

# Results of a model AIDS prevention program for high school students in the Philippines

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**Objectives:** To describe the sexual practices of high school students; to describe the process of development of a school-based AIDS prevention program; and to evaluate the effect of this program on students' AIDS-related knowledge, attitudes and AIDS-preventive behaviors.

**Subjects and methods:** A cluster-randomized, controlled trial with pretest/post-test evaluation was conducted in four demographically similar public high schools in a semi-urban district of Metro Manila, the Philippines. Of 845 high school students who participated in the baseline survey, 804 (95%) completed a postintervention questionnaire.

**Intervention:** An AIDS prevention program was developed by public high school teachers together with local AIDS experts, social scientists and health educators. The teacher-led AIDS program was designed to provide students with accurate information about AIDS, particularly in dispelling misconceptions about casual contagion, to foster positive attitudes towards people with AIDS and to develop skills aimed at clarifying values and assessing intended behavior.

**Results:** At baseline, 11% of students (20% of males and 4% of females) reported ever having had sexual intercourse (mean age 14 years). Among these, condom use was low (24%). After implementation of the AIDS prevention program, statistically significant effects favoring the intervention group were observed in knowledge and attitudes towards people with AIDS. While there was no statistically significant overall effect on intended preventive behavior, the program appeared to delay the students' intended onset of sexual activity.

**Conclusions:** A sizable number of Filipino high school students are sexually active but condom use is low. School-based AIDS prevention programs can be developed and implemented in developing countries with the assistance of school personnel to address sexual issues. Our program was successful in increasing AIDS-related knowledge and improving attitudes towards people with AIDS. Supplementation with other preventive activities may be needed to achieve lasting changes in students' risk-taking behavior.

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**Keywords:** AIDS education, attitudes, behavior, knowledge, high school students, the Philippines, prevention.

## Introduction

Surveys of adolescents' knowledge about HIV/AIDS in both developed [1-11] and developing countries [12,13]

have revealed that their knowledge has improved over the course of the epidemic. Despite increased knowledge, however, adolescents continue to have misconceptions about the casual transmission of HIV [2-13], and their

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information about HIV/AIDS prevention remains insufficient [2,3,5,7,8,9,13]. In the Philippines, while the prevalence of HIV infection is relatively low [14], current data on the risk-taking behavior of Filipino youth [15] suggests that its prevalence may increase dramatically over the next several years.

Recognizing that adolescents risk HIV infection, school-based prevention programs have been recommended in an attempt to decrease risk-taking behavior, and several of these programs have been developed and described in the scientific literature. Most, however, have been implemented in developed countries [15-25], with only a few conducted in developing countries [26-28]. Evaluations of some school-based AIDS prevention programs have shown that they are effective in increasing students' knowledge but have had less of an effect on AIDS-related attitudes or behavior [4,8,15,16,17]. Others have resulted in modest changes in both HIV knowledge and attitudes [13,24,25]. Because of religious, cultural and psychosocial differences across regions and continents, interventions that have proved effective elsewhere may not be applicable to the Filipino setting.

The Philippines is the only country in southeast Asia with a predominantly Roman Catholic population. While there is a separation of power between the church and the government, the Catholic church appears able to influence government policies on family planning issues. This conservative religious culture tends to limit the possibilities for open discussion of sexuality in the media [29]. Interventions have, therefore, been mostly limited to general awareness initiatives. In secondary schools, while sex education has been formally included in the current curriculum, it is often limited in scope and/or has been inadequately addressed by teachers. School-based AIDS prevention programs do not exist.

Despite the urgent need for AIDS prevention programs in the Philippines, political action has been constrained by a lack of resources and the matter appears to have been assigned a lower priority than other economic and social problems. Students, however, strongly desire to learn more about HIV/AIDS in school [30]. The present study evaluated the effect of a culturally sensitive, AIDS educational program on the AIDS-related knowledge, attitudes and planned preventive actions of Filipino public high school students. While most research workers in AIDS prevention have evaluated the ability of school-based programs to influence knowledge, attitudes and behavior, the process of developing and implementing these programs has received little attention. Thus, this paper also describes the process of program development.

## Subjects and methods

### Design of the intervention

In January 1992, authorities from the Department of Education, Culture and Sports (DECS) were consulted

in order to obtain their permission and support for the development of an AIDS prevention program for high school students. Soon after, a needs assessment survey of AIDS-related knowledge, attitudes and behavior of high school students was undertaken. With cognitive learning theory [31] as a theoretical framework, the results of the study were used as a guide in the development of an AIDS educational program.

A 2 day teacher training workshop was convened in June 1992 and attended by 30 health-education or value-education teachers nominated by their school principals. From among these participants, five teachers were chosen to become part of a core group (which also included local AIDS experts, social scientists, health educators and curriculum experts from the Bureau of Secondary Education, Department of Education, Culture and Sports), who planned and developed the educational program. The purpose of the workshop was threefold: first, to provide teachers with basic information about AIDS and sexually transmitted diseases; second, to assess their attitudes towards the disease; and third, to explore the different teaching strategies that could be used in the design of the curriculum. Teachers were asked to prepare AIDS lesson plans which were then used in a simulated classroom setting.

Six intensive weekly workshops were conducted to plan, design and write the curriculum. The educational materials that were produced included a teachers' instructional manual, flip charts and audio tapes (available from M.R.A. Aplasca). The manual, which was written in Pilipino (the students' native language), consisted of a curriculum divided into five subject areas: human sexuality and sexually transmitted diseases, AIDS and the immune system, development of self esteem, decision-making skills and refusal skills. Since previous sex education lectures in Pilipino public high schools had been quite limited, the first lesson was designed to provide an in-depth discussion of puberty and reproduction. The lessons used a variety of teaching strategies in addition to traditional didactic lectures, including role playing, games, dialogues, group discussions and exercises aimed at clarifying values and assessing intended behavior patterns.

Since a previous study had shown that most Filipino students were not sexually active [30], the emphasis of the program was on delaying sexual activity until adulthood and/or within marriage. Historically, the use of artificial birth control methods, including condom use, has created heated discussion between the Catholic church and the government. After discussions with teachers, condom use as a preventive measure for HIV (not as a family planning method) was included in the lessons. However, school authorities did not allow condom demonstrations in schools. Before final implementation, the educational materials were pretested among high school students in a public high school demographically similar to the schools included in the study. Revisions were made based on

the evaluations and suggestions from both students and teachers.

The final program, comprising 12 lessons, was implemented by trained teachers in Physical Education, Health and Music (PEHM), and Value Education classes. Lessons were taught for 40 min twice a week over a 6-week period. Using the same educational materials, teachers adjusted their messages and strategies so that they were appropriate for the grade level and needs of the students. The educational materials that were developed were turned over to the Department of Education, Culture and Sports and were subsequently used by other public high schools in the National Capital Region.

### Study design and participants

The study was a two-arm, randomized, cluster, controlled trial of the intervention with pre- and post-test evaluation. Four demographically similar schools were chosen from the 10 public high schools in the semi-urban district of Metro Manila. Of these four schools, two were randomly assigned to the intervention and two to control. Within the intervention schools, one classroom from each grade level (representing 10% of the students at that level) was randomly selected for the intervention and within the control schools, one classroom from each grade level was randomly selected to serve as part of the control. Before the program was implemented, the teachers notified parents that AIDS prevention education was going to be given to their children. No resistance on the part of the parents was encountered.

The Filipino high school curriculum, which starts after 6 years of elementary education, is composed of 4 years of study. Although high school students are usually between the ages of 13–16, there are wide age variations within classes because some students have had to interrupt their schooling. Of the eligible participants, 845 (96%) completed the baseline survey. Non-participants were absent when the questionnaire was being administered. Of the 845 students who completed the baseline survey, 804 [comprising 420 (96%) intervention and 384 (94%) control students] completed the second postintervention questionnaire. The results of the intervention as reported here are based on these 804 students.

### Measurements

The study used self-administered questionnaires. The students were instructed not to write their names on the questionnaires so that the confidentiality of their responses could be maintained. A code was generated by the investigators so that pre- and post-test questionnaires from individual students could be matched in the analysis. The questions included were based on questionnaires used previously to assess knowledge, attitudes, beliefs and behavior patterns of adolescents [21,32]. Additional questions were generated from interviews and focus group discussions. The questionnaire, which was translated into Pilipino, was pilot-tested among students in a high school not included in the study and then modified accordingly.

Before administering the questionnaire, the purpose of the study was explained to the students; they were told that participation was voluntary and that non-participation would not affect their school status in any way. No student present at the time of the survey refused to participate. The baseline questionnaire was completed during class time within 30–40 min. Follow-up surveys were administered in the intervention and control groups 2 and 8 weeks after completion of the AIDS educational program. Since responses to the two surveys were similar, we present only the results from the 8-week postintervention survey.

### Sociodemographic characteristics

The students were asked their age, sex, grade level, parents' education and economic status. As any direct inquiry about family income was considered sensitive, socio-economic status was evaluated in two ways, by parental education and by the number of a set of items in the household (e.g. television, gas stove, stereo, cassette tape recorder, refrigerator, electric flat iron, washing machine, betamax, computer, car and piano). The latter surrogate measure of economic status had a Cronbach's  $\alpha$  value of 0.76 and was highly correlated with the parents' formal education.

### AIDS-related knowledge and attitudes

Knowledge of AIDS was assessed by asking the students whether each of the statements related to AIDS biology (six items), transmission (10 items) and prevention (five items) was correct (Table 1). The AIDS knowledge score was measured in each of the three different scales by summing correct responses. Attitudes were rated along a four-point Likert scale from 1 (strongly disagree) to 4 (strongly agree). Attitudinal items were grouped into scales (Table 1) and the reliabilities computed with Cronbach's  $\alpha$  test. The scales measured avoidance of people with AIDS (five items,  $\alpha=0.60$ ), compassion towards people with AIDS (five items,  $\alpha=0.80$ ) and intentions regarding AIDS preventive behavior (eight items,  $\alpha=0.70$ ). The attitudinal scale score used the mean value of all items, and therefore had a range of 1–4. A single item, 'students like us should not have sex at all until we are adults or we are married,' was analyzed separately.

### Sexual behavior/alcohol and drug use

Sexual behavior patterns of sexually active students were assessed by asking about age at the time of first sexual intercourse, the lifetime number of sexual partners, whether they had ever used condoms and the frequency of condom use. The students were also asked about their drug-related behavior patterns.

### Data analysis

The Statistical Package for Social Sciences (SPSS/PC+ 4.0) was used to analyze data from the baseline and the post-test surveys. To control for possible baseline differences in postintervention outcome variables (AIDS knowledge and AIDS-related attitudes) between the intervention and control groups, we used post-test minus baseline change scores. Two-tailed Student's t-tests were

**Table 1.** Items included in the scales of AIDS-related knowledge and attitudes.**AIDS-related knowledge**

## AIDS biology

- AIDS weakens the body's ability to fight off disease
- HIV causes AIDS
- The AIDS virus is carried in the blood of infected persons
- Most people who have AIDS get pneumonia more often than the average person
- The longest time the AIDS virus can live in the body before symptoms appear is 1 year
- A person with AIDS can be cured if treated early

## AIDS transmission

- You can get AIDS by...
- a transfusion of infected blood
- sharing needles with an infected injecting drug user
- using the toilet after someone with AIDS has used it
- mosquito bites
- shaking hands with a person with AIDS
- if someone with AIDS coughs or sneezes on you
- eating in a restaurant where a cook has AIDS
- sitting next to a classmate who has AIDS

## AIDS prevention

- Always using condoms during sex will reduce your risk of getting AIDS
- You can avoid getting AIDS through daily exercise
- A person who does not have sex with anyone is less likely to get AIDS
- People who have multiple sexual partners have a low chance of getting AIDS
- At present there is a vaccine for AIDS

**AIDS-related attitudes**

## Avoidance of people with AIDS

- If I discover that my friend has AIDS, I will avoid him (her)
- A teacher with AIDS should not be allowed to teach
- I will sit near a person who has AIDS in school
- People with AIDS should be confined to their homes
- I will befriend a child with AIDS

## Compassion towards people with AIDS

- People with AIDS are people like us who have feelings that can be hurt
- People with AIDS should not be ridiculed
- We have to understand people with AIDS
- I will share my love with people with AIDS
- I have sympathy for people with AIDS

## Intended preventive behavior

- In the future, I plan to be very careful with whom I have sex
- I am able to talk to my sex partner about the risk of AIDS
- In the future, I plan to use condoms always during sex
- I will refuse anyone who asks me to use illegal injectable drugs
- I will not have sex if I am under the influence of alcohol or I am drunk
- I will avoid friends who indulge in sex and drugs
- I love myself, so I will avoid being exposed to AIDS
- I will only have one sex partner throughout my life

from a series of one-way analyses of variance for each outcome variable (change scores) separately within the intervention (eight classrooms) and the control (eight classrooms) groups. The predictor in each analysis of variance was the eight-level categorical variable of classroom. This predictor captures both the school level and the classroom level clustering effect. The *P* values reported here are based on these modified statistics.

**Results**

Table 2 shows the sociodemographic characteristics of the students. Both the intervention and the control student groups were similar in age, sex, father's education and economic status. However, students in the control group were in a higher grade on average ( $P < 0.05$ ) and had less well educated mothers ( $P < 0.05$ ).

**Table 2.** Sociodemographic characteristics of sample.

	Intervention (n = 420)	Control (n = 384)
Mean age (years)	14.7	14.9
Sex (%)		
Male	44.3	45.1
Female	55.7	54.9
High school level (%)*		
First year	27.4	22.1
Second year	26.7	23.2
Third year	23.3	29.2
Fourth year	22.6	25.5
Religion (%)		
Catholic	83.8	91.1
Other Christians	16.2	7.9
Mother's education (%)**		
Less than high school	49.3	56.2
High school graduate	15.9	16.6
Some college/vocational schooling	18.9	13.3
College graduate/postgraduate	16.2	12.8
Father's education (%)		
Less than high school	45.1	49.0
High school graduate	20.6	16.4
Some college/vocational schooling	18.1	16.4
College graduate/postgraduate	16.5	17.1
No. of household items owned (%) (proxy measure of economic status)		
Less than four	28.6	27.6
Four to five	33.1	38.0
Over five	38.3	34.4

\* $P = 0.03$ , \*\* $P = 0.02$ , intervention versus control group.

**Sexual behavior**

Of the 804 students who completed the second post-intervention survey, 80 (11%) reported previous sexual intercourse. Of these, 66 (83%) were male and 14 (18%) female ( $P < 0.001$ ; Table 3). An equivalent number of students simply left all items on sexual behavior unanswered. Among those reporting sexual intercourse, con-

used to compare the mean change in scores for subjects in each experimental group. As each school was randomly allocated to either the control or experimental group (rather than randomizing individual students), a correction for each outcome variable was necessary [33]. An estimate of the interclass correlation was obtained

dom use was low (24%). Reasons cited for not using condoms were: use of other birth control methods (26%); sex is not exciting with a condom (25%); my partner would not allow condom use (16%); I don't think I will get AIDS (15%); I didn't know how to use condoms (15%); and I had no money to buy condoms (3%).

**Table 3.** Sexual behavior.

	Males	Females	Total
Sexually active (%)	20.3	3.6	11.3
Age of first sexual intercourse (years)	14.1	13.3	14.0
First sexual partner (%)			
Opposite sex boyfriend/girlfriend	48.4	53.8	49.4
Same sex boyfriend/girlfriend	4.7	7.7	5.2
Prostitute	6.3	7.7	6.5
Other	40.6	30.8	38.9
No. of lifetime sexual partners (%)			
One	64.6	61.5	64.1
Two or three	15.4	23.1	16.7
Four or five	7.7	0	6.4
More than five	12.3	15.4	12.8
Frequency of sex in past year (%)			
Once a month	72.1	36.4	66.7
Twice a month	9.8	27.3	12.5
Once a week	9.8	18.2	12.5
More than once a week	8.2	18.2	9.7
Frequency of condom use (%)			
Always	9.2	7.7	9.0
Frequently	4.6	0	3.8
Seldom	13.8	0	11.5
Never	72.3	92.3	75.6

Proportion sexually active: 325 males, 384 females; 95 out of 804 students did not answer this question. The remaining questions were asked only of students who reported being sexually active (66 males, 14 females). For first sexual partner, the students were instructed to choose one.

### Drug-related behavior

Most students (94%) reported never having used drugs. Among those who had, the most commonly used drugs were marijuana (4%) and methamphetamines (*shabu*; 1%). Ten (1%) students reported having injected drugs and two of these 10 reported having shared a needle. A total of 179 students (25%) reported having drunk alcoholic beverages, but only nine of these reported sex after drinking alcohol.

### Effects of the intervention

The change in knowledge of AIDS from baseline to the second follow-up indicated that the students who had attended the AIDS educational program became more knowledgeable than those in the control group according to each of the three knowledge scales, and the differences were statistically significant (Table 4). The students in the intervention group were more likely to answer correctly that HIV cannot be transmitted by several types of casual transmission, including (data not shown) mosquito bites ( $P<0.01$ ), through a cough or a sneeze

( $P<0.01$ ), by shaking hands with a person infected with HIV ( $P<0.01$ ) or by eating in a restaurant where the cook has AIDS ( $P<0.01$ ).

The results also indicated that the program fostered positive attitudes towards people with AIDS. As shown in Table 4, students who had attended the AIDS educational program were less likely to avoid people with AIDS, and they also expressed more compassion towards people with AIDS ( $P<0.01$  for each). The intervention and control groups did not differ significantly in change in overall intended preventive behavior, although there was a trend ( $P=0.07$ ) favoring the intervention group. However, the intervention did significantly increase the proportion of students who agreed that students should delay sex until they became adults or until they were married ( $P<0.001$ ; data not shown).

**Table 4.** Changes in mean scores for AIDS-related knowledge and attitudes.

	Intervention	Control	Difference in means
HIV-related knowledge			
AIDS biology	+0.55	+0.10	+0.45**
Transmission	+1.29	+0.36	+0.93*
Prevention	+0.55	+0.14	+0.41*
HIV-related attitudes			
Avoidance of people with AIDS	-0.64	-0.19	-0.45*
Compassion for people with AIDS	+0.11	-0.01	+0.12**
Intended preventive behavior	+0.21	+0.13	+0.08

\* $P<0.01$ , \*\* $P<0.001$ .

### Increased knowledge and more tolerance towards people with AIDS

To determine whether increases in AIDS-related knowledge was associated with changes in the students' attitudes towards people with AIDS, we examined correlations among these variables. Increases in students' knowledge about the modes of AIDS transmission were associated with increasing compassion towards people with AIDS ( $r=0.14$ ;  $P<0.001$ ). Changes in knowledge about modes of HIV transmission was not associated with changes in intentions towards preventive behavior, but was associated with improvements in preventive knowledge ( $r=0.13$ ;  $P<0.001$ ).

### Qualitative program evaluation

A focus group discussion with approximately 10 students from the intervention group was conducted by an external review committee to evaluate the effects of the AIDS intervention program. Participants in the review committee concluded that the students had excellent AIDS-related knowledge and that they also showed compassion and positive attitudes towards people with AIDS. The students stated that after attending the AIDS educational program in their schools, they were better able to talk about AIDS and correct the misconceptions of their parents, friends and relatives.

## Discussion

As the AIDS epidemic involves more and more regions of the world, there is an urgent need for preventive actions. Adolescents are an important target group for AIDS prevention education [34], because it is at this age that attitudes about sexual behavior are developed and decisions about lifestyle and identity are usually made [32]. The need for preventive education is especially important in parts of the world, like Asia, where HIV infection is increasing at an alarming rate [35].

Among Filipino adolescents, particularly among males, sexual activity may start in high school. Results from our study show a lower rate of sexual activity among adolescents than those reported in another study conducted among the general population in Metro Manila [15]. In that study, 44% of male adolescents from 10 to 19 years of age reported having had sexual intercourse. The lower number of sexually active high school students that we found may have reflected a non-response bias, as a large proportion (approximately 12%) of our sample refused to answer questions about sexual activity. Sexually active students may be less likely to answer such questions for fear of being identified. Data on teen-age pregnancies and sexually transmitted diseases may be better indicators of sexual activity in this population. Since these data are currently not available in the Philippines, future studies should attempt to obtain them.

The low rate of condom use among sexually active students (Table 3) puts them at risk of HIV infection. As noted above, teaching about artificial birth control methods, including condom use, has created conflict between the Catholic church and the government. However, we found that teachers, perhaps realizing the importance of teaching sexually active students how to protect themselves, insisted that condom use, as an HIV preventive measure, be included in the curriculum. This suggests the importance of working with school personnel to develop AIDS preventive curricula as opposed to trying to impose a centrally developed program upon them.

The present results indicate that a school-based teacher-led AIDS prevention curriculum taught by trained classroom teachers in the Philippines can modify adolescents' HIV-related knowledge, including knowledge about the casual transmission of HIV, and attitudes towards people with AIDS. Additionally, it appears that students who increase their AIDS knowledge as a result of an AIDS prevention curriculum become more tolerant of people with AIDS.

In accord with studies in other parts of the world, we did not find a statistically significant change in intended or actual behavior as a result of the AIDS prevention program. This may be a result of several factors. First, while all teachers were trained to administer the AIDS curriculum, classroom observations by the investigators indicated that there were considerable differences in teach-

ing quality among classrooms. A 2 day training course may not be adequate to fully develop the skills needed for teachers to become more comfortable with teaching about AIDS or on other topics that have a large sexual component. The teachers recognized this and requested more extensive training if they were to continue to teach AIDS prevention. This problem might also be remedied by having the curriculum delivered by specially trained health educators who should be more comfortable discussing sexual issues with students. Second, although the curriculum was relatively extensive, lasting 12 classroom sessions, considerable time was devoted to providing basic sex and drug education rather than spending more time focused on AIDS prevention. Third, not enough time was dedicated to exploring peer pressure and practising resistance and refusal skills; this might even have been the most important factor. Finally, it may be unrealistic to expect that any AIDS prevention curriculum can modify risk behavior without more intensive student participation.

Given the current estimates of adolescent HIV-related risk behavior [36], and findings from the present study and others, there is a clear need to expand and improve AIDS prevention programs. New educational strategies are needed that are more effective in influencing adolescents to adopt and maintain AIDS preventive behavior patterns [37]. Prevention programs may need to be ongoing and followed-up or repeated regularly [27]. Ways of ensuring continuity and sustainability of programs need to be developed. Other studies [21] suggest that a teacher-led curriculum should be augmented by other intervention strategies, such as a peer-led educational program.

In conclusion, the involvement of teachers and other school officials in the conceptualization and implementation of our program most likely contributed to its acceptance and ease of implementation. The AIDS prevention materials developed have been endorsed by the Philippines National Office of the Department of Education, Culture and Sports. While it is important to convey accurate information and dispel AIDS misconceptions, the next generation of AIDS prevention education curricula must aim to improve adolescents' decision-making skills, especially as they relate to the potential for engaging in unsafe sexual or drug practices. Additionally, the role of schools as agents of change should not be exaggerated. Other places where adolescents congregate in the Philippines (recreation centers and other sites of after-school programs) should also be used to provide AIDS prevention education. Ultimately, however, successful strategies for demonstration programs will have to be integrated into regular school curricula and community programs in order to successfully challenge the risk of HIV/AIDS to adolescents. While the epidemic is still in its early stages in the Philippines, the need and the potential for AIDS prevention education in curtailing the spread of HIV infection is great.

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