

¹Department of Health Sciences, Graduate school, Angeles University Foundation, Angeles City, Pampanga, Philippines.

²Department of Medicine, Prince of Songkla University, Songkhla Province, Thailand

*Corresponding Author: Batholomew Chibuikwe James, Public Health Program, Graduate School, Angeles University Foundation Angeles, Pampanga Philippines, Email: jmsbatholomew@gmail.com

Abstract

Introduction: Knowledge, attitude, and practices (KAPs) are pillars in the fight against HIV/AIDS worldwide. It stands to be the very best helpful tool to evaluate and assess individual or community before implementing intervention program approaches. The study evaluates the knowledge, attitudes and practices on HIV, AIDS prevention and transmission among college students in Pampanga, Philippines. **Materials and Methods:** This is a cross-sectional, descriptive research method utilising a self-administered questionnaire among 565 college students aged 18-24 in three selected higher educational institutions in Pampanga, Philippines; The statistical analyses included univariate analyses, frequency, percentages, mean and Standard Deviation (SD) or median, interquartile range (IQR) and SPSS. Chi-square test of independence for the association.

Results: Among 565 participants, 239 persons (42%) showed low knowledge of transmission and prevention of HIV/AIDS, 203 (36%) has a moderate level of knowledge, and 121 (21%) has a high level. Common misconceptions about HIV transmission included that washing genitals could prevent transmission and that transmission was possible through mosquito bites, respiratory fluids, sweat, or urine. Television was the most frequent source of HIV/AIDS-related knowledge among respondents. Those who answered questions related to the sexual practices said that their last 3 encounters were the same person and their sterilising "piercing objects" before use. Still, those who answered that they engaged in such practices accounted for 22% and 29% of all participants, respectively.

Conclusion: Misconceptions regarding HIV was common in the study population, and approximately one-fourth of respondents engaged in high-risk practices. Social desirability could have biased the self-reported responses; thus, caveats were considered to interpret the study findings. Intervention programme in colleges around the Philippines to improve their knowledge regarding HIV, AIDS is recommended

Keywords:

Knowledge; Attitude; Practices; HIV/AIDS; College Students; Philippines

Introduction

At present, 76 million people have been infected with HIV, and 33 million have died from HIV/AIDS-related illnesses, while 38.0 million (31.6– 44.5 million) people aged 15–49 years worldwide are currently living with HIV, among whom 5 million youths aged 15–25 years and 3.8 million are living in 11 Countries of South-East Asia of WHO Region. Young adults are more prone to HIV infection, partly due to insufficient knowledge and misconception regarding the spread and prevention of HIV/AIDS and poor behavioural health.

Region.4 Nearly all new infections (80%) were among young people aged 15-34 years, and the median age at diagnosis was 28 years.

Diagnosed HIV/AIDS patients in the Philippines are highly predominantly males. Barriers in HIV/AIDS prevention and control among youths include lack of awareness and correct

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practices related to HIV/AIDS with regards to viral transmission, diagnosis and treatment, as well as potentially stigmatizing attitude towards HIV patients. In the Philippines, KAP surveys on HIV/AIDS among youths have been conducted in schools in Metro Manila and among commercial sex workers in various cities, as well as among male injecting drug users in Cebu City.¹² However, little data exist on KAPs related to HIV/AIDS among tertiary students and KAPs related to HIV/AIDS in Pampanga Province^[1].

Demographic and setting-specific surveys of knowledge, attitude, and practice related to HIV/AIDS can contribute empirical evidence for program planners and policymakers relevant and appropriate for the population subgroup and setting. This study's objective was to assess the level of knowledge, attitude, and practices related to HIV/AIDS prevention, control, stigma, and variations in these measurements by sex and year of study among college students in Pampanga Province, Philippines.

Methods

We conducted a school-based cross-sectional study from January to April 2018 at three public higher education institutions in Pampanga Province whose administrators gave consent for us to conduct the survey Pampanga State Agricultural University in Magalang (RS1), Mabalacat City College in Mabalacat (RS2), and City College of Angeles (RS3). Inclusion criteria included age 18 to 24 years and being in an undergraduate program.

We considered non-undergraduate students (e.g. high school and graduate students) to be ineligible for the study. Pampanga Province is located in Central Luzon Region, the Philippines, with a land area of 2,180.68 km² and a population of 2,014,019 as of 2010.

The capital city is San Fernando, while the highly urbanized city of Angeles is situated within the Province but is governed independently.

Study instrument development and outcome measurements

Our study instrument included a self-administered questionnaire. We drafted a questionnaire by adapting the MEASURE DHS program and the AIDS survey model and a document from the National HIV/AIDS programs for young people and an instrument used in Cameroon's previous study.

The study instrument included 5 sections Socio-demographic, academic, and family characteristics; Determinant indicators (source of information about HIV/AIDS and STDs, knowledge about HIV transmission, prevention, management); Source of information about HIV/AIDS; Attitudes towards people living with HIV/AIDS; Self-reported sexual health practices^[2]. English was the primary language of the instrument. We pre-tested the study instrument draft on students from local institutions other than

the 3 participating institutions who met the same inclusion criteria as the study participants and used their feedback to make further changes and finalize the study instrument.

Measurements of knowledge, attitude and practices related to HIV/AIDS

Most of our questions for measurement of knowledge, attitude and practices related to HIV/AIDS had dichotomous ("yes" vs "no") responses. Knowledge measurement questions included 13 questions, 7 questions related to HIV, AIDS transmission and misconceptions, question on the asymptomatic carrier, 4 questions on prevention or reduction of HIV transmission, and question on treatment of HIV. We gave a participant a score of 1 and 0 for each incorrect answer for each correct response. We then summed the knowledge score (possible range: 0-13 points)^[3]. We considered participants with the score of 7 or below as having a "low" level of knowledge, those with the score of 8-10 as having a "medium" level of knowledge, and those with a score of as having a "high" level of knowledge as our arbitrary cut-off point. Attitude measurement questions included on acceptance of people living with HIV (PLHIV) in an educational environment, and 3 questions on accepting people living with HIV in family and social settings. We assigned a score of 1 to each positive answer and 0 to each negative response. During data analysis, we considered participants with attitude scores below the arbitrary cut-off to be those with a "negative attitude" towards persons living with HIV, and those with attitude score at the arbitrary cut-off point or above to be those with a "positive attitude" towards persons living with HIV. Concerning practices related to HIV/AIDS, we included two questions: having the same sexual partner for the last 3 sexual encounters; sterilizing any form of piercing object before use. We avoided queries regarding the use of condoms to measure sexual practices since we are ordered not to emphasize condoms by the ethics committee; this is because of the catholic belief against condoms; the Philippines happen to be a catholic country use of condoms is not encouraged. The first question was intended as a proxy measure for sexual behaviours. In contrast, the second question was designed as a proxy measure for the safe use of sharp objects, with implication for hypodermic needles. We decided to use the second question in lieu of directly asking about injection drug use due to legal sensitivity during the study period.

Data collection

After identifying the target population and the institutions, we submitted the Angeles University Foundation Ethics committee's ethical clearance and informed consent. Each participating educational institution's administrators extensively reviewed the informed consent form to ensure the participants' rights and privacy before giving their permission. We also asked the institutions to provide a list of students, and we sampled students in the 1st to 4th years using systematic sampling. We requested the sampled students to assemble in the study hall on campus during the

semester, explained to them about the study and invited them to participate. The questionnaire was self-administered. In front of the questionnaire is the informed consent form that outlined the study aim and design, which the Participant must read, agreed and sign before filling up the questionnaire. We also informed the students that they have the right to decline to participate without any consequence^[4]. The majority of our study participants are above the age of 18; therefore, parental permission was not necessary to sign the consent form. This study was approved by the Angeles University Foundation Ethics Review Board on, ERC.

Data management and analyses

The entered data were de-identified to maintain participants' anonymity and confidentiality during data analyses and publication of the study findings. Descriptive statistical analyses included univariate analyses of the responses using frequency and percentages and mean and Standard Deviation (SD) or median and Inter-Quartile Range (IQR), depending on the distribution of the values as there were only two questions on high-risk practices related to HIV/AIDS and findings during initial data exploration, we also found high proportions of refusal to answer and non-responses in both questions. We performed all statistical analyses using the Statistical Package for the Social Science (SPSS), version 20.0 (SPSS Inc., Illinois, and USA). We then assessed the association between attitude toward people living with HIV/AIDS and the respondents' demographics using the Pearson Chi-square test of independence.

Results

Most participants were female, age less than 20 years, in Year 3 and identified as Roman Catholic (Table 1). Most

participants identified television as the most common information source about HIV/AIDS, followed by social media, sex education material, friends, and newspapers (Table 2).With regard to knowledge and misconceptions about HIV, AIDs transmission and prevention, although the majority of participants seemed to be aware of asymptomatic carriers of HIV and reduction of HIV transmission by condom use and abstinence, more than half of the participants also reported common misconceptions, including that washing one's genitals could help to prevent HIV transmission, that HIV could be transmitted through mosquito bites, and that HIV could be transmitted via respiratory fluids, sweat, or urine (Table 3). Concerning attitude, most participants reported acceptance of people living with HIV in school, family and social setting. However, each attitude question had a considerable of respondents who refused to answer. With regard to practices related to HIV transmission, approximately half of all participants who responded to the question related to sexual encounters reported having the same partner for the past three encounters, and approximately two-fifths said their sterilizing piercing objects before use. The majority of the participants either stated that they refused to answer the practice-related question or provided no response^[5]. Based on the knowledge and attitude scores distribution, more than three-fourths of the study participants had a low to medium level of knowledge related to HIV/AIDS. However, two-thirds had a positive attitude towards people living with HIV (Table 4). Attitude toward people living with HIV was the same for male and female respondents, although younger respondents had a higher proportion of those with a positive attitude than older respondents (Table 5).

Table 1: Characteristics of the Study Participants (n=563 participants).

Characteristic	Frequency (percent)
Gender	
Male	173 (30.7%)
Female	390 (69.3%)
Age Group	
<20 years	340 (60.4%)
20-22 years	135 (24.0%)
>22 years	88 (15.6%)
Year of Study	
1st year	95 (16.9%)
2nd year	78 (13.9%)
3rd year	308 (54.7%)
4th year	82 (14.6%)
Religion	

Roman Catholic	346 (61.2%)
Born Again Christian	137 (24.3%)
Methodist	8 (1.4%)
Muslim	1 (0.2%)
Others	63 (11.2%)
None	7 (1.2%)
No response	1 (0.2%)

Table 2: Source of Information on HIV/AIDS by the Respondents (multiple answers allowed, n=563 participants)

Source	Frequency (percent)
Television	356 (63.2%)
Social Media	253 (44.9%)
Sex Education Material	226 (40.1%)
Friends	133 (23.6%)
Newspaper	78 (13.9%)
Church	68 (12.1%)
Family	59 (10.5%)
Radio	54 (9.6%)

Table 3: Knowledge, Attitude and Practices Related to HIV/AIDS Transmission, Prevention and Control (n=563 participants).

Question Domain and Sub-domains	Correct Response / "Yes" (%)	Incorrect Response / "No" (%)	Refused to Answer	No Response
HIV transmission				
HIV cannot be transmitted by sharing bathroom, meals, utensil and swimming pools.	360 (63.9%)	203 (36.1%)	N/A	N/A
HIV cannot be transmitted through contact with HIV positive person saliva, tears, sweat, or urine.	307(54.5%)	256 (45.5%)	N/A	N/A
Coughing and sneezing from HIV positive person will not spread HIV.	262 (46.5%)	301 (53.5%)	N/A	N/A
HIV will not be transmitted through mosquito bites.	250 (44.4%)	313 (55.6%)	N/A	N/A
HIV and STDs can be transmitted easily through anal sexual activities.	342 (60.7%)	221 (39.3%)	N/A	N/A
HIV can still be transmitted by having sex with a virgin (a person who has never had sex before).	278 (49.4%)	285 (50.6%)	N/A	N/A
A person cannot get HIV virus from witchcraft or other supernatural means.	348 (61.8%)	215 (38.2%)	N/A	N/A
Asymptomatic carriers				
A healthy looking person can be a HIV carrier and can still transmit HIV.	422 (75.0%)	141 (25.0%)	N/A	N/A

Prevention and reduction of HIV transmission				
Washing one's genitals/ private parts after sexual activities cannot keep a person from getting HIV/ STDs.	243 (43.2%)	320 (56.8%)	N/A	N/A
HIV/STDs transmission can be reduced by having sexual activities with just one uninfected partner.	281 (49.9%)	282 (50.1%)	N/A	N/A
Use of protective measure like condoms will help to reduce the chance of getting HIV and STDs during sexual activities.	326 (57.9%)	237 (42.1%)	N/A	N/A
Risk of HIV and STDs infection can be reduced by abstaining from sexual intercourse.	342 (60.9%)	220 (39.1%)	N/A	N/A
Involving in any risky sexual activities will increase chance of HIV infection.	70 (12.4%)	441 (78.3%)	38 (6.8%)	14 (2.49%)
Using of any form of intoxicating substance will increase risk of HIV infection.	13 (2.31%)	124 (22.2%)	381 (67.7%)	45 (7.99%)
Using any injectable illegal drugs will increase the risk of HIV Infection.	12 (2.31%)	342 (60.5%)	173 (30.7%)	36 (6.39%)
Faithfulness to one uninfected partner will reduce the chance of getting infected with HIV	291 (51.6%)	58 (10.0%)	181 (32.2%)	33 (5.86%)
Staying away from any form of sexual activities before marriage will help reduce risk of getting infected with HIV.	277 (49.2%)	111 (19.2%)	147 (26.1%)	28 (4.97%)
Having HIV test within every 12 months will help keep check of your health status.	21 (3.73%)	479 (85.8%)	46 (8.2%)	17 (3.02%)
Using protective measure during your last 3 sexual intercourse will help reduce risk of getting infected with HIV.	63 (11.1%)	139 (24.9%)	322 (57.2%)	39 (6.93%)
Treatment of HIV				
At the present, HIV/AIDS has no cure.	263 (46.7%)	300 (53.3%)	N/A	N/A
Acceptance of people living with HIV in an educational environment				
HIV positive person should be allowed to continue his or her teaching in school.	280 (49.80%)	158 (28%)	125 (22.2%)	N/A
HIV/AIDS positive student should be allowed to continue his/her study in school.	372 (66.1%)	101 (15.9%)	101 (18.0%)	N/A

Acceptance of people living with HIV in family and social settings

We should care for relative and friends in our community who are living with HIV/AIDS.	417 (74.1%)	66 (11.8%)	80 (14.1%)	N/A
We should maintain our friendship with our friends that are HIV positive.	452 (80.2%)	34 (6.1%)	77 (13.8%)	N/A
We should not buy items from a shopkeeper or food seller that is HIV positive.	159 (28.3%)	132 (48.3%)	132 (23.4%)	N/A
Practices				
Your last three sexual encounters were with the same person.	102 (18.1%)	125 (22.0%)	293 (52.0%)	43 (7.6%)
Sterilizing any form of piercing object before using it on yourself.	105 (18.6%)	158 (28.1%)	264 (46.9%)	36 (6.4%)

Table 4: Levels of Knowledge and Attitude Related to HIV/AIDS Transmission, Prevention, Control and Stigma

Domain	No. And %
Knowledge	
Low	239 (42.5%)
Moderate	203 (36.1%)
High	121 (21.5%)
Attitude	
Negative	208 (36.9%)
Positive	355 (63.1%)

Table 5: Association between demographics of the respondents and attitude towards people living with HIV (n=563 respondents)

Demographics	Negative	Positive	P-value*
Gender			
Male (n=173)	62 (35.8%)	111 (64.2%)	0.879
Female (n=390)	144 (36.9%)	246 (63.1%)	
Age group			
20 years and below (n=341)	116 (34.0%)	225 (66.0%)	0.048
21-22 years (n=135)	49 (36.3%)	86 (63.7%)	
23 years and above (n=87)	42 (48.2%)	45 (51.8%)	

Discussion

We assessed knowledge, attitude, and practices related to HIV/AIDS among higher education students in Pampanga, Philippines. The students received information on HIV/AIDS mainly from the television and social media, although sex education material was also a relatively common source. Nonetheless, misconceptions about HIV/AIDS transmission remained (e.g., coughing will spread HIV, washing one's genitals can help prevent transmission), implying that lack of HIV-related knowledge remained. Most study participants indicated a positive attitude towards people living with HIV/

AIDS, and younger students were more likely than older students to express such attitude. HIV-related practices, however, could not be assessed with certainty due to the high proportion of those who refused to answer the questions. The television, social media, and sex education materials were the most common sources of information about HIV/AIDS among our study respondents, which is similar to a previous study among secondary school students in Nigeria, but differed from another study in Cameroon. In that regard, the Philippines is a Catholic country that does not allow any form of sex education, especially the use of condoms. Most of the families in the Philippines are very conservative in

expressing issues related to sex education. The findings of the study, particularly that sex education materials were mentioned as the third most common source of information, may be an indication of a changing social attitude toward sex education, just as the Pope has suggested that condom could be regarded as a method of HIV transmission and not just for the purpose of contraception alone. The level of HIV/AIDS-related knowledge in our study differed from a previous survey of Nubed and Akochere and Thanavanh and colleagues, which found a higher level of knowledge among students using a similar instrument. Misconceptions about HIV transmission reported by our respondents are concerning, although they may not be unique to our study setting. However, a number of caveats exist in the study. We grouped all the bodily fluids with no viral loads ("saliva, tears, sweat, or urine"). The question did not allow us to distinguish the type of bodily fluid that was most commonly misconceived, limiting the usefulness of the response in this question and other questions with similar wording. The questions also did not precisely measure knowledge regarding the probability of transmission for low-risk sexual activity (e.g., oral sex and manual stimulation) or emerging issues (e.g., pre-exposure and post-exposure prophylaxes), which potentially had a direct implication on the promotion of safe sex. Future studies should make considerations for these limitations and emerging issues. Most participants reported a positive attitude towards people living with HIV, which differed slightly compared to a previous study.¹⁹ A number of factors could have influenced the responses to these questions. There is a controlling element of 'hiya' in Filipino culture, essentially defined as a sense of modesty that made one refuse to disagree with showing hostility openly for fear of causing offence. The sense of 'hiya' could be considered a proxy for social norms for not reporting stigma or intolerance, which might have influenced our study's responses. Future studies may consider other methods to measure attitude, such as introducing hypothetical scenarios on stigma in various settings and ask the participants about their potential courses of action, allowing for multiple answers. Regarding practices with implication on HIV transmission, the majority of participants refused to answer each question. Among those who answered the questions, approximately half of the participants reported engaging in safe behaviour, which implied that the other half did not. Refusal to answer the question could be due to the question's socially / legally sensitive nature, implying that social desirability bias could have influenced self-reported practice responses. Alternatively, students could have answered "refused to answer" or not respond because they were not sexually active or had no history of using hypodermic piercing objects. Still, the response of "not applicable" were not available in the questionnaire. Future studies should consider modifying the study instrument to lessen this ambiguity.

Limitations

This is one of the first studies to assess knowledge, attitude and practices related to HIV/AIDS among tertiary students in

Central Luzon and contributed empirical evidence that should be of interest to policymakers and health promotion program planners. However, a number of limitations exist. Firstly, the questionnaires were self-administered, and the influence of social desirability was likely non-negligible. Secondly, the wording of the questions and the dichotomous answers limited the participants' level of detail of information. Lastly, the study only included students who were actively enrolled at tertiary education institutions 18 to 24 years of age. This study's findings may not be generalizable to other populations, including youths who were not enrolled in tertiary education or those with lower educational attainment.

Conclusion

We conducted a school-based cross-sectional study at three tertiary education institutions in multiple cities in Pampanga Province, Central Luzon Region, the Philippines. We found that most respondents had a low to medium level of knowledge regarding HIV/AIDS, and a relatively high proportion of participants had misconceptions regarding HIV transmission. However, most participants reported a positive attitude towards people living with HIV. Information related to sexual practices towards HIV/AIDS transmission and prevention was limited. Social desirability, religious beliefs, and cultural norms might have influenced the responses to the questions, limiting the amount of information available from the respondents regarding our study findings' usefulness. The association between respondent demographics with knowledge and attitude were significant in this study.

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Conflict of Interest

My co-author and I declare no conflict of interest.

Ethical Approval and Participant Informed Consent

This study was approved by the Angeles University Foundation Ethics Review Board on Jan 29 2018, ERC Ref No: 037. The administrators of each participating educational institution also extensively reviewed the informed consent form to ensure the participants' rights and privacy were secured.

Authors Contribution

BCJ: Conceptualization, Project Administration, Formal Analysis. WW: Writing- review and editing. RK: Conceptualization, Methodology and Adviser. BCJ, WW:

original draft. All authors have read and approved for the submission of this manuscript

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