

# Hospital pharmacists' knowledge about and attitude toward HIV/AIDS and patients living with HIV/AIDS in Kedah, Malaysia

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**Submitted:** 22 September 2011

**Accepted:** 19 February 2012

Arch Med Sci 2013; 9, 6: 1117–1124

DOI: 10.5114/aoms.2012.30953

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## Abstract

**Introduction:** The current study aims to explore the knowledge, attitude, and perception of hospital pharmacists towards HIV/AIDS and patients living with HIV/AIDS (PLWHA) in the state of Kedah, Malaysia.

**Material and methods:** This was a cross-sectional study conducted among the hospital pharmacists in three government hospitals in Kedah, using a self-administered 43-item questionnaire. Data analysis was done using non-parametric and multinomial regression.

**Results:** A total of 75 respondents participated in this study, resulting in a response rate of 60.8%. The majority were found to be well aware of the causes of HIV/AIDS. However, about 34 (45.3%) believed erroneously that HIV/AIDS cannot be transmitted through tattooing or body piercing. Nearly 25 (33.3%) of the respondents believed that preventing the use of intravenous drugs may not be effective to prevent HIV/AIDS and endorsed social isolation as a measure to prevent HIV/AIDS. The majority (66.6%) had negative attitudes and about 20% held extremely negative attitudes. Findings from regression modelling revealed that hospital ( $-2 \log \text{likelihood} = 215.182, \chi^2 = 18.060, Df = 8, p = 0.021$ ) and gender ( $-2 \log \text{likelihood} = 213.643, \chi^2 = 16.521, Df = 8, p = 0.035$ ) were more likely to affect the attitudes of respondents.

**Conclusions:** Overall, more than one third of the respondents were found to have negative attitudes towards PLWHA. Gender, job experience, and hospitals with more HIV/AIDS patient visits were the main factors affecting attitudes.

**Key words:** hospital pharmacist, knowledge, attitude, human immunodeficiency virus/acquired immunodeficiency syndrome, transmission.

## Introduction

Human immunodeficiency virus (HIV) infection and acquired immunodeficiency syndrome (AIDS) are among the greatest public health challenges around the globe. In spite of advances in modern medicine, there is a lack of therapeutic choices that assure the cure or prevent further progression of disease and its complications. In addition, the life-threatening nature of the disease has resulted in negative attitudes and stigma among the public and health care providers toward patients living with HIV/AIDS (PLWHA) [1]. Negative attitudes of the health professional may result in

labelling or discrimination [2, 3]. The health development network and Global Network of People Living with HIV/AIDS 2004 has defined stigma toward HIV/AIDS patients as the feelings or actual response to a person, group of persons, community or society that describes or portrays a sense of refusal, denial, dishonour, or underrating that results in social distance. Cognitive approaches adopted in medical education are among the oldest identified reasons for stigma among health care providers toward PLWHA [5], and nurses showed an increase in the level of stigma after having had lectures on HIV/AIDS [6, 7]. Furthermore, those medical professionals with higher medical qualifications and greater experience, occupying higher positions, were found to express/possess more negative attitudes towards PLWHA. Other international studies reported a lack of understanding in the working environment as a factor creating a situation of fear that augments the stigma toward PLWHA [8-10].

In recent years, the role of pharmacists in health care settings has developed enormously. Nowadays, pharmacists play a vital role as health care team members in pharmaceutical care in hospital and community settings. Pharmacists clearly play a role in the quality of care and treatment of HIV/AIDS patients (i.e., educating patients about medications, adherence counselling, and assessing drug-drug interactions) [11, 12]. However, in many developing nations, pharmacists are still unable to play the expected role because of a lack of training or skills/clinical expertise for the treatment of PLWHA [13, 14].

### Role of pharmacists in the management of HIV/AIDS patients in Malaysia

Malaysia is one of the fastest growing Southeast Asian nations, with an estimated population of 28 million [14]. The majority of the population is comprised of Malays, Chinese, and Indians. In Malaysia, a massive development in the pharmacy profession has been noted. The traditional role of the pharmacist has been modified, and opportunities exist for the pharmacist to play a vital role in the direct patient care of patients. It is envisioned that by 2020 all Malaysian pharmacists will be offering effective roles in direct patient care in both private and public settings [15]. As per the Malaysian AIDS Council (MAC), there were 3692 new cases reported in the year 2008, and the number is expected to grow higher in coming years [16]. Internationally, many studies have explored the attitudes of health care team providers toward HIV/AIDS patients [1, 6-8]. However, in Malaysia the literature lacks evidence of the attitudes of physicians, pharmacists, and nurses towards PLWHA. The current study will be the first effort to explore hospital pharmacists' knowledge, attitudes, and perceptions towards HIV/AIDS and PLWHA in the state of Kedah.

## Material and methods

A cross-sectional study was designed, and a self-administered questionnaire was distributed among the hospital pharmacists in Kedah government hospitals. Kedah (Darul Aman) is the 8<sup>th</sup> largest state of Malaysia. The estimated population of Kedah is 1.8 million, mainly comprising Malay (75.5%), Chinese (14.2%), Indians (1.9%), and expatriates (1.5%). There are 9 public hospitals in Kedah, i.e. Hospital Sultanah Bahiyah, Hospital Kulim, Hospital Baling, Hospital Sik, Hospital Langkawi, Hospital Yan, Hospital Jitra, Hospital Kuala Nerang, and Sultan Abdul Halim Hospital.

### Study sample

Of out 9, only 3 hospitals (Hospital Sultan Abdul Halim, Hospital Sultanah Bahiyah, and Hospital Kulim) had a memorandum of agreement with the Asian Institute of Medical Science and Technology (AIMST). The pharmacists working in these three hospitals in the state of Kedah were included in this study. A universal sampling method was adopted, with the entire hospital pharmacist body being given equal opportunity to participate in this study. A total of 130 questionnaires were distributed among the hospital pharmacists working in these three hospitals. Seventy-nine of the respondents expressed willingness to participate.

### Validity and reliability of the study tool

The content validation of the questionnaire was performed by professionals at the Department of Pharmacy Practice, AIMST, and the Department of Pharmacy Practice, College of Clinical Pharmacy, King Faisal University. A total of 43 items were finalized for this study. In order to test the reliability of the study tool, a pilot survey was done among 20 hospital pharmacists working in other states of Malaysia. The Reliability scale was applied to assess the reliability of the study tool; Cronbach's  $\alpha$  for the study tool was 0.67. The respondents who participated in the pilot group were not included in the study sample.

### Contents of study tool

As noted, a 43-item questionnaire was used to evaluate pharmacists' knowledge about and attitudes towards PLWHA. The entire study tool was comprised of six sections.

Section one consisted of five questions that covered the demographic information of the respondents, i.e., age, gender, marital status, job experience, and hospital affiliation.

Section two covered general knowledge about HIV/AIDS. Five questions were presented in the section, i.e., *What does the abbreviation HIV stand for?* [Correct/Incorrect], *What does the abbreviation AIDS*

**Table I.** Demographic characteristics of respondents

Demographics		N (%)
Race	Malay	21 (26.6%)
	Chinese	23 (29.1%)
	Indian	6 (7.6%)
	Not disclosed	29 (36.7%)
Age range (23-51 years) Mean 28 ±5.8 years	23-25	18 (24.0%)
	26-30	44 (58.7%)
	31-35	9 (12.0%)
	48-51	4 (5.3%)
Gender	Male	6 (8.0%)
	Female	69 (92.0%)
Job experience [years]	1-2	26 (34.7%)
	3-5	33 (44.0%)
	6-7	8 (10.7%)
	8-10	4 (5.3%)
	Over 20	4 (5.3%)
Marital status	Single	46 (61.3%)
	Married	28 (37.3%)
	Divorcee	1 (1.3%)
Hospital	Hospital Sultan Abdul Halim, Sungai Petani	43 (57.3%)
	Hospital Sultanah Bahiyah, Alorstar	25 (33.3%)
	Hospital Kulim, Kulim	7 (9.3%)
How many HIV patients did you come across in the last 12 months?	1-10	42 (56.0%)
	11-20	16 (21.3%)
	30-60	9 (12.0%)
	70-100	8 (10.7%)

**Table II.** Pharmacist perceptions toward the possible causes of HIV infection

Statement	Yes	No	Variable	Mean score	Value of p
1. Sexual intercourse without a condom with HIV-infected person	75 (100.0%)	0	Gender	Male	12.16 ±0.75
				Female	12.52 ±2.01
2. Sharing needle with HIV-infected person	74 (98.7%)	1 (1.3%)	Experience [years]	1-2	12.26 ±1.48
				3-5	12.42 ±2.52
3. Transfusion of HIV-infected blood or receiving HIV-infected organ	74 (98.7%)	1 (1.3%)		6-7	12.75 ±0.75
				8-10	12.50 ±1.29
				Over 20	14.00 ±0.0
4. Having sex with multiple sexual partners with unknown HIV status	67 (89.3%)	8 (10.7%)			
5. From an HIV positive mother to her fetus	71 (94.7%)	4 (5.3%)			
6. Sharing personal items such as shaving blades	57 (76.0%)	18 (24.0%)			
7. Breast-feeding from an HIV-infected mother	56 (74.6%)	19 (25.3%)	Marital status	Single	12.32 ±2.31
				Married	12.70 ±1.08
				Divorcee	14.00 ±0.0
8. Having tattoo or body piercing	41 (54.7%)	34 (44.3%)			
9. Kissing an HIV-infected person [mouth to mouth/French kissing]	67 (89.3%)	8 (10.7%)	Race	Malay	12.34 ±2.87
				Chinese	12.28 ± 1.30
				Indian	12.0 ± 1.09
10. Mosquito bites	8 (10.7%)	67 (89.3%)			
11. Sharing/eating a meal with an HIV-infected person	1 (1.3%)	74 (98.7%)	Age [years]	23-25	12.22 ±1.66
				26-30	12.38 ±2.21
12. Using a public swimming pool	4 (5.3%)	71 (94.7%)		31-35	12.88 ±1.05
				48-51	14.00 ±0.0
13. By using a public toilet	5 (6.7%)	70 (93.3%)			
14. Casual contacts (hugging or touching) with an HIV-infected person	1 (1.3%)	74 (98.7%)			

\*Significant, <sup>a</sup>Mann-Whitney test, <sup>b</sup>Kruskal-Wallis test was applied

stands for? [Correct/Incorrect], Is HIV a transmissible disease? [Yes/No], Can HIV/AIDS be cured at this moment? [Yes/No], and How many HIV patients did you come across in the last 12 months? [open ended] (Table I).

Section three consisted of 14 items that focused on respondents' perceptions towards causes of HIV/AIDS. A nominal scale [Yes/No] was used for the respondents to share their views about the statements in this section (Table II). For statements one to nine, Yes was the right answer and every right answer added one point to the respondent's score. For statements 10 to 14, reverse scoring was used. The 14 items are displayed in Table II.

Section four aimed to evaluate the respondents' views about measures to be adopted for the prevention of HIV/AIDS. As in section three, a nominal scale [Yes/No] was used and the scoring of responses used the same criteria. For statements one to six, Yes was the right answer. For statements seven to twelve, No was the right answer. Statements used to evaluate the respondents' views are shown in Table III.

Section five aimed to explore the respondents' knowledge level about the decision making process in order to change the therapeutic regimen of the patients. Eight items comprised section five, and a nominal scale [Yes/No] was provided for the respon-

**Table III.** Respondents' views about measures to prevent HIV infection

Statement	Yes	No	Variable	Mean score	Value of p
1. Avoid taking illicit drugs/use of intravenous drug	50 (66.7%)	25 (33.3%)	Gender	Male 12.16 ±0.75 Female 12.52 ±2.01	0.13 <sup>a</sup>
2. By avoiding sharing needles and syringes	75 (100.0%)	–	Experience [years]	1-2 10.84 ±1.08	0.73 <sup>b</sup>
3. Having sex with only one faithful, uninfected partner	75 (100.0%)	–		3-5 11.00 ±1.21	
4. Using condoms during sexual intercourse	69 (92.0%)	6 (8.0%)		6-7 11.12 ±0.99	
5. Treating STDs promptly	53 (70.7%)	22 (29.3%)		8-10 11.0 ±0.81	
6. Screening donated blood before transfusion	75 (100.0%)	–	Over 20 11.0 ±1.00		
7. Not sharing swimming pools or toilet with an infected person	5 (6.7%)	70 (93.3%)	Marital status	Single 10.88 ±1.17 Married 11.10 ±1.00 Divorcee 12.0 ±0.00	0.42 <sup>b</sup>
8. Not sharing food with an infected person	5 (6.7%)	70 (93.3%)	Race	Malay 12.3 ±2.9 Chinese 12.3 ±1.30 Indian 12.0 ±1.09	0.82 <sup>b</sup>
9. Isolating people living with HIV/AIDS	6 (8.0%)	69 (92.0%)	Age [years]	23-25 10.88 ±1.38	0.59 <sup>b</sup>
10. Do not stay with infected person in the same house	8 (10.7%)	67 (89.3%)		26-30 11.0 ±1.18	
11. Do not have casual contact with infected person	4 (5.3%)	71 (94.7%)		31-35 10.8 ±0.78	
12. Avoiding mosquito bites	5 (6.7%)	69 (92.0%)		48-51 11.5 ±1.00	

<sup>a</sup>Mann-Whitney test, <sup>b</sup>Kruskal-Wallis test was applied

**Table IV.** Pharmacist views about the decision making to change treatment regimen for HIV/AIDS patient

Statement	Yes	No	Race	Gender	Age	Job experience
1. Patient's compliance is poor	46 (61.3%)	28 (37.3%)	0.10	0.01*	0.59	0.41
2. Patient cannot tolerate adverse reactions of the regimen	75 (100.0%)	–	–	–	–	–
3. Viral load increases	63 (84.0%)	12 (16.0%)	0.03*	0.74	0.49	0.49
4. CD4 T-cell count decreases	57 (76.0%)	18 (24.05)	0.93	0.69	0.40	0.90
5. Patient experiences opportunistic infections (OIs)	28 (37.3%)	57 (76.0%)	0.30	0.95	0.86	0.89
6. Drug interactions with other medicines	52 (69.3%)	23 (30.7%)	0.51	0.01*	0.67	0.89
7. Patient cannot afford the treatment cost	21 (28.0%)	54 (72.0%)	0.08	0.53	0.87	0.61
8. Patient is found to be pregnant	74 (98.7%)	1 (1.3%)	0.51	0.76	0.87	0.86

\*Significant,  $\chi^2$  test

**Table V.** Pharmacist attitudes towards patients living with HIV/AIDS

Statement	Yes, n (%)	No, n (%)			Mean score
1. Do you feel comfortable about counselling HIV/AIDS patients?	56 (74.7%)	19 (25.3%)	Race	Malay	8.6 ±1.94
				Chinese	9.0 ±2.08
			Indian	9.2 ±0.75	
			Gender	Male	8.6 ±1.36
			Female	8.7 ±1.88	
2. Do you feel comfortable about working together with a colleague who is a HIV/AIDS patient?	41 (54.7%)	34 (45.3%)	Job experience [years]	1-2	8.9 ±1.91
		3-5		8.3 ±1.86	
		6-7		9.8 ±1.12	
		8-10		9.5 ±2.08	
3. Are you willing to live with people having HIV/AIDS in the same house?	23 (30.7%)	52 (69.3%)		Over 20	9.0 ± 1.41
4. Do you feel empathetic towards people living with HIV and AIDS?	54 (72.0%)	21 (28.0%)	Hospital	A	9.0 ±1.91
				B	8.6 ±1.75
				C	8.1 ±1.67
5. Are you willing to take care of patients who have HIV/AIDS?	29 (38.7%)	46 (61.3%)	Age [years]	23-25	8.8 ±1.85
				26-30	8.6 ±1.90
				31-35	9.1 ±1.90
				48-51	9.0 ±1.41
6. Do HIV/AIDS patients deserve free treatment?	36 (48.0%)	39 (52.0%)	Marital status	Single	8.6 ±1.84
		Married		9.0 ±1.87	
		Divorced		9.0 ±1.84	

dents' convenience. A list of these eight items is displayed in Table IV.

Section six evaluated the negative attitudes of the respondents toward the PLWHA. Six questions were included in this section. A nominal scale [Yes/No] was provided with the statements. A scoring scheme was adopted to measure the respondents' attitudes. For all statements, Yes was the right answer, and every right answer added one point to the respondents' total scores. However, for wrong answers – i.e., No – the weight was two. Any respondents selecting the wrong answer were granted two points in the overall score. The maximum possible score on the attitude scale was 12. To rank respondents' attitudes, quartiles were applied, with those scoring 6 ranked to have positive attitudes towards PLWHA, those scoring 7-10 classified to have negative attitudes, and those scoring 11-12 classified to have very negative attitudes towards PLWHA. Details about the respondents' attitudes with descriptive statistics are shown in Table V.

### Ethical approval

Permission to conduct this study was granted by the Head of the Pharmacy Department, Hospital Sultan Abdul Halim, Hospital Sultanah Bahiyah, and Hospital Kulim. Furthermore, verbal consent was provided by the respondents for their participation in this study. Questions that identified the identity of any person were avoided.

### Statistical analysis

Non-parametric statistics were used to analyse the data. For the comparison of the score between

two groups, the Mann-Whitney test was applied, while for more than two groups, the Kruskal-Wallis test was preferred. A  $\chi^2$  test was applied among 2X2 tables to see the level of association among the variables. Furthermore, to highlight the factors affecting the attitude of the respondents towards PLWHA, multinomial regression was applied using attitude score as the dependent variable and demographic variables as the independent variables. However, some variables such as hospital, number of patients exposed annually, and years of experience were selected as the co-variants. Values of  $p$  equal to or less than 0.05 were considered significant.

### Results

A total of 79 (75) respondents were willing to participate in this study. A higher contribution was seen from female 69 (92.0%) respondents, and those aged 26-30 years. Thirty-three (44.0%) of the respondents had 3-5 years of job experience and 42 (56.0%) of the respondents disclosed that they have annual interactions with 1-10 PLWHA. Evaluation of the general knowledge of respondents revealed that 9 (12.0%) of the hospital pharmacists were not aware of the proper abbreviation of AIDS, nearly 10 (13.3%) believed that HIV is not a contagious disease, and 3 (4.0%) mentioned that HIV can be cured (Figure 1). Detailed responses with the demographic information are presented in Table I.

### Perceptions about the causes of HIV/AIDS

Items in section three were used to evaluate the respondents' perceptions toward causes of

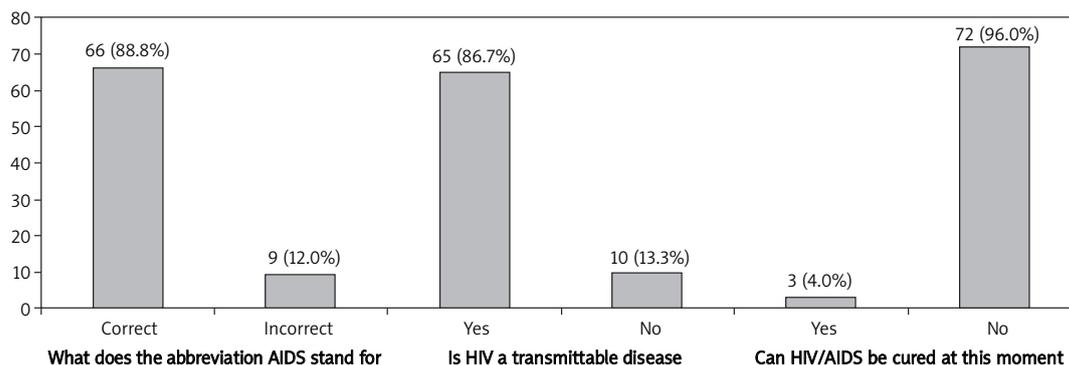


Figure 1. Pharmacist general knowledge about HIV/AIDS

HIV/AIDS. Overall, the majority were aware of the potential causes of HIV/AIDS. However, some of the respondents held erroneous perceptions about the causes of HIV/AIDS – for instance, 34 (44.3%) believed that HIV/AIDS cannot be transmitted through tattooing or body piercing. Similarly, 24.0% of the respondents did not agree with the statement that HIV/AIDS can be transmitted by sharing personal items such as shaving blades and through breast-feeding from an HIV-infected mother. Overall, the respondent’s age and years of job experience were found to significantly affect perceptions about the causes of HIV/AIDS (Table II).

### Respondents’ views about the prevention of HIV/AIDS

Most of the respondent had accurate ideas about the prevention of HIV/AIDS (Table III). However, 25 (33.3%) of the respondents believed that avoiding use of intravenous drugs may not be effective to prevent HIV/AIDS. In addition, some of the respondents endorsed social isolation as a measure to prevent HIV/AIDS. Details about the respondents’ views for the prevention of HIV/AIDS are shown in Table III.

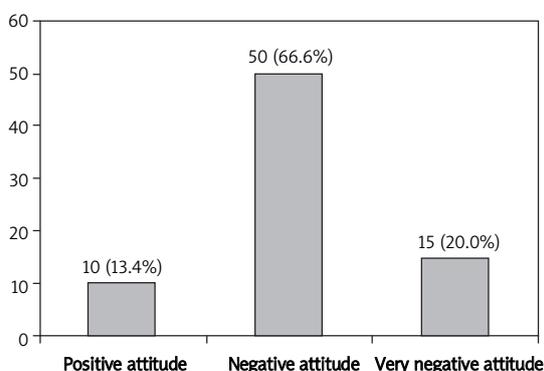


Figure 2. Classification of the pharmacist attitude towards patients living with HIV/AIDS

### Respondents’ views about changing the treatment regimen

Deciding on changes in the treatment regimen is a critical issue when treating the HIV/AIDS patient. Nearly all the respondents agreed that treatment should be changed only if the patient cannot tolerate adverse reactions or is pregnant (Table IV). However, patients’ poor compliance and drug interactions with other medicines were other criteria for changing the treatment regimen that were found to be statistically significant ( $p = 0.01^*$ ).

### Respondents’ attitude towards patients living with HIV/AIDS

Items discussed in section six were used to assess the attitude towards patients living with HIV/AIDS. Segregation of responses on the basis of score revealed that 10 (13.4%) of the respondents held positive attitudes towards PLWHA. However, the majority (50, or 66.6%) had negative attitudes and about 20.0% of the respondents held extremely negative attitudes (Figure 2). Findings from multinomial regression modelling revealed that hospital ( $-2 \log \text{likelihood} = 215.182, \chi^2 = 18.060, Df = 8, p = 0.021$ ) and gender ( $-2 \log \text{likelihood} = 213.643, \chi^2 = 16.521, Df = 8, p = 0.035$ ) were more likely to affect the attitudes of respondents.

### Discussion

This is the first study of Malaysian hospital pharmacists to explore their knowledge level about HIV/AIDS and to assess their attitudes towards PLWHA. The most surprising finding of this study was the fact that the majority of the hospital pharmacists endorsed a negative attitude toward PLWHA. However, it is hard to make conclusive remarks about these negative attitudes because there is no previous evidence available. There is a possibility that culture has some influence on the attitudes towards PLWHA. Studies conducted among the Chinese population in this regard have uncovered negative attitudes towards PLWHA [17, 18]. In the cur-

rent study, all the respondents were Chinese, so it can be assumed that culture and ethnicity may be one of the factors affecting the attitudes towards PLWHA.

It should be noted that 19 respondents (25.3%) were not comfortable counselling a patient with HIV/AIDS infection. Counselling of the patient is one of the important jobs of the hospital pharmacist. Effective communication between the patient and pharmacist helps increase the chances of compliance to therapy. However, social distance or lack of comfort with the patient creates stigma and the risk of discrimination, which not only reduces the quality of treatment [19], but also can affect the self-esteem of HIV-positive patients [20]. Thus, even where PLWHA have access to better health care, they may not experience better health and quality of life due to the discrimination from health care providers. In addition, it was observed that 34 (45.3%) of the Chinese hospital pharmacists were not willing to work with a colleague if he/she had HIV infection. Similarly, a majority of 52 (69.3%) were reluctant to stay with a patient with a HIV infection. Forty-six (61.3%) were not willing to take care of a PLWHA and about 39 (52.0%) were against free treatment services (Table V). The scoring of the responses in the attitude section shows that only 10 (13.4%) of the respondents had positive attitudes toward PLWHA, while the rest have negative and extremely negative attitudes towards PLWHA. These negative attitudes were somewhat surprising to see, because in the section exploring the causes of HIV/AIDS (Table II) and preventive measures for HIV/AIDS (Table III), most of the respondents agreed that social and casual contact with the HIV/AIDS patients will not result in transmission of the infection. Multinomial regression modelling revealed gender and hospital as the two main factors significantly associated with the negative attitudes towards PLWHA. Segregation of attitudes on the basis of mean score revealed that female pharmacists aged over 30 years with job experience of more than 5 years had comparatively higher negative attitudes than others (Table V). These findings are in compliance with those of other international studies that reported a higher stigma and discrimination among senior medical professionals towards PLWHA [23]. In addition, it was surprising that pharmacists from the hospital with a higher number of HIV/AIDS patients had higher negative attitudes than those with lower numbers of HIV/AIDS patient visits. These findings are in contradiction with the findings from other regions that associate the previous exposure of the health care providers with a higher willingness to participate in direct patient activities for PLWHA [3]. In the current study, unlike other studies [21], pharmacists with low exposure to HIV/AIDS patients were found to have less neg-

ative attitudes towards PLWHA. There is a possibility that societal or community response is a factor responsible for the social distance from the HIV/AIDS patients. It is possible that in Chinese/Malaysian culture, social relations with HIV/AIDS patients are looked down upon, and a healthy person befriending an HIV positive patient faces the same discriminative response. Future studies exploring health care provider attitudes should consider investigating the societal response toward persons who befriend HIV positive patients. It is possible that social responses toward persons who befriend HIV positive patients may be contributing to the negative attitude and low empathy level of the health care providers in this study.

Overall, 9 (12.0%) of the respondents were not aware of the correct abbreviation of AIDS. The majority have a good idea about preventive measures for HIV/AIDS. However, a significant minority of the Chinese hospital pharmacists believed that sharing personal items like shaving blades and having piercings/tattoos will not result in the transmission of HIV infection. Age and job experience were the two factors that were significantly found to affect the pharmacists' perceptions about the causes of HIV/AIDS (Table II). Those respondents over 40 years of age and with job experience over 20 years were found to have a better understanding towards the causes of HIV/AIDS.

In conclusion, the findings demonstrate a good understanding among Chinese hospital pharmacists in the Kedah state about the causes of and preventive measure for HIV/AIDS. More than one-third of the study sample held negative attitudes towards PLWHA. However, young pharmacists with job experience in the range of 3-5 years held less negative attitudes than others. Furthermore, a greater number of visits by HIV/AIDS patients was found to affect the attitudes of the hospital pharmacists towards PLWHA.

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