center, November 9-11.