EAST-WEST CENTER WORKING PAPERS

EAST-WEST CENTER

Population Series

No. 100, February 1998

AIDS-Related Risk, Knowledge, and Prevention Behavior among Young Men in the Philippines

Deborah Balk, Tim Brown, and Grace Cruz

Deborah Balk is a former Fellow, and **Tim Brown** is a Fellow with the Program on Population, East-West Center. **Grace Cruz** is an Assistant Professor with the University of the Philippines Population Institute.

East-West Center Working Papers: Population Series are an unreviewed and unedited prepublication series reporting on research in progress. Please direct orders and requests to the East-West Center's Publication Sales Office. The price for Working Papers is $3.00 each plus postage. For surface mail, add $3.00 for the first title plus $0.75 for each additional title or copy sent in the same shipment. For airmail within the U.S. and its territories, add $4.00 for the first title plus $0.75 for each additional title or copy in the same shipment. For airmail elsewhere, add $7.00 for the first title plus $4.00 for each additional title or copy in the same shipment. Readers in developing countries may request single copies on a complimentary basis.

Established in 1969 as a unit of the East-West Center, the **Program on Population** conducts research and offers professional education focusing on population issues, with emphasis on the analysis of demographic and human-resource trends, their social and economic causes and consequences, and their policy implications in Asia, the Pacific, and the United States.

The Office of Population of the United States Agency for International Development [USAID] provided support for this publication under a cooperative agreement with the Program on Population of the East-West Center.

A

AIDS-Related Risk, Knowledge, and Prevention Behavior among Young Men in the Philippines

Deborah Balk, Tim Brown, and Grace Cruz

Abstract. This study of AIDS risk-related behavior among Filipino men age 15–24 examines three aspects of high-risk sexual behavior: commercial sex experience, number of lifetime sexual partners, and condom use. The analysis uses data from the 1994 Young Adult Fertility and Sexuality Survey (YAFS-II) to test a causal model, the Health Belief Model.

The study found that young men's sexual activity—with girlfriends or acquaintances and with sex workers—is not uncommon. Approximately 8 percent of all young men in the sample reported having paid for sex in their lifetimes, with the percentage growing steadily from less than 1 percent at age 15 to nearly 20 percent by age 24. Of the roughly one-quarter of the sample who had been sexually active, 14 percent of the married men and 11 percent of the single men reported five or more sexual partners in their lives. While almost 92 percent of all respondents knew about condoms, only 22 percent of this group had every used a condom. Among those who had paid for sex in the past 12 months, only 22 percent reported consistent condom use. These findings indicate significant opportunities for HIV transmission through the premarital and commercial sexual activities of young Filipino men.

Three factors amenable to policy intervention are important determinants of condom use: the affordability of condoms, their accessibility, and the awareness that condom use prevents HIV transmission. However, no obvious policy-relevant factors were identified (except perhaps an association with drinking) that could reduce the chances that young men will engage in sex with prostitutes or have large numbers of sexual partners.

Background demographic, socioeconomic, and religious characteristics, which are fundamental determinants of sexual activity, did not turn out to be strong determinants of the risk factors for HIV transmission. All in all, the Health Belief Model cannot readily be endorsed by the present analysis.

East-West Center Working Papers, Population Series, No. 100
February 1988

AIDS-RELATED RISK, KNOWLEDGE, AND PREVENTION BEHAVIOR AMONG YOUNG MEN IN THE PHILIPPINES

This study examines the AIDS risk-related behaviors of youth in the Philippines, a country for which little about general population risk behavior has been documented. Worldwide, youth make up the most vulnerable age group of persons affected by sexually transmitted diseases, including HIV (Boyer and Kegeles 1991). This is in part because adolescence and young adulthood is a time of sexual awakening, definition, and experimentation. In the Philippines, youth are also at high risk because sex with prostitutes is not outside the normal range of early sexual experiences.

Most past sexual-behavior studies in the Philippines have focused on specific geographic areas, predominantly urban, and special sub-populations, predominantly those believed to be at high risk and students (see review in Tan 1994; also see Tan 1995). Furthermore, few studies on AIDS issues in the Philippines have used multivariate analysis to gain understanding. Using data from a nationally representative sample of 15–24 year olds,[1] fielded in 1994, a Young Adult Fertility and Sexuality Survey (YAFS-II) offers a unique opportunity to consider issues of direct relevance to national HIV and AIDS efforts and to do so in a framework of multivariate analysis.

For two reasons this analysis concentrates on the behaviors of Filipino males. First, while both young men and women were surveyed,[2] only males were asked the questions necessary to determine higher levels of risk (i.e., relating to use of commercial sex workers, and condom use and knowledge). Second, some have described the Philippines as having a sexual double standard, whereby women are expected to remain sexually inexperienced until marriage, while men are not (Tan 1994). As we show elsewhere (Balk et al. 1997), the HIV risk of most young women in the Philippines appears to be largely determined by their boyfriends' or husbands' premarital and/or extramarital sexual behavior rather than by their own. A similar pattern of high sexual activity by men and low activity by women has been responsible for most infections of women in Thailand (Sittitrai and Brown 1994). Thus, it is appropriate to focus on men's sexual behavior prior to and outside of marriage in order to assess the risk to young Filipino men and women.

This analysis begins by considering which youth are more likely to be sexually active. Then, each of the following aspects of high-risk sexual behaviors is considered independently: condom-use,

---

[1] Muslim villages (*barangays*), mostly in Mindinao, were excluded from the sample due to the sensitive nature of the questions. With the exception of this small population, the survey is representative of the Philippines.

[2] YAFS-II was the second round of the survey. The first round, which sampled females only, was undertaken in 1983. No questions on HIV/AIDS were included in that round.

commercial sex, and lifetime partners. In these analyses, a causal model—the Health Belief Model—is tested. Although this model has been criticized (e.g., Leviton 1989), research on Thai men—whose behavior is believed to have a number of important similarities to that found in the Philippines—finds that this model provides a useful framework for identifying men who effectively protect themselves in high-risk sexual situations (Vanlandingham et al. 1995).[3] This model incorporates aspects of an individual's beliefs about prevention activities, perceived notion of individual risk, and knowledge of the disease itself, in addition to socioeconomic, demographic, and other relevant background characteristics. Unfortunately, due to data limitations, this study cannot assess the regularity of condom use with commercial sex workers.

HIV and AIDS Prevalence in the Philippines

Little is known about HIV and AIDS prevalence in the Philippines. The first case of AIDS in the Philippines was diagnosed in 1984. Since that time the number of diagnosed AIDS cases and detected HIV infections has continued to climb steadily (see Figure 1). By the end of 1995, 234 AIDS cases and 470 HIV infections had been reported to the Department of Health (FETP 1996a), but these reports substantially underestimate actual prevalence because of underreporting and incomplete coverage. By the end of 1996, another 100 cases (of HIV and AIDS combined) had been reported (HAIN 1996). The low ratio of HIV infection to AIDS cases reported implies that a large number of additional HIV infections have not been detected by the limited testing to date.

As in many Asian countries, the earliest infections were associated with either overseas travel or contact with foreigners, e.g., among sex workers serving US military bases, men having sex with men who had traveled abroad, or overseas contract workers (Tan and Dayrit 1994). However, while external contacts contributed to the introduction of the virus, by 1990, indigenous spread was becoming apparent among those developing AIDS. Today, HIV is spreading primarily among Filipinos and predominantly through heterosexual transmission (Philippines Population Association 1994).

Even though HIV infection levels among female sex workers have remained low to date, the National HIV Sentinel Surveillance system has sporadically detected HIV in comparatively small samples of women. The potential for HIV spread is apparent in the several percent of these women who

[3] Vanlandingham et al. (1995) find that another model, the theory of reasoned action (TRA) model, is a somewhat better fit than the HBM. Although conceptually different from HBM (see Ajzen and Fishbein 1980), TRA is operationally quite similar. TRA posits that group norms, for example, peer pressure to visit brothels, are important to molding an individual's behavior, having sex with prostitutes in this example; and, in Thailand, these norms are found to be quite important. Unfortunately, there are no suitable variables in the YAFS-II data set to test this hypothesis.

test positive for syphilis, with freelance sex workers exhibiting higher rates than establishment-based sex workers (FETP 1996b). Syphilis not only spreads through the same sexual avenues as HIV, but also increases the chances of HIV transmission between sexual partners (see reviews by Wasserheit 1992; MacQueen 1994).

In comparison to other southeast Asian countries (e.g., Thailand, Cambodia, Myanmar), some assume that the AIDS situation in the Philippines is not likely to develop into a serious epidemic. However, a number of factors contribute to the potential for one. Levels of commercial and casual (i.e., non-committed) sex among heterosexuals in the Philippines are not negligible and by some accounts are substantial. Concomitantly, the level of condom use is extremely low. Additionally, there is an active, but comparatively small population of men having sex with men, who are particularly marginalized from traditional sources of health resource, and are also infrequent condom users. Lastly, injecting drugs, which are used by only a small portion of the population, are a factor which, given the experimental nature of adolescence, may be especially pertinent to the risks faced by youth. Each of these risk factors is discussed in turn, within the limitations of the data, to describes patterns of AIDS-risk behavior in the general population. Throughout this paper, the terms sex, sexual activity, and sexual experience refer to sexual intercourse.

One's risk of acquiring HIV is dependent both on the type of partner—prostitutes, acquaintances, spouses (and the gender of these partners)—and the number of partners. We first consider the qualitative dimension then the quantitative. Then use of condoms and injectable drugs are discussed.

Partner Types

Commercial sex

Commercial sex—defined here as males paying females for sex[4]—has contributed substantially to the HIV epidemic in many countries. Because commercial sex workers frequently have many sexual partners, they are at elevated risk of contracting both HIV and other sexually transmitted diseases, which in turn increase HIV transmission (Grosskurth et al. 1995; Wasserheit 1992). Sentinel surveillance efforts in the Philippines have sporadically detected low levels of HIV in commercial sex workers, and the level of sex-worker infections can be expected to grow over the next several years (FETP 1996b).

[4] YAFS-II respondents were asked, "Have you ever paid a girl for sex?" Commercial sexual experiences may also include men paying men for sex or women paying men for sex (Tan 1995), but women in this survey were not asked about their commercial sexual experiences. Evidence on men paying men for sex, however, is discussed. Unless otherwise noted, commercial sex refers to men paying women for sex.

Especially in comparison to Thailand (e.g., Vanlandingham et al. 1993; Sittitrai et al. 1992; Sittitrai and Brown 1994), there are few studies that have considered the level of commercial sex use in the Philippines. Tiglao (1991, quoted in Tan 1994) finds that 12 percent of the 20–24 year old males in Metro Manila reported visiting a sex worker within the past 12 months. This compares favorably to an estimate from a nationally representative sample of women (the Safe Motherhood Survey, SMS), which suggests that 12 percent of the women married to men 20–24 years old either report that their partners have paid or do not know whether they have paid other women to have sex with them (NSO 1995).[5]

YAFS-II data show that 8 percent of all young males and 25 percent of sexually active males have paid a female for sexual intercourse at some time in their lives. As shown in Figure 2, a clear age trend is apparent, with the percentage reporting paying for sex growing steadily from less than one percent at age 15 to nearly 20 percent at age 24 among all young men. Of those who paid for sex in their lifetimes, 39 percent reported purchasing sex during the 12 months preceding the interview, an indicator of relatively recent activities with high risk for HIV exposure. With observed age variations (data not shown), this translates into about 5 percent of all 20–24 year old males having visited sex workers within the past year.

Those respondents who reported having had recent commercial sex experience were asked more detailed information on their paid sexual experiences. Approximately one-quarter (26 percent) purchased sexual services monthly or more frequently, while another quarter said only occasionally (22 percent). Most of the remainder (49 percent) had paid for services only once in the previous one-year period. The average number of paid sexual partners was 2.5, with 85 percent reporting three or fewer paid partners during the preceding year. Close to half (47 percent) report changing sexual partners each time they pay for sex, while just about one-quarter (23 percent) report visiting the same partner repeatedly.

"Casual" sex among heterosexuals

In addition to commercial sex, sizable levels of casual sex—that is, sex which is neither commercial nor part of a conjugal union[6]—between young men and women have been reported in the past. Tiglao (1991, quoted in Tan 1994) finds that 9 percent of 15–19 year old males and 27 percent of 20–24 year old males in Metro Manila report casual sex in the previous year. Data from the SMS confirm this: 31 percent of women (nationally) married to 20–24 year old men report that they were certain that their partners had

[5] Ambiguous responses are included because women may be shy to admit their spouses' behavior.

[6] A conjugal union is a legally or socially sanctioned marriage. Casual sex may occur among boyfriends and girlfriends or among acquaintances or even strangers, as long as no payment is exchanged.

had sex with others prior to their union or did not know whether their partners had had sex (NSO 1995). Tiglao's study also reports much lower levels of casual sex, at 0 percent and 3 percent, for 15–19 and 20–24 year old women, reflecting a substantial gender imbalance in risk behaviors.

In the past 12 months prior to the survey, 22 percent of the 24 year-old single males reported having casual sex: this is in comparison to 8 percent who reported commercial sex and 67 percent who reported no sexual activity in this period. This rate represents sharp increases from the activity levels in the mid-teen years (Balk et al. 1997): fewer than five percent of the 15–16 year olds males reported engaging in casual sex. Ten percent of the sampled 15–24 year olds men are married. Of these men, 58 percent have had sex before marriage, of which about 13 percent had commercial sex (these men may or may not have had other non-commercial casual partners). Of those having premarital sex, 63 percent reported a partner(s) other than their spouse.

Among men ages 15–19, married men (although a very small share of all sampled men, n=48) are more than three times as likely to have had a premarital sexual experience than single men. About 60 percent of 20–24 year old married men had a premarital sexual experience, while only about 40 percent of their unmarried counterparts had. This suggests that early marriage is also related to earlier premarital sex. Among all men who have sex before marriage, 60 percent did not have sex with the same person again after the first time. The evidence here suggests that while most premarital sexual experiences are casual in nature, a non-negligible minority of these men are engaging in commercial sex. Although the data were not collected in such a way to determine the proportion of commercial to noncommercial partners, it is evident that some, if not most, of the men who engage in commercial sex also have casual sexual partners.

Men having sex with men

Male homosexual and bisexual behavior has been strongly associated with the HIV epidemic in many countries, largely because of the efficiency of HIV transmission through anal intercourse (Mastro and de Vincenzi 1996; Caceres and van Griensven 1994). In a study of homosexual men in Manila in 1990, Lee and Sison (1991) found that roughly 40 percent of their sample had engaged in receptive anal sex in the last month. Even in recent behavioral sentinel surveillance findings among men having sex with men, consistent condom use remains relatively low, especially outside of Metro Manila (FETP 1996b). Thus, in the Philippines, men who have sex with men also incur substantial risk of contracting HIV. Additionally, although "Filipino culture is known to be fairly tolerant of homosexuality" (Osteria and

Sullivan 1991: 139; also see Tan 1995), public disapproval of homosexuality and bisexuality is nevertheless high, making access for prevention activities difficult for this population.

Limited information was gathered in YAFS-II on the extent of male same-sex behavior. Respondents were asked to describe whether their general sexual experience at the present time was with females only, a mixture of females and males, or with males only. Approximately 6 percent of sexually experienced male respondents reported some same-sex experience. The majority of this experience was bisexual, with predominantly female sexual partners. However, non-response was high on this question, with another 9 percent declining to answer or giving answers inconsistent with sexual experience reported earlier in the interview (Balk et al. 1997). This likely reflects the social sensitivity of the topic of same-sex contact. Married men (3 percent) were significantly less likely to report any current male sexual contact than single men (8 percent). Additionally, we find that four percent of all men (and almost 10 percent of all sexually experienced males) reported having received payment for sex at some time. When asked to report on the gender of the partners paying them for sex, 70 percent reported that the paying partners were male only (Balk et al. 1997). In total, these findings indicate that substantial numbers of young men engage in sex with other men, with most engaging in bisexual rather than exclusively homosexual behavior.

Number of Partners

Every time a person takes a new partner, there is an opportunity for HIV transmission if one of the partners is infected (see review in MacQueen 1994). Thus, another critical factor influencing the spread of HIV in a population is the number of sexual partners. YAFS-II collected the respondents' number of lifetime sexual partners, shown in Figure 3, which for married male respondents excludes their wives if the husband only had premarital sex with his future wife.[7] Close to 60 percent of married males who were premaritally sexually active—recall 58 percent of married men reported premarital sexual activity—reported at least one partner (other than their wife) prior to marriage, and in 14 percent of cases, the husband has had five or more premarital partners. While 54 percent of the sexually active single men reported having had only a single sexual partner, 11 percent of sexually active single men reported five or more partners in their lifetimes. This suggests that there may be numerous opportunities for HIV spread through casual sexual contacts prior to marriage. Modeling studies have shown that such small groups of more sexually active individuals can greatly accelerate the spread of HIV in a population

[7] For numbers of premarital partner greater than 1 in this figure, it is possible that one of the partners was the wife. However, the questionnaire does not allow this to be determined explicitly in all cases.

(Garnett and Anderson 1994). This is particularly true when men engage in both commercial and non-commercial casual sex, forming a bridge for HIV to travel between sex-worker populations and the general female population. There is evidence of such overlapping commercial and non-commercial sexual networks in the YAFS-II sample. Of single males with multiple lifetime partners, 29 percent of those who have paid for sex in their lifetimes reported only non-commercial casual sex in the past year. In reality, the percentage of overlap will be higher, since the survey does not allow us to determine how many single men reporting commercial sex in the past year also had non-commercial partners. Should HIV prevalence reach higher levels in the future, as most expect that it will, this core group of more active males will play an important role in accelerating the spread of HIV.

Condom Use

Condoms—the most effective way to prevent AIDS outside of monogamy and abstinence—are not only unpopular in the Philippines, as they are in many other places, but they are also the target of considerable opposition from the Catholic church. One study conducted in Metro Manila, Cebu, and Davao—all highly urban areas—found that among 18–45 year old men, 37 percent had ever used a condom and only 11 percent were current users either for contraceptive or disease-prevention purposes (Consumer Pulse 1993 as discussed in Tan 1994). The figure of 37 percent compares to 66–73 percent among urban Thai men of roughly the same age composition (Sittitrai et al. 1992a). For comparability with this study population, data from the Thai Partner Relations Survey in 1990 (Sittitrai et al. 1992b) indicated that 56 percent of all 15–24 year old males had ever-used condoms. Since that time, condom use rates in Thailand have risen substantially. YAFS-II found low condom use rates. The only measure of condom use available for all sexually active men is lifetime condom use. For the subset of men who had engaged in recent commercial sexual activities, we have greater detail about condom use relating to those activities.

YAFS-II respondents who knew of condoms (92 percent) were asked, along with other questions about AIDS, whether they had *ever* used one: 22 percent said that they had. In addition, elsewhere in the survey, married and sexually active single men had been also asked about their first and most-recent sexual experiences and whether they used condoms during those times: nine percent said that they had. Of those reporting condom use, 64 percent reported it in one part of the interview but not the other, almost all of whom reported that they had used a condom when asked during the questions about AIDS. (This is plausible because the questions asked during the other parts of the survey refer to specific sexual experiences only.) Anyone who identified himself as an ever-user by either criteria was counted. This

amounts to about 23 percent of the sexually active men, with no differential observed between married and single men.

Sexually active young men who have ever engaged in commercial sex are more likely than other men to protect themselves (Balk et al. 1997). This is evident by the higher proportion of lifetime condom users among those who claimed to have *ever* paid for sex (40 percent versus 17 percent for those who never paid) and who have *ever* been paid for sex (31 percent versus 22 percent). Those men who have only received payment for sex are much less likely to use condoms than are men who have paid for sex (whether or not they have also received payment for sex); almost 75 percent of this group with low condom use reports receiving payment for sex from males only. Those who paid for sex more recently, that is within the past year, are more likely to have ever-used condoms. Whether this is due to recent increases in media attention or public awareness of condoms or increased availability is not evident from these data.

Among the small number of men who paid for sex in the past 12 months (n=156), only 22 percent report using condoms every time, while 25 percent said most or some of the time, and 50 percent said never. Among these respondents, the frequency with which they paid for sex in the 12 months prior to the survey is not significantly related to lifetime condom use, suggesting that recency alone is the more important predictor of *lifetime* condom use.[8] Additionally, neither the number of paid partners nor one's habits for changing paid partners is significantly associated with *lifetime* condom use. We found no significant association between the regularity of condom use with sex workers and frequency with which one engages in commercial sex nor one's habits for changing paid partners. Future studies in the Philippines should be more aggressive in their efforts to account for condom use and its relationship with commercial sex.

Injecting Drug Use

The risk of contracting HIV depends not only on sexual activity but also on the sharing of needles with others, for example, when injecting drugs, which youth may be more likely to experiment with than older persons. However, levels of injecting drug use are generally believed to be low in the Philippines, and their contribution to reported HIV and AIDS cases in the country has been extremely small (0.1 percent)

[8] We do not know about the relationship between recency and frequency since those who had not paid for sex in the past 12 months were not asked about the frequency with which they had paid for it in the more distant past.

(FETP 1996a). The data collected on injecting drug use in YAFS-II confirm this belief.[9] Thus, analysis of sexual activity is the focus of the remainder of this paper.

Personal Risk Perception and Behavior

One of the difficulties in addressing HIV risk among youth is that young people tend to believe in their own invulnerability. Knowledge and attitudes alone do not necessarily result in behavioral change (see, for example, Fishbein et al. 1993). It is also believed among public health professionals that unless youth perceive some risk of contracting HIV, they are unlikely to take preventative actions or otherwise change their behavior.

To assess their perceptions of personal risk, respondents were asked what they felt the chances were that "someone like them" would get AIDS. The majority, 79 percent, saw little personal risk, answering either that there was no chance or that it was unlikely that someone like them would contract HIV. Only 12 percent thought there was some chance of this. The remainder either did not know of AIDS or were uncertain of their own risk.

A comparison between the perceived risk and the reported risk among men engaging in behavior such as commercial or non-commercial sex shows the importance of these low levels of risk perception. Men who visit commercial sex workers are at highest risk. Table 1 presents the perceived risk of those who have engaged in both lifetime and recent commercial sex. Perceived risk is higher among those who have ever paid for sex than those who have not, but 72 percent still see themselves as having little or no chance of contracting HIV. Men who have paid for sex recently perceive slightly higher risk than their counterparts who have not. A more complete profile of sexual activity, including condom use, is available for single men (Table 2). Again, perceived risk increases as sexual risk increases, but still almost three-quarters of males with risk behaviors see themselves at little or no risk of HIV. Given the low levels of condom use in commercial sex, this lack of risk perception raises serious concerns.

[9] Respondents were asked "Have you ever tried *turok?*" in confidential sealed-envelope questionnaires that accompanied the survey: two percent of respondents reported such use. These results are probably underestimates of ever-use, but there is no evidence to suggest that the true rate would be much higher. They suggest that the rate of current use would be much lower.

Table 1. Perceived risk of contracting HIV among male respondents by lifetime and recent commercial sex experience.

	Lifetime commercial sex experience		Recent commercial sex experience (12 months)	
Chance of someone like you contracting HIV:	**Yes (%)**	**No (%)**	**Yes (%)**	**No (%)**
No chance	49.2	61.1	45.2	51.6
Not likely	22.6	15.9	23.2	22.5
Likely	19.9	10.7	21.4	19.2
Very likely	3.6	1.9	5.9	2.3
Don't know/unaware of AIDS	4.6	10.4	4.3	4.5
n	*400*	*4847*	*155*	*242*

Table 2. Perceived risk of contracting HIV among single male respondents by risk behavior in the past year.

	Sexual risk activity in the last 12 months			
	No sex	**Casual sex (non-commercial)**	**Commercial sex with condoms**	**Commercial sex without condoms**
Chance of someone like you contracting HIV:				
No chance	60.6	56.9	46.2	45.2
Not likely	16.0	19.4	22.8	24.0
Likely	10.8	15.1	20.3	22.2
Very likely	1.9	2.6	6.5	6.3
Don't know/unaware of AIDS	10.9	5.9	4.2	2.3
n	*4005*	*468*	*32*	*110*

Awareness of AIDS

Awareness of AIDS is high in the Philippines. A 1988 survey indicates that 78 percent of persons at least 18 years old were aware of AIDS; awareness had risen to 84–85 percent by the early 1990s (see review in Tan 1994). YAFS-II finds that 95 percent of 15–24 year old men and women stated that they had heard of AIDS in 1994. (Differences between these surveys may represent either differences in the sampled age groups or a continuing growth in overall awareness of AIDS, but this cannot be determined as demographic breakdowns are not available for the earlier surveys.) YAFS-II also shows that about 10 percent of the 15-year-olds and six percent of the 16-year-olds—ages when the vast majority of youth are sexually inactive—were not aware of AIDS, compared with less than 4 percent of those over the age of 19. Given the high level of awareness in the late1980s, when the YAFS-II respondents were 9–18 years old, the present analysis can make the assumption that awareness precedes behavior (accounting for age).

In-depth knowledge about AIDS was somewhat more limited. While 92 percent of AIDS-aware respondents were able to identify at least one sexual mode of transmission when asked to state routes of transmission in an open-ended format, only one-quarter could identify more than one route or a non-sexually transmitted route. Of the sexually transmitted modes, the most frequently given response, given by 77 percent of men, was that AIDS is transmitted by having sex with prostitutes; however, only one-quarter stated that AIDS may be transmitted by having multiple sex-partners.[10] Seventy-eight percent knew that there is no cure for AIDS, and 74 knew that condoms, if used correctly, can prevent the transmission of HIV when asked in a yes-no format (Balk et al. 1997).

From both public health and sociological perspectives, it is important to understand how information, in this case about HIV/AIDS, is disseminated in the population. This might consist of determining the sources of information as well as identifying social networks that individuals rely on to discuss AIDS (see, for example, Aplasca et al. 1995). YAFS-II respondents were not asked about their source of information about AIDS, but they were asked whether they discuss AIDS with anyone, and if so, whom (Balk et al. 1997). Fifty-seven percent of the men reported that they discuss AIDS with someone else, most commonly with friends of the same sex (51 percent). Most men did not discuss AIDS with any other type of person: fewer than 10 percent of young men stated that they discussed AIDS with relatives or friends of the opposite sex, and fewer than 5 percent stated that they discussed it with a partner, teacher, or health practitioner. Unfortunately, YAFS-II could not assess the quality of

[10] Unfortunately, the open-ended format adds a note of caution to the interpretation of these responses (see Balk and Lahiri 1997). Here, the presence of an answer is translated into knowledge or the lack thereof, but this may produce estimates of knowledge which are either too high or too low.

information discussed by these different sources. Although respondents were not asked if they learned about AIDS at school, all respondents were asked if they had had any "population" education: 55 percent had, and 40 percent in particular specified education relating to STDs. This suggests that already well-established institutions—schools and informal discussion networks—may be useful for disseminating AIDS information.

Knowledge and Beliefs about Condoms

Most (92 percent) Filipino men have heard of condoms. Because diligent use of condoms is one of the most effective ways to prevent the transmission of HIV, it is important to identify the barriers to condom use, such as whether they are accessible and considered acceptable to use (Aggleton et al. 1994). This matter is particularly complex in the Philippines where, until the spring of 1997, the official policy of the government family planning program was that condoms were not available for unmarried persons at their clinics. They were available (for purchase), irrespective of marital status, at private outlets such as drug stores, supermarkets (especially in urban areas), and non-governmental clinics. Nevertheless, the government's policy even to date represents a social milieu that may depress the use of condoms, even among the highly motivated.

Condom-aware respondents were asked detailed questions about their attitudes toward the acceptability and desirability of using condoms. Fifty-eight percent of these respondents felt that condoms make sex less pleasurable, and 47 percent said that they would be embarrassed to buy condoms. Roughly one-third felt that they were too expensive to use regularly, and one-third said that condoms were against their religion. These men were also asked whether condoms, if used correctly and if not torn or broken, could prevent pregnancy, sexually transmitted diseases, and AIDS. About 82, 72, and 63 percent, respectively, knew that condoms can prevent pregnancy, STDs, and AIDS. Sexually active men—especially single sexually active men—were more likely than those who had not yet had sexual intercourse to know this to be the case.[11] Only one-tenth of the sexually active males had no negative ideas about condoms, and one out of six sexually active men had four or more negative attitudes or beliefs about condoms (Balk et al. 1997).

Another barrier to condom use is accessibility. Condom-aware men were asked to name a source where they could obtain them. About 7 percent of the sexually active and 14 percent of sexually inactive

[11] Sexually inexperienced males were also more likely than sexually active males to report that they would be embarrassed to buy condoms, but they were less likely to say that they thought condoms made sex less pleasurable or that they were too expensive to use regularly (not shown).

males did not know where to obtain condoms. Among the men who could identify a source, most mentioned a drugstore. Despite the government's policy at the time of the survey to withhold family planning services from unmarried clients, a sizable minority of single men (18 percent) also mentioned government public health centers.

Condom-aware men were also asked to estimate the travel time from their home to the nearest source of condoms by the most common means of transportation available. As expected, there were significantly different average travel times for men residing in urban (22 minutes) and rural (49 minutes) areas. There were no differences by marital status, suggesting that the government's previous policy not to provide condoms to unmarried clients did not make it significantly more difficult for unmarried men to obtain them. Lifetime use is so low among these respondents, however, that there must be other barriers to obtaining or using condoms.

Large differences in travel time were found by educational categories, where schooling decreases travel time (Balk et al. 1997). These data cannot determine whether this means that educated men are capable of obtaining condoms more quickly than less-educated men or that communities in which more-educated people live contain more health centers and facilities to obtain condoms. Future studies should pay closer attention to this issue so that policies may be effectively directed toward underserved populations.

Predicting HIV Risk-Related Behaviors

As shown above, risk is related to the number and type of sexual partners and consistent use of condoms. Some studies consider composite risk, for example, consistent condom use in commercial sex activities (e.g., Vanlandingham 1995; Morris et al. 1995; Sittitrai et al. 1992a). Due to data limitations, this study explores the determinants of the many components of risk: lack of condom use, sex with prostitutes, and the number of lifetime sexual partners. Before these analyses, we also describe the population of youth that is sexually active. The following deterministic analysis first considers demographic, socioeconomic, and religious characteristics (Model 1), followed by the impact of sexuality-specific education or awareness (Model 2), and social and psychological traits (Model 3), such as the regular consumption of alcoholic beverages, a behavior that has been found in Thailand to be closely related to prostitute-seeking behaviors (e.g., Vanlandingham 1993; MacQueen et al. 1996; Fordham 1995). Conceptual justifications for use of the selected variables are discussed along with the results below.

In all of the analyses, other than that predicting sexual activity, we also test the effect of AIDS-specific and condom-specific knowledge and attitudes. Such questions are often used to operationalize the concepts of the health belief model (HBM) of health-seeking behaviors. This model provides a framework in which to assess the likelihood that a given preventative action will be adapted (e.g., condom-use, sexual abstinence). It has been well described and applied elsewhere (e.g., Rosenstock, Strecher, and Becker 1994; Vanlandingham et al. 1995). Table 3 outlines the concepts of the model (e.g., perceived health threat, barriers to and benefits from a protective action) and the variables that we have constructed to operationalize them. The health threat, in all cases, is modeled on the same questions about HIV. The benefits from a protective action are operationized with questions specific to each action. Aside from that, however, questions on beliefs about condoms have been used in all three types of AIDS-related risk behavior, even though they only relate directly to one type of risk. This was done because beliefs about condom use can be argued to proxy for analogous behaviors and because of data limitation. To represent an individual's willingness to take action (or self-efficacy) against a health threat, we use a variable for whether the respondent feels that condoms make sex less pleasurable. Because the majority of men in this sample have not used condoms, we argue that this question represents their projected willingness to use them. Other studies (e.g., Vanlandingham et al. 1995) have used this variable to measure one's perceived barriers and have used more direct questions, such as whether the respondent feels condoms are easy to use, to measure self-efficacy. Lastly, unlike most attempts to test the HBM, here we also include a series of interaction terms to test whether the effect of perceived benefits from and barriers to a protective action, such as condom use, differs by one's perception of the threat itself, such as becoming infected with HIV (Rosenstock, Strecher, and Becker 1994).

Table 3. Concepts of the Health Belief Model and the variables selected to operationalize them.

Concept	Variable constructed (coding)
Individual's perception of ...	Respondent ...
1. a health threat	combination of a+b below (0=none, 1=low, 2=high)
a. susceptibility to the health threat	Perception of acquiring HIV (high=1, otherwise =0)
b. severity of the health threat	Knows that there is no cure for AIDS (yes=1, no=0)
2. barriers to a protective action	Believes that condoms are not too costly (yes=1, no=0)
3. benefits from a protective action or inaction	Understands that effective condom use protects against HIV infection (yes=1, no=0); or understands that HIV may be acquired by having sex with prostitutes (yes=1, no=0); or understands that HIV may be acquired by having multiple sex partners (yes=1, no=0).
4. ability to take action (self-efficacy)	Believes that condoms do not make sex less pleasurable (yes=1, no=0)

Who is sexually active?

The adolescent and early adult years are when most men become sexually active. Table 4 identifies the characteristics that affect the likelihood of premarital sexual activity. As expected, each year of age raises one's chances of becoming sexually active, by 29 percent (Model 3). Currently married men are more likely to be sexually active prior to marriage than currently single men, but this result sheds no light on whether this is due to selectivity (i.e., men marry because they have become sexually active). This variable has strictly been introduced as a control variable since younger-marrying men differ in other characteristics from later-marrying men. Men with at least some college education are 46 percent more likely (Model 3) to be sexually active than all other men. However, present attendance at school lowers one's chances of being sexually active. Wealth raises the likelihood of sexual activity considerably, as does urban residence. In fact, partial lifetime residence in an urban areas raises one's likelihood, and continuous urban residence raises it even further.

Broad education about population and family planning—and STD education particular—in school also raises one's chances of being sexually active. The timing of sex education was not ascertained with respect to the onset of sexual activity, which means that these results imply either that education prepares youth for sexual activity or that youth with such education are more likely to report sexual activity. Additionally, sexually active youth are more likely to be AIDS aware. Although AIDS awareness is high in the population, we do not know if AIDS awareness precedes or follows the onset of sexual activity for a given individual. Interpretations of these variables should be made cautiously.

The impact of several social characteristics was also considered. Some studies have found that a stable parental marital relationship allows adolescents to learn when sexual activity is acceptable, within a given culture (e.g., Haurin and Mott 1990). Often instability is measured by a mother's employment status (e.g., Ku, Sonenstein, and Pleck 1996)—i.e., to measure the degree to which she is present in the household—and parental marital status, but YAFS-II captures an even broader form of parental instability in the direct question asking respondents to assess the stability of their parent's marriage. Men who felt that their parents' marriage was unstable were somewhat more likely to be sexually active, confirming this association.

We also considered whether the respondent regularly engages in two non-sexual high risk behaviors—smoking and drinking. These are negatively associated with other health outcomes, and drinking may directly affect sexual decision-making. Although the questions about smoking and drinking refer to the present, the outcome variable may refer to any time in the past: we use present smoking and drinking behaviors as a proxy for risk-taking more generally. We find strong evidence supporting this:

Table 4. Logistic regression estimation predicting the likelihood of premarital sexual activity status among Filipino males, 15–24 years old: Odds ratios (statistical significance).

Characteristics	Model	(1)	(2)	(3)	Number of observations
Demographic, socioeconomic, religious traits					
Age		1.325***	1.323***	1.292***	5266
Currently married[a]		1.869***	1.763***	1.791***	506
Highest completed educational level[b]					
High school		1.232**	1.072	1.163	2809
College		1.440**	1.221	1.458**	1202
Currently attending school[c]		0.598***	0.597***	0.647***	2212
Type of school most-recently attended[d]					
Private religious		1.187*	1.174	1.177	845
Private non-sectarian		1.266**	1.259**	1.222*	846
Socioeconomic status†		1.043***	1.039***	1.038***	5266
Place and history of residence[e]					
Lived in both rural and urban areas		1.682***	1.627***	1.610***	2065
Always lived in an urban area		2.085***	1.996***	1.921***	1849
Non-Catholic[f]		0.744**	0.746**	0.774**	621
Attends religious services at least weekly[g]		0.869*	0.869*	0.925	2448
Sexuality-specific education or awareness					
Population education in school[h]					
General population education			1.244*	1.241*	754
General population & STD education			1.256**	1.287***	2065
Aware of AIDS[i]			1.718***	1.748***	4808
Social and psychological traits					
Perceives parents' marriage as unstable[j]				1.139*	1340
Regularly smokes cigarettes currently[k]				1.909***	908
Regularly drinks alcoholic beverages[l]				2.209***	457
Number of close friends				1.026***	5266
Percent predicted overall		76.92	77.29	78.21	
-2 log likelihood		4769.419	4727.962	4595.813	
Model λ^2 (improvement)		1037.589***	16.001**	157.605***	

Values for the *t*-statistics and λ^2-distributions are represented with asterisks, as follows: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The omitted categories (and their *n*'s) are noted as follows: [a] Single (4,580); [b] Elementary or none (1,075); [c] Currently not in school (2,874); [d] Public or none (3,395); [e] Always lived in rural area (1,172); [f] Catholic (4,465); [g] Less than once per week (2,638); [h] No population education (2,276); [i] Not aware of AIDS (278); [j] Parents' marriage seen as stable (3,746); [k] Never, in the past, or occasionally (4,178); [l] Never, in the past, or occasionally (4,629).

† Socioeconomic status is a composite index measuring the wealth of one's permanent residence. It is comprised as follows. Homes with 1–2, 3–4, and 5 or more rooms were given 1, 2, and 3 points, respectively. One point was given for each of the following characteristics or items: if the residence were electrified, if there were a private source of water, and if there were an indoor toilet, bicycle, car, sewing machine, fan, stove, iron, refrigerator, or television. The scale ranges from 0 to 16, with mean and median values of approximately 8.

regular smoking and drinking considerably raise the odds of being sexually active. Interpretation of this finding must be made with caution, because these variables may be endogenous, that is the factors which have led to regular smoking and drinking behavior have simultaneously determined sexual activities (also see Celantano et al. 1996). This is not to say that a particular drinking episode does not have an independent effect on sexual activity, rather that the unbiased effects and biased ones cannot be distinguished here.

Lastly, we consider the size of the respondents' social circle, on the grounds that large social circles or peer groups may be conducive to other social activities that may include sexual activities, either commercial or casual. We find evidence for this, although the magnitude of this effect is not as great as those associated with smoking, drinking, or most of the background characteristic.[12]

Who is more likely to use a condom?

Risk is associated with not using condoms. As it is somewhat easier to discuss who is more likely to use condoms, Table 5 presents the results of the multivariate analysis in terms of ever-use. In the summary table, Table 8, results are shown in terms of never-use so that it is analogous to other factors associated with risk of acquiring HIV (i.e., commercial sex use, number of partners). Unlike the factors associated with becoming sexually active, few of the background characteristics effect the odds of condom use. Age and being currently married each raise the odds. In this case, age clearly controls for exposure to sexual activity, and if a variable for the years one has been sexually active were introduced, the effect of age would be obliterated (not shown). Socioeconomic status (SES) and urban residence also have a positive effect on condom use, but education is not significant. The effects of urban residence and SES are especially important, because these are associated with access to and the ability to afford condoms respectively.

[12] We also considered the number of siblings, as a loose measure of parental investment and supervision per child, which we expected to be negatively associated with sexual activity; but we found no evidence of this. Hogan and Kitagawa (1985, quoted in Haurin and Mott 1990) argue that in families with a large number of children, there will be less parent-child interaction. Haurin and Mott (1990) suggest that parental supervision may be displaced by older siblings, providing some "neutralizing" effect, and they find some empirical support for the proposition that younger siblings behave in accordance with their older siblings' sexual behavior. Also see Ku, Sonenstein, and Pleck (1996) who find mixed effects of the number of siblings on the age at first intercourse and condom use.

Table 5. Logistic regression estimates predicting the likelihood of ever-use of condoms among premaritally sexually active Filipino men, 15–24 years old: Odds ratios (statistical significance).

Characteristics Model	(1)	(2)	(3)	(4)
Demographic, socioeconomic, religious traits				
Age	1.096***	1.095***	1.092**	1.077**
Currently married	1.299	1.341*	1.326	1.469**
Highest completed educational level				
High school	1.184	0.994	1.007	0.932
College	1.322	1.073	1.123	0.996
Currently attending school	1.006	1.007	1.047	1.031
Type of school most-recently attended				
Private religious	1.088	1.068	1.075	1.078
Private non-sectarian	1.042	1.017	1.023	0.955
Socioeconomic status	1.083***	1.078***	1.075***	1.057**
Place and history of residence				
Lived in both rural and urban areas	1.944***	1.915***	1.950***	2.010***
Always lived in an urban area	1.943***	1.906**	1.962***	1.980***
Non-Catholic	0.660	0.649*	0.659	0.671
Attends religious services at least weekly	0.989	0.990	1.017	0.984
Sexuality-specific education or awareness				
General population education in school		1.533**	1.525**	1.715**
General population & STD education in school		1.494**	1.494**	1.543**
Social and psychological traits				
Perceives parents' marriage as unstable			0.887	0.876
Regularly smokes cigarettes			1.266	1.258
Regularly drinks alcoholic beverages			1.104	1.139
Number of close friends			0.986	0.986
AIDS- & condom-specific knowledge or attitudes (Health Belief Model)				
Threat of getting AIDS:[1]				
Medium-level threat				2.116
High-level threat				1.958
Condom use protects against AIDS				4.962***
Condoms are not too costly				2.150*
Condoms do not make sex less enjoyable (self-efficacy)				1.132
Interactions				
Medium-level threat (condom use protects against AIDS)				0.286**
High-level threat (condom use protects against AIDS)				0.328**
Medium-level threat (condoms are not too costly)				0.950
High-level threat (condoms are not too costly)				0.918
Percent predicted overall	75.51	75.38	57.47	76.81
-2 log likelihood	1337.781	1331.478	1326.326	1280.555
Model λ^2 (improvement)	62.323***	6.303**	5.153	119.550***

Values for the *t*-statistics and λ^2-distributions are represented with asterisks, as follows: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
[1]The threat of getting AIDS is measured by combining perceived susceptibility and perceived severity. Men who thought that they had no chance of getting AIDS and know that AIDS has no cure have the lowest threat (16%); they are the reference category. Men who either thought that they had a high chance of getting AIDS or did not know that AIDS does not have a cure form the middle category (59%). Men who thought that they had a high chance of getting AIDS and did not know that AIDS does not have a cure form the category of highest threat (25%).

General population and STD education also raise the likelihood of condom use. The problem of reverse causality is less pertinent in this analysis (than in the one above) because all men in this analysis are sexually active.

None of the social and psychological traits effect one's use of condoms. One might argue that the relationship between most of these traits and condom use would be less strong than with sexual activity itself, but at least those behaviors directly associated with risk taking (e.g., drinking) would be expected to have an effect. They do not.

Of the variables included to test HBM, that is those on AIDS-specific and condom-specific knowledge or attitudes, we find that only two affect the use of condoms. Men who were aware of the benefits of condom use—that is, they knew that condom use may protect against HIV transmission—and those who did not feel that there were barriers to intervention—that is, they did not think that condoms were too costly to use regularly—were much more likely to have used condoms. The effect of the cost of condoms was constant irrespective of the degree of threat, but the benefits of condom use depended on the level of threat. Ironically, those at the least threat had the greatest positive effect of the benefits of condom use. This result may occur because men who are at an increased risk, realizing their past and present risks, may perceive the benefits of condom use to be lesser (also see Vanlandingham et al. 1995).

These results strongly suggest that condom-specific promotional messages, especially to those at higher risk, as well as price controls may go a long way in raising condom use. When we add a variable to account for the time it takes the respondent to reach the nearest condom source (not shown), we find that the greater the distance to the clinic, the higher the likelihood that the respondent does not use condoms; this effect is very strong and does not change other relationships shown in Model 4. This suggests that access to condoms is also an important barrier to use.

Who is more likely to have sex with prostitutes?

Like the findings for condom use, only a few background characteristics affect whether one has ever had sex with a prostitute (see Table 6). These are age (again, proxying for the years of sexual activity), marital status, and socioeconomic status. Even urban residence does not increase the chances of having had sex with a prostitute. The effect of socioeconomic status is important because it suggests that wealthier men are more able to afford, and therefore partake, in commercial-sex activities. Here again,

Table 6. Logistic regression estimates predicting the likelihood of ever having had sex with a commercial sex worker among premaritally sexually active Filipino men, 15–24 years old: Odds ratios (statistical significance).

Characteristics Model	(1)	(2)	(3)	(4)
Demographic, socioeconomic, religious traits				
Age	1.127***	1.125***	1.117***	1.119***
Currently married	0.485***	0.494***	0.488***	0.501***
Highest completed educational level				
High school	0.913	0.808	0.814	0.819
College	1.575*	1.376	1.496	1.456
Currently attending school	0.816	0.821	0.863	0.864
Type of school most-recently attended				
Private religious	1.021	1.002	1.041	1.057
Private non-sectarian	1.103	1.075	1.085	1.085
Socioeconomic status	1.062***	1.059***	1.060***	1.049**
Place and history of residence				
Lived in both rural and urban areas	0.858	0.848	0.849	0.864
Always lived in an urban area	0.891	0.884	0.862	0.857
Non-Catholic	0.790	0.782	0.802	0.801
Attends religious services at least weekly	1.051	1.056	1.115	1.134
Sexuality-specific education or awareness				
Population education in school				
General population education		1.558**	1.533**	1.535**
General population & STD education		1.262	1.263	1.248
Social and psychological traits				
Perceives parents' marriage as unstable			1.086	1.100
Regularly smokes cigarettes			1.289*	1.321*
Regularly drinks alcoholic beverages			1.622***	1.608***
Number of close friends			0.994	0.996
AIDS- & condom-specific knowledge or attitudes (Health Belief Model)				
Threat of getting AIDS[1]				
Medium-level threat				0.925
High-level threat				1.457*
Sex with prostitutes raises the chance of becoming infected with HIV				1.459**
Condoms are not too costly				1.126
Condoms do not make sex less enjoyable (self-efficacy)				1.049
Interactions[2]				
Medium-level threat (sex with prostitutes raises the chance of becoming infected with HIV)				--
High-level threat (sex with prostitutes raises the chance of becoming infected with HIV)				--
Medium-level threat (condoms are not too costly)				--
High-level threat (condoms are not too costly)				--
Percent predicted overall	70.70	71.24	72.26	72.10
-2 log likelihood	1428.510	1423.475	1408.307	1388.524
Model λ^2 (improvement)	79.041***	5.035*	15.168***	123.514***

Values for the *t*-statistics and λ^2-distributions are represented with asterisks, as follows: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

[1]See Table 5 for explanation.

[2]Interactions all are insignificant, making the model inferior. Model as shown was run without interactive effects.

general population education raises one chances of having had sex with a prostitute, but STD education in particular does not, for reasons that we cannot explain.

As expected from findings in Thailand, regular drinking significantly raises the odds that one has had a commercial sexual experience in the Philippines. This is believed to be the case because some social outings among men begin with drinking and lead to brothels. There is also a positive effect of smoking, probably because smoking either speaks to general risk-taking behaviors or is associated with drinking. Alternatively, as noted above, these variables may be simultaneously determined with the outcome variable.

Men who had the highest threat of getting AIDS were more likely to have visited a sex worker. Whether this is causally reversed—that is, because they had had sex with prostitutes they evaluated their risk of getting HIV to be high—cannot be determined from these data; however, it is an obvious possibility. Men with knowledge that having sex with prostitutes transmits HIV, regardless of their perceived threat, were also much more likely to have had sex with prostitutes; this again suggests that causality may be reversed. (Further support of reverse causality is drawn from the finding, not shown, that men who know that condom use protects against AIDS were much more likely to have had sex with a prostitute; and this effect was largest for men at the highest threat of acquiring HIV. Men who have ever paid for sex are also more likely to have ever used condoms.)

Who has many lifetime sexual partners?

Like the above two risk factors, Table 7 shows that background characteristics have little effect on the number of partners. Socioeconomic status has an important effect on commercial sex and condom use but, it has no effect here, presumably because the number of partners need not include paid partners. Age, again in large part proxying for exposure to sexual activity, has a positive effect, as expected. Married men tend to have fewer lifetime partners, presumably because they curtail their premarital sexual exposure by marrying earlier than still-single men. Education in all forms has no apparent affect on the number of lifetime partners. Lifetime urban residents have had more sexual partners than other men. This probably has to do with the size of social circles and nature of social interactions in urban areas. Urban residents identify statistically larger networks of friends than rural residents (not shown), being largest among lifetime urbanites, but we can only speculate as to how the nature of social interaction differs in urban and rural areas.

Table 7. OLS regression estimates predicting the number of premarital sexual partners among premaritally sexually active Filipino men, 15–24 years old: unstandardized coefficients (statistical significance).

Characteristics	Model (1)	(2)	(3)	(4)
Demographic, socioeconomic, religious traits				
Age	0.142***	0.141***	0.143***	0.137***
Currently married	-0.836***	-0.802***	-0.790***	-0.762***
Highest completed educational level				
High school	0.349	0.103	0.144	0.167
College	0.008	-0.053	0.024	0.062
Currently attending school	-0.213	-0.224	-0.103	-0.078
Type of school most-recently attended				
Private religious	-0.111	-0.143	-0.046	-0.041
Private non-sectarian	0.316	0.304	0.335	0.263
Socioeconomic status	0.025	0.017	0.019	0.009
Place and history of residence				
Lived in both rural and urban areas	0.365	0.310	0.264	0.279
Always lived in an urban area	0.763**	0.697**	0.580*	0.547*
Non-Catholic	0.202	0.177	-0.021	0.022
Attends religious services at least weekly	-0.275	-0.287	-0.203	-0.187
Sexuality-specific education or awareness				
General population education		0.310	0.336	0.312
General population & STD education		0.321	0.329	0.317
Social and psychological traits				
Perceives parents' marriage as unstable			0.599***	0.615***
Regularly smokes cigarettes			0.439*	0.464**
Regularly drinks alcoholic beverages			0.590**	0.589**
Number of close friends			0.033**	0.036**
AIDS- & condom-specific knowledge or attitudes (Health Belief Model)				
Threat of getting AIDS[1]				
Medium-level threat				-0.400
High-level threat				0.107
Sex with multiple partners raises the chance becoming infected with HIV (a)				-0.469
Condoms are not too costly (b)				-0.332
Condoms do not make sex less enjoyable (self-efficacy)				-0.295
Interactions				
Medium-level threat (sex with multiple partners raises the chance of becoming infected with HIV)				0.677
High-level threat (sex with multiple partners raises the chance of becoming infected with HIV)				0.537
Medium-level threat (condoms are not too costly)				0.355
High-level threat (condoms are not too costly)				0.525
Constant	-1.328	-1.285	-1.848	-1.466
R^2	0.020	0.024	0.040	0.039
F-statistic	3.191***	3.270***	4.053***	2.854***
Model improvement (*F*-statistic)	—	3.158**	5.861***	0.997

Values for the *t*-statistics and λ^2-distributions are represented with asterisks, as follows: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

[1]See Table 5 for explanation.

All of the social and psychological traits proved to be important determinants. Perception of one's parents' marriage as unstable has the strongest effect. The size of one's network of close friends and regular consumption of alcoholic beverages have moderately strong positive effects on the number of premarital sexual partners. Even smoking has a mild effect. These effects are significant even though men who felt their parents' marriage was unstable were also more likely to drink and smoke than other men; however, they identified smaller numbers of close friends (not shown). Taken together these findings suggest at least that highly social and high-risk behavior of a non-sexual nature is associated with highly social and high-risk behavior of a sexual nature: whether one is the cause of the other or that they are all determined by the same underlying set of characteristics is a question for further study.

None of the AIDS- and condom-specific knowledge or attitudes affect the outcome, suggesting that the HBM is not an effective model for determining the number of sexual partners. In fact, the amount of variance explained (R^2) by any of these models is very low, suggesting that none of the above variables provides very powerful explanations for why some men have high numbers of sexual partners and others do not.

Discussion

The above three models each have some potential problems with endogenous variables (i.e., those in which the causality is reversed or determined simultaneously), but nevertheless some salient features emerge. These are reviewed in Table 8. Background demographic, socioeconomic, and religious characteristics, which are fundamental determinants of sexual activity, are not strong determinants of the risk-factors for HIV transmission. Selected characteristics either related to social behaviors or to AIDS-specific information tend to be strong determinants. However, these characteristics are not consistent across the different risk factors. For example, the perception that one has a high chance of becoming infected with HIV increases the likelihood that one has had commercial sex but does not affect use of condoms or the number of lifetime partners. Respondents who do not know that condom use protects against AIDS or who do know that sex with prostitutes raises the chance of becoming infected with HIV (i.e., a perceived benefit from action or inaction) are more likely not to have used condoms and to have had commercial sex, respectively, perhaps because these activities themselves (use of condoms, having commercial sex) raise awareness about the benefits of condom use or abstinence from commercial sex. There is no analogous effect on the number of lifetime partners. All in all, the HBM cannot be readily endorsed in the present analyses, even though some of its tenets play an important role. Whether this is

Table 8. Summary of the determinants of sexual activity and three risk-factors for HIV transmission (from logistic and OLS regressions) among sexually active Filipino men, 15–24: Direction and significance of effects.

Characteristics	Premarital sexual activity	*Activities with high risk*		
		Does not use condoms	*Commercial sex*	*Lifetime partners*
Demographic, socioeconomic, religious traits				
Age	+ ***	– ***	+ ***	+ ***
Currently married	+ ***	– **	– ***	– ***
Socioeconomic status	+ ***	– ***	+ **	
Urban residence	+ ***	– ***		+ *
Non–Catholic	– **			
Educational characteristics				
Years of schooling	+ ***			
Currently attending school	– ***			
Attended/ing private religious school	+ *			
Attended/ing private non-sectarian	+ ***			
Sexuality–specific education or awareness				
Received in school:				
General population education	+ *	– **	+ **	
General population & STD education	+ ***	– **		
Aware of HIV/AIDS	+ ***	na	na	na
Social and psychological traits				
Perceives parents' marriage as unstable	+ *			+ ***
Regularly smokes	+ ***		+ *	+ **
Regularly drinks	+ ***		+ ***	+ **
Number of close friends	+ ***			+ **
AIDS– & condom–specific knowledge or attitudes				
Threat of getting AIDS	na		+ *	
Condom use does not protect against AIDS/Sex with prostitutes/multiple partners raise the chance of becoming infected with HIV	na	+ ***	+ **	
Condoms are too costly	na	+ *		

NB: Labels have been simplified to represent overall effects (e.g., urban represents the degree of urbanization, which is shown as lifetime rural/both rural and urban/lifetime urban residence in Tables 4–7).

Not shown are factors that have no effect: in all of the above models, religiosity (frequency of attendance at religious services); and in the three models of high-risk activities, belief that condoms do not make sex less enjoyable (self-efficacy). Results shown here ignore the interaction effects, which for the most part were not significant (see Tables 5–7).

because the model is poorly specified here or simply an inappropriate model is a matter for studies with more comprehensive data.

Drinking and smoking appear to affect two out of the three risk factors, in the expected direction. Because this analysis did not consider these behaviors more closely and does not assess the determinants of these behaviors themselves, further research is needed to assess whether all high-risk behaviors are simultaneously determined from a single source or whether these behaviors play an independent role in the socialization process that encourages high-risk sexual behaviors.

Young Filipino men face many AIDS-related risks. While sexual activity—with girlfriends or acquaintences and prostitutes—is fairly common, condom use is very uncommon. This study has found that condom affordability and accessibility as well as the information that condom use prevents the transmission of HIV are important determinants of condom use. However, no obvious policy handles could be identified (except perhaps those associated with drinking) to reduce the chances that young men will engage in sex with prostitutes or have high numbers of sexual partners. Future studies must take a closer look at the determinants of these behaviors. In addition, future studies on sexual behavior in the Philippines should be prepared to assess risk more comprehensively, such as condom use in commercial sexual activities.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the assistance of Midea Kabamalan. This paper was prepared for presentation at the Population Association of America Annual Meetings, March 27–29, 1997, Washington DC. The YAFS-II survey was funded by UNFPA. Work undertaken at the East-West Center was funded by the USAID (CA# CCP-3049-A-00-3015-00).

REFERENCES

Aggleton, Peter, Kevin O'Reilly, Gary Slutkin, and Peter Davies. 1994. "Risk everything? Risk behavior, behavior change, and AIDS," *Science* 265: 341–345.

Aplasca, Mari Rose A., David Siegel, Jeffrey S. Mandel, Rosemarie T. Santana-Arciaga, Jay Paul, Esther S. Hudes, Ofelia T. Monzon, and Norman Hearst. 1995. "Results of a model AIDS prevention program for high school students in the Philippines," *AIDS* 9 (Suppl. 1): S7–S13.

Balk, Deborah, Grace Cruz, and Tim Brown. 1997. "HIV/AIDS risk in the Philippines: Focus on adolescents and young adults," East-West Center Working Paper, Population Series, No. 93. Honolulu:East-West Center.

Balk, Deborah, and Subrata Lahiri. 1997. "Awareness and knowledge of AIDS among Indian women," *Health Transition Review* 7 (Suppl.): 421–465.

Boyer, Cherrie, and Susan M. Kegeles. 1991. "AIDS risk and prevention among adolescents," *Social Science and Medicine* 33 (1): 11–23.

Caceres, Carlos F., and Godfried J.P. van Griensven. 1994. "Male homosexual transmission of HIV-1," *AIDS* 8: 1051–1061.

Celantano, David, Kenrad Nelson, Somboon Suuprasert, et al. 1993. "Behavioural and sociodemographic risks for frequent visits to commercial sex workers among northern Thai men," *AIDS,* 7: 1647–1652.

Celantano, David, Kenrad Nelson, Somboon Suparsert, Eiumtrakul Sakol, Tulvantana Supachai, Surinda Kuntolbutra, Pasakorn Akarasewi, Anuchart Matanasarawoot, Nicholas Wright, Noraongrid Sirisopana, and Choti Theetranont. 1996. "Risk factors for HIV-1 seroconversion among young men in northern Thailand," *Journal of the American Medical Association* 275: 122–127.

Field Epidemiology Training Program (FETP), 1996a. *HIV/AIDS Registry.* Manila: Department of Health.

Field Epidemiology Training Program (FETP). 1996b. *Number of HIV Ab Seropositives and Syphilis Seroprevalence per Group per Site, National Sentinel Surveillance System, 1993–1995.* Manila: Field Epidemiology Training Program, Department of Health.

Fishbein, Martin, David Trafimow, Claudette Francis, Michael Helquist, M. Ann Eustace, Michelle Ooms, and Susan E. Middlestat. 1993. "AIDS knowledge, attitudes, beliefs, and practices (KABP) in two Caribbean countries: A comparative analysis," *Journal of Applied Social Psychology* 23 (9): 687–702.

Fordham, Graham. 1995. "Whisky, women and song: Men, alcohol and AIDS in Northern Thailand," *Australian Journal of Anthropology* (6): 154–177.

Garnett, Geoff P., and Roy M. Anderson. 1994. "Balancing sexual partnerships in an age and activity stratified model of HIV transmission in heterosexual populations," *IMA Journal of Mathematical Applied Medical Biology* 11(3):161–192.

Grosskurth, Heiner, Frank Mosha, James Todd, Keshani Senkoro, James Newell, Arnoud Klokke, John Changalucha, Beryl West, Phillipe Mayaud, Awena Gavyole, Reverianus Gabone, David Mabey, and Richard A Hayes. 1995. "A community trial of the impact of improved sexually transmitted disease treatment on the HIV epidemic in rural Tanzania: baseline survey results," *AIDS* 9: 927–34.

Ku, Leighton, Freya Sonenstein, and Joseph Pleck. 1996. "Factors influencing first intercourse for teenage men," *Public Health Reports* 108(6): 680–694.

Lee, Romeo, and Antono F. Sison. 1991. "Filipinos and AIDS: A study of the sexual and preventive behaviors of homosexual men in Metro Manila, Philippines." Manila: Social Development Research Center.

Leviton, Laura C. 1989. "Theoretical foundations of AIDS-prevention programs," in R. Valdiserri (ed.), *Preventing AIDS: The Design of Effective Programs*. New Brunswick, NJ: Rutgers University Press.

Haurin, R. Jean, and Frank L. Mott. 1990. "Adolescent sexual activity in the family context: The impact of older siblings," *Demography* 27(4): 537–557.

Health Action Information Network. 1996. "Update on HIV/AIDS and STDs in the Philippines." December 1, 1996. http://pubweb.acns.nwu.edu/%7Eflip/aids.html.

MacQueen, Kathleen M., Taweesak Nopkesorn, Michael D. Sweat, Yothin Sawaengdee, Timothy D. Mastro, and Bruce G. Weniger. 1996. "Alcohol consumption, brothel attendence, and condom use: Normative expectations among Thai military conscripts," *Medical Anthropology Quarterly* (10): 402–423.

MacQueen, Kathleen. 1994. "The epidemiology of HIV transmission: Trends, structure, and dynamics," *Annual Review of Anthropology* 23: 509–26.

Mastro, Timothy, and Isabelle de Vincenzi. 1996. "Probabilities of sexual HIV-1 transmission," *AIDS* 10 (Suppl. A): S75–S82.

Morris, Martina, Anthony Pramualratana, Chai Podhista, and Maria Wawer. 1995. "The relational determinants of condom use with commercial sex partners in Thailand," *AIDS* (9): 507–515.

National Statistical Office (NSO) [Philippines] and Macro International Inc. (MI). 1994a. *National Demographic Survey 1993*. Calverton, MD: NSO and MI.

National Statistical Office (NSO) [Philippines] and Macro International Inc (MI). 1994b. *National Safe Motherhood Survey 1993*. Calverton, MD: NSO and MI.

National Statistical Office (NSO) [Philippines] and Macro International Inc (MI). 1995. *National Safe Motherhood Survey 1993*. Standard recode files PHSM31RT (.DAT, .SPS), 12, 13 April 1995, Calverton, MD: NSO and MI.

National Statistical Office (NSO). 1992. *1990 Census of Population and Housing: Report #3.* Manila: National Statistical Office.

Osteria, Trinidad, and Gerard Sullivan. 1991. "The Impact of Religion and Cultural Values on AIDS education Programs in Malaysia and the Philippines," *AIDS Education and Prevention,* 3(2): 133–146.

Peruga, Armondo, and David D. Celantano. 1993. "Correlates of AIDS Knowledge in Samples of the General Population," *Social Science and Medicine* 36(4): 509–524.

Philippines Population Association. 1994. "AIDS in the Philippines: A Situation Analysis." Manila.

Sittitrai, Werasit and Tim Brown. 1994. "Risk factors for HIV infection in Thailand," *AIDS* 8 (Suppl. 2): S143–S153.

Sittitrai, Werasit, Praphan Phauphak, Jean Barry and Tim Brown. 1992a. *Thai Sexual Behavior and Risk of HIV Infection: A Report of the 1990 Survey of Partner Relations and Risk of HIV Infection in Thailand.* Bangkok: Program on AIDS, Thai Red Cross and Institute of Population Studies, Chulalongkorn University.

Sittitrai, Werasit, Praphan Phauphak, Jean Barry and Tim Brown. 1992b. Data file from the *1990 Survey of Partner Relations and Risk of HIV Infection in Thailand.* Bangkok: Program on AIDS, Thai Red Cross and Institute of Population Studies, Chulalongkorn University. (Used with investigators' permission.)

Tan, Michael L. 1995. "From *Bakla* to Gay: Shifting gender identities and sexual behaviors in the Philippines," in Richard Parker and John Gagnon (eds.), *Conceiving Sexuality.* New York: Routledge.

Tan, Michael L. 1994. "A Review of Social and Behavioral Studies Related to HIV/AIDS in the Philippines." Manila: Health Action Information Network.

Tan, Michael L, and Manuel M. Dayrit. 1994. "HIV/AIDS in the Philippines," *AIDS* 8 (Suppl. 2): S125–S130.

Vanlandingham, Mark, Somboon Suprasert, Nancy Grandjean, and Werasit Sittitrai. 1995. "Two views of risky sexual practices among northern Thai Males: The Health Belief Model and the Theory of Reasoned Action," *Journal of Health and Social Behavior,* 36 (March): 195–212.

Vanlandingham, Mark, Somboon Suprasert, Werasit Sittitrai, Chayan Vaddhanaphuti, and Nancy Grandjean. 1993. "Sexual Activity Among Never-married men in Northern Thailand," *Demography* 30(3): 297–314.

Wasserheit, Judith N. 1992. "Interrelationships between human immunodeficiency virus infection and other sexually transmitted diseases," *Sexually Transmitted Diseases* 19: 61–77.

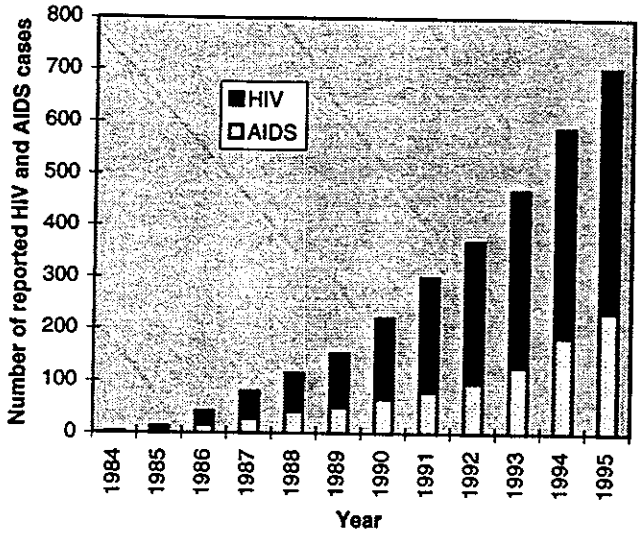

Figure 1. Cumulative HIV infections and AIDS cases through 1995.

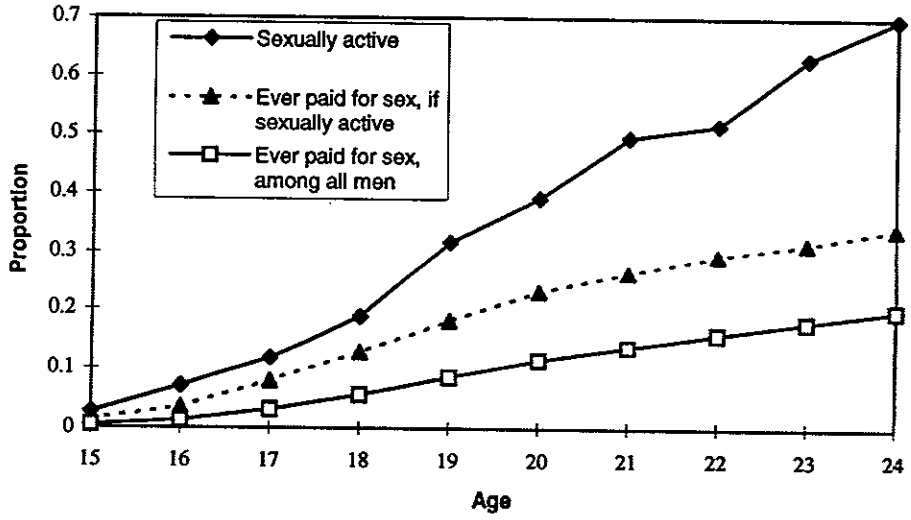

Figure 2. Proporation of young Filipino males who are sexually active and lifetable probability of having ever paid for sex.

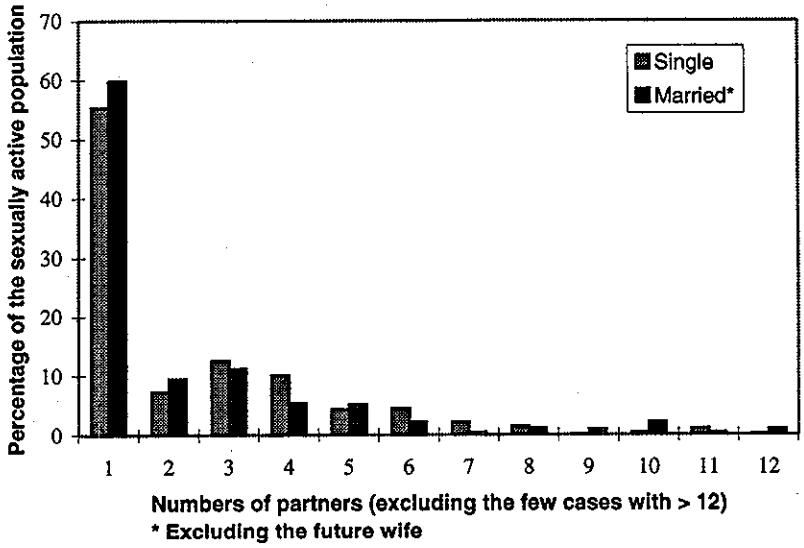

Figure 3. Number of sexual partners among the premartially sexually active population of currently single and married men.