HIV/AIDS-RELATED KNOWLEDGE, ATTITUDES AND PERCEPTIONS: A CROSS-SECTIONAL HOUSEHOLD SURVEY

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Abstract. This study aimed to assess knowledge of and attitudes toward HIV/AIDS among a community in a semi-urban setting in Malaysia, to determine factors affecting perceptions toward people living with HIV in the community, and to provide baseline information for planning preventive measures against HIV/AIDS. This cross-sectional study was conducted in August 2009. Two hundred sixty-two household members were interviewed with a semi-structured questionnaire. Most respondents (232; 88.5%) had heard of HIV/AIDS. Only a few respondents (6; 2.6%) could correctly answer all the questionnaire items. Misconceptions about disease transmission were seen among surveyed participants, such as the belief HIV/AIDS can be contracted from saliva (104; 44.8%), mosquito bites (95; 40.9%) or casual touch (86; 37.1%). A multivariate linear regression model showed better perceptions towards people living with HIV depend on an improved knowledge of HIV/AIDS transmission. Current data emphasize the need to scale up HIV/AIDS education incorporating the mode of disease transmission.

Key words: HIV/AIDS, knowledge, attitude, perception, Malaysia

INTRODUCTION

Globally, an estimated 33 million (30-36 million) people were living with human immunodeficiency virus (HIV) in 2007 (UNAIDS, 2008). Despite progress made in scaling up response over the past decade, the HIV pandemic remains the most serious infectious disease challenge to global public health (WHO, 2007, 2009a); consequently, calls have been made for a more pragmatic approach toward containing the disease (Asante, 2007).

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The first 3 cases of HIV were diagnosed in Malaysia in 1986 (Department of Public Health, Malaysia, 2008). Since then, the rise in HIV/AIDS has continued unabated (Ahmd *et al*, 2009). By December 2007, the estimated number of people living with HIV (PLHIV) in Malaysia was 69,000, out of a total population of 25.3 million (Mesquita *et al*, 2008; UNGASS, 2008). The majority of reported cases were in the 20-39 years old age group, the younger and potentially more productive segment of the country's population. Most cases are detected through screening conducted at drug rehabilitation centers, prisons, antenatal clinics, and tests done on those whose spouses are HIV-positive. In most countries, HIV is related to behavior

that exposes individuals to the virus and increases the risk of infection. Information about HIV and the type and frequency of risk behaviors related to the transmission of HIV is important for identifying and better understanding populations at higher risk for contrasting HIV (UNAIDS, 2008). The disease is no longer limited to the high risk urban population but has spread to rural areas as well (Meundi *et al*, 2008). In Malaysia, household-based surveys undertaken in rural or semi-urban settings are still limited. While national surveillance is important, ad hoc evaluations of the community are equally important to respond to rapid changes in the epidemic and enable relevant and appropriate interventions (WHO, 2009b). The two main questions addressed here are: 1) What is the current level of knowledge of and attitudes towards HIV/AIDS among a semi-urban community?; and 2) What are the community's perceptions towards PLHIV? To answer these questions, the present study was performed with three objectives: 1) to assess the knowledge of and attitudes toward HIV/AIDS among the community in a semi-urban setting, 2) to determine factors affecting perceptions towards people living with HIV in the community; and 3) to provide baseline information for better planning of preventive measures for HIV/AIDS.

MATERIALS AND METHODS

Study design and study population

A descriptive, cross-sectional study design was used for this survey conducted in August 2009 in a semi-urban community of Mantin, a northern town in Serembam District, Kuala Lumpur, Malaysia. The population at the time of this study was 29,737. A convenience sample of 262 households was interviewed. The interviewers were undergraduate medical students in semester 5 studing at the International Medical University (IMU) (*ie*, ME 2/07 cohort). They were trained to administer the questionnaire. Questionnaire items were developed after an extensive literature review and consultations with the faculty members.

Study tools

The questionnaire consisted of pretested-semi structured questionnaires and was translated verbally from English to the local language. The respondents were asked whether the statement read by the interviewer should be answered yes or no, true or false or do know or do not know. Verbal consent was obtained prior to beginning the interview and confidentiality was assured, as the interviewers did not record either the names or addresses of the respondents. The respondents had the right to refuse to participate or refuse to answer any question. Permission to conduct the present survey was jointly obtained from the IMU and from the medical director of the Mantin Clinic (Klinik) as a community-orientated learning program.

The survey included 3 broad categories of questions: 1) general information, 2) knowledge of and attitudes towards HIV/AIDS, and 3) perceptions towards PLHIV. The verbatim questions are available on request from the corresponding author. General information collected were age, gender, occupation, ethnicity, marital status, education level, occupation and household monthly income. HIV/AIDS-related knowledge scores of the respondents were broadly categorized into 16 items, including mode of transmission (8 items), prevention of HIV (7 items) and whether HIV is curable or not (1 item). Scores regarding perceptions towards

PLHIV included 5 items, addressing willingness to 1) shake hands, 2) work with PLHIV, 3) stay in the same house, 4) share food and drink and 5) care of PLHIV. Each questionnaire item answered correctly conferred a score of 1.

Statistical analysis

Descriptive statistics were used for the profiles of the respondents. Qualitative data were handled with dummy variables to transform them into numerical data where applicable. Statistical significance for comparison of survey responses was calculated using the Student's *t*-test.

Using the scores for perceptions towards HIV/AIDS as a dependent variable, a multivariate linear regression model incorporating the exploratory variables identified by univariate analysis was developed. A stepwise method was applied to eliminate non-significant variables. A *p*-value of <0.05 was considered statistically significant. Data were entered into an Excel spreadsheet and analyses were performed with SPSS version 16.0 statistical software (SPSS, Chicago, IL).

RESULTS

Socio-demographic characteristics

Table 1 presents selected characteristics of participants in the present study. A total of 262 participants were interviewed, of whom 176 (67%) were females. Most of the respondents were currently married (211; 80.5%). The average age of the surveyed respondents was 41.7 years (± SD 16.5). More than half the participants had completed at least a secondary education (182; 69.5%), and half (137; 52.3%) were dependents (housewives or not having a paying job). The median monthly household income of the surveyed respondents was 1,700 Malaysian ringgit (interquartile range: 1,000-3,000) (USD 1 = 3.45 Malaysian ringgit at the time of survey). In the present survey, most respondents (232; 88.5%) had heard of HIV/AIDS.

Table 1
Selected characteristics of respondents (n = 262).

Variables	Number (%)
1. Age in years (mean ± SD)	41.7 (±16.5)
2. Female gender	176 (67)
3. Currently married	211 (80.5)
3. Ethnicity	
Malay	78 (29.8)
Chinese	113 (43.1)
4. Education level	
Secondary and above	182 (69.5)
6. Occupation	
Dependent/not working	182 (69.5)
7. Household income (in Ringgit)[a]	1,700 (1,000-3,000)[b]
8. Heard of HIV/AIDS	232 (88.5)

[a]1 USD = 3.48 Ringgit at time of study; [b]IRQ: Inter quartile range

Knowledge of and attitudes towards HIV/AIDS

The mean knowledge score of the respondents was 10.71 (±SD 3.9). Out of 232 respondents who had heard about HIV/AIDS, most (198; 85.3%) knew blood transfusions transmit HIV/AIDS, followed by sex (192; 82.8%), sharing needles (187; 80.6%), and maternal child transmission (175; 75.4%). More than one-third of respondents (80; 34.5%) regarded AIDS as a treatable disease. The majority of respondents (154; 66.4%) had never heard of sexually transmitted infections (STIs) other than HIV/AIDS (data not shown). The most common sources of information about HIV/AIDS among participants were mass media (185;79.7%), while a few of respondents obtained HIV/AIDS related

Table 2
Knowledge of and attitudes towards HIV/AIDS among respondents who had heard of HIV/AIDS (n = 232).

Description	Number (%)
Mean knowledge score [a]	10.71 (±3.96)
Respondents who correctly identified all 16 points	6 (2.6)
Misconceptions about transmission	
Via mosquito bite	95 (40.9)
Via saliva	104 (44.8)
Via casual touch	86 (37.1)
Respondents who correctly identified preventive measures (7 items)	37 (15.9)
Identified condom as a preventive measure	78 (33.6)
Respondents who correctly identified treatment aspects (1 item)	124 (53.4)
Willingness to be tested	177 (76.3)
Confidentiality of the test result	134 (57.8)

[a] mean (± SD)

information from health care providers (32;13.8%).

Only a few respondents (6; 2.6%) correctly answered all items. Misconceptions about disease transmission were observed among surveyed participants. Mosquito bites (95; 40.9%), saliva (104; 44.8%), and casual touch (86; 37.1%) were incorrectly regarded as modes of transmission. However, more than half the respondents (154; 66.4%) correctly identified HIV/AIDS preventive measures. Nearly half the sampled population (108; 46.6%) did not think a condom was useful in preventing transmission of HIV (Table 2).

Statistically significant variables for differences between participants with a higher mean knowledge score and a lower mean knowledge score were education level of secondary school or above (t = 7.1, p < 0.001), age ≥ 40 years (t = - 3.34, p < 0.001), monthly income >1,700 ringgits (t = 5.3, p < 0.001), willingness to be tested (t = 4.9, p <0.001) and willingness to keep the results confidential (t = 2.19, p = 0.03) (Table 3). Younger subjects with a higher education level and a higher income level had a better knowledge about HIV/AIDS. Respondents with favorable attitudes towards HIV/AIDS, such as willingness to be tested for HIV and to undertake confidential serological results, had higher mean knowledge scores.

Perceptions towards HIV/AIDS

Overall, very few of the respondents (6; 2.6%) among the surveyed population passed the threshold score for favorable perceptions toward PLHIV. Although more than half of the respondents (162; 62.9%) were willing to employ or work with PLHIV, less than two thirds (64; 27.6%) were willing to share food or drink with them (Table 4).

Univariate analysis showed age (r = -0.16, p = 0.006), secondary school or higher education level (r = 2.68, p <0.001) and knowledge scores (r = 0.362, p <0.001) were associated with perception scores. As hypothesized, being younger with a higher level of education and a higher level of HIV/AIDS knowledge were associated with favorable perceptions towards

Table 3
The mean knowledge score by characteristic in respondents who had heard about HIV/AIDS (n = 232).

Description	Knowledge score mean ± SD	t-test (p-value)
Age		
≥ 40 years	9.81 (4.4)	3.34 (<0.001)
< 40 years	11.5 (3.36)	
Education level		
≥ Secondary	11.74 (3.27)	7.1 (<0.001)
< Secondary	8.0 (4.35)	
Gender		
Female	10.6 (3.98)	0.54 (0.59)
Male	10.9 (3.93)	
Occupation		
Not working	10.69 (4.02)	0.92 (0.93)
Working a paid job	10.74 (3.9)	
Income [a]		
≥ 1,700	12.09 (3.2)	5.3 (0.001)
< 1,700	9.38 (4.24)	
Willingness to be tested		
Yes	11.4 (3.55)	4.9 (<0.001)
No	8.5 (4.44)	
Confidentiality of the test result		
Yes	11.2 (3.8)	2.19 (0.03)
No	10.05 (4.1)	

[a] n = 220

Table 4
Perceptions towards HIV/AIDS among respondents who had heard of HIV/AIDS (n = 232).

Variables	Number (%)
Respondents with complete perception score (5/5)[a]	6 (2.5)
Willingness to shake hands with PLHIV	162 (69.8)
Willingness to share food/drink	64 (27.6)
Willingness to employ/work with PLHIV	146 (62.9)
Willingness to stay in the same house	107 (46.1)
Willingness to care for a relative who is known HIV positive	11 (4.7)

[a] Who correctly answered all 5 items.

PLHIV. However, multivariate regression analysis showed only a knowledge of HIV/AIDS was significantly and positively associated with perceptions towards HIV/AIDS. The regression model passed all relevant diagnostic tests as indicated in Table 5. A better level of knowledge about HIV/AIDS, resulted in more favorable perceptions towards PLHIV. However, this model explained only 14% of the variability.

Table 5
Results of regression analysis (Dependent variable = perception score).

Variable	Coefficient (standard error)	*t*- test (*p*-value)
Intercept	0.662 (0.274)	2.42 (0.17)
Knowledge score	0.137 (0.24)	5.7 (< 0.001)
Diagnostic tests:		
D-W statistic (calculated) = 2.072		
VIFs <2.0 for all variables		
F- test = 32.79 (p <0.001)		
Adjusted $R^2 = 0.14$		

DISCUSSION

These community-based survey results provide insight into knowledge, attitudes and perceptions towards HIV/AIDS. Findings from the present analysis should be useful for monitoring and evaluating HIV/AIDS control programs in general, and health education components of HIV/AIDS in particular, in the Mantin area.

The significant relationship between education level and knowledge scores about HIV/AIDS was consistent with the findings of a study in India (Meundi *et al*, 2008). This could be due to a better opportunity for access to information and a better understanding of the disease among educated persons. The poor knowledge of HIV prevention methods among females and rural inhabitants could be due to poor literacy among these groups and reduced access to HIV/AIDS education material (Chiang *et al*, 2009). However, even a high level of knowledge does not necessarily lead to safe preventive behavior (Jahanfar *et al*, 2009). Further studies of HIV/AIDS related behavior are needed. Our results also provide insights into misconceptions related to transmission of HIV/AIDS among participants. Misconceptions about transmission of the disease are probably due to reflections about integrated health education targeted at more than one disease. For example, health talks on both dengue fever and HIV/AIDS took place during the same session, which could propably confuse the listener. Hence, individuals may have incorrectly concluded that HIV/AIDS is transmitted by mosquito bite. This hypothesis needs to be further investigated. Studies have shown misconceptions must be taken into account when developing an education program for professionals and the public (Reis *et al*, 2005). Some surveyed participants believed HIV/AIDS is a curable disease. Our findings in this aspect are comparable with the results of a national survey in Malaysia (Wong *et al*, 2008), and a survey of selected entry level medical students in India (Chatterjee *et al*, 2001), 18.1% and 20.3%, respectively. This misunderstanding needs to be corrected, since a belief that HIV/AIDS is curable is a known risk factor for disease transmission (Wong *et al*, 2008). Studies have found HIV/AIDS related misconceptions are found even among current and future health care professionals, including physicians, nurses, midwives (Reis *et al*, 2005) and pharmacy students (Ahmd *et al*, 2009).

Our findings show the major source of information about HIV/AIDS is mass media. This may be due to the effect of

mass media campaigns in Malaysia aimed at raising awareness (WHO, 2009b). Information from the health care provider was relatively low in surveyed participants. The Mantin Town is a relatively small community making it easier to disseminate health related information. Patients with STIs serve as a risk indicator for HIV infection since some STIs increase the risk of contracting HIV infection (WHO, 2009b). It is important to adopt a syndrome approach to the clinic rather than being concerned only with HIV/AIDS.

During the current study, approximately half of participants desired to keep their test results confidential. This may be explained by fear of stigma, discouraging individuals from disclosing their seropositive status to their sexual partners, family and friends. In a study in four Nigerian states, discriminatory behavior and attitudes towards PLHIV were observed among a significant proportion of 1,021 health care professionals (Reis *et al*, 2005). Discriminatory behavior toward PLHIV may be at least partly related to an incorrect knowledge about HIV/AIDS among the public. For example, saliva is incorrectly regarded as a mode of transmission and may lead to reluctance of individuals to share food and drink with PLHIV. An incorrect understanding of the modes of HIV transmission also leads to fear of transmission from casual contact. This fear, combined with a better understanding of the deadliness of the disease, can lead to physical and social ostracization of PLHIV and other forms of discrimination. Furthermore, discriminatory attitudes may be related to results arising from transgressions of social norms, such as socially unsanctioned sexual activity (Crandall *et al*, 1995). HIV prevention strategies depend on the twin efforts of care and support for those living with HIV, together with targeted prevention for people at risk or vulnerable to the infection (UNAIDS, 2008). The data suggests the need for an integrated approach to improve the community's perceptions towards HIV/AIDS. It is important to be aware stigmatization and discrimination obstruct HIV/AIDS interventions (Asante, 2007), and anti-stigma efforts should involve local community members and extended family members in conjunction with information-based awareness programs (Sivaram *et al*, 2004).

There were limitations with the present study. Being a sample of convenience, generalization is limited to the study population in particular**.** A back-translation of the questionnaire from the local language to English was not attempted. Hence, accuracy is a concern. Furthermore, a cross-sectional survey of this nature may only capture a snapshot of information about the participants. The findings may change over time. Most respondents were dependents due to the timing of the survey being conducted during office-hours. The level of knowledge about and attitudes and perceptions towards HIV/AIDS in this study may differ from other household members. Our findings may have either overestimated or underestimated the level of knowledge and discriminatory attitudes in the community at large. Due to the subject matter of the survey, the responses may not actually reflect the actual practices and attitudes of the respondents, despite the confidentiality of the information provided. A test-retest survey for reliability was not feasible in the light of the limited resources. The variables included in the regression analysis may have been inadequate to detect important factors predicting perceptions towards PLHIV. Further studies incorporating more variables are needed.

The majority of respondents were currently married women. Females in the majority of homes take physical and psychosocial care of the family. Reflections from this group would constitute important baseline information. Malaysia needs to halt and reverse the spread of HIV/AIDS. Considerable challenges lay ahead (WHO, 2009b). The findings of the present survey are useful as baseline information for decision makers and health care planners to enable more relevant and effective health interventions.

The health education program is the main strategy for the prevention and control of HIV/AIDS. The main objectives of the education and promotion program are to provide facts about HIV/AIDS and to foster a positive attitude towards HIV/AIDS prevention (Department of Public Health, Malaysia, 2008). The apparent discriminatory perceptions towards PLHIV highlight the need for a massive health education program regarding HIV/AIDS. In this context, education of trainers is an important step, since incomplete knowledge about HIV transmission among health care professionals has been documented (Fido *et al*, 2002; Reis *et al*, 2005).

This survey shows deficient knowledge and a set of prevailing attitudes that are apt to adversely influence HIV/AIDS transmission in the community.

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