Knowledge about and attitudes to HIV/AIDS Among nurses at Thai University Teaching Hospital

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Introduction

Starting with only a few cases in 1984 (Phanuphak *et al.,* 1985), the HIV-epidemic in Thailand developed in sequential waves (Weniger *et al.* 1991). Several surveys of injecting drug users (IDU) and female commercial sex workers (FCSW) in the next four years of the epidemic showed an HIV prevalence of one per cent or less. However, in 1988, surveys in Bangkok began showing a steep increase in infection rates among IDUs, from about 1 per cent to 31 - 44 per cent within a period of six months (Weniger *et al*., 1991). The second wave of the epidemic was recorded among FCSWs, with the Ministry of Public Health's first national sentinel serological survey in 1989 reporting an HIV prevalence rate of 44 per cent among brothel-based FCSWs in Chiang Mai province (Ungshusak *et al*., 1990). The Ministry's subsequent semi-annual sentinel serological HIV surveys show the occurrence of consecutive waves of the epidemic in men attending STD clinics, military conscripts, male blood donors and antenatal women (Weniger *et al.,* 1991) with prevalence being higher in the northern provinces than in the rest of the country. Altogether, Thailand was estimated to have had a cumulative total of 700,000 HIV infected people at the end of 1993. By the year 2005, HIV-infection is expected to affect between 1.2 - 1.8 million people, depending on different assumptions about sexual risk behaviour (Brown *et al*., 1994).

From the beginning of the HIV/AIDS epidemic there was recognition of the importance of providing HIV/AIDS education and training for all health care workers (HCWs). HIV-infected people are mostly asymptomatic but may seek health care for conditions unrelated to HIV/AIDS, making it unavoidable for most HCWs to come in

contact with HIV-infected people. This fact coupled with the fatal nature of the disease itself sharpened the focus on infection control procedures and led to The Centers for Disease Control (CDC) and other organisations developing a series of infection control guidelines culminating in the application of universal precautions to blood and body fluids across all patients (Hughes, 1989, p.17). Effective infection control hence presupposes that all HCWs are knowledgeable about how the virus is transmitted and how transmission can be prevented.

Most studies of HCW's HIV/AIDS knowledge have mainly been conducted in the USA and in the UK and have covered areas such as epidemiology, pathophysiology, transmission modes, prevention and treatment of AIDS. Almost all seem to have covered the key areas of transmission and prevention but as researchers have used widely different instruments or often reported one compounded score for knowledge measuring different areas, it is difficult to compare results across studies (Horsman and Sheeran, 1995). Knowledge about HIV/AIDS has shown great variation, but knowledge in the key area transmission modes has generally been high among nurses and nursing students, although deficits have been identified in terms of non-transmission modes, for example, through casual contact (Eldridge and St. Lawrence,1995).

Since the beginning of the AIDS epidemic fear of contagion among HCWs has been a concern. Numerous studies have confirmed that this continues to be so. Tierney (1995) in her review of studies of nurses' HIV/AIDS knowledge and attitudes concluded that "Even with increasing experience, fear of contagion appears to be a persistent phenomenon in North American and British nursing … and this despite the provision of precautionary guidelines for staff " (p.16).

HCWs have expressed negative feelings towards caring for people living with HIV/AIDS (PLWHAs). When faced with a caring situation, some HCWs experience stress and request reassignment to avoid caring for PLWHAs while others consider a career change (Kegeles *et al.,*1989; Swanson *et al.,* 1991; Huerta and Oddi, 1992; Barbour, 1994). On the other hand, to some nurses and physicians AIDS care

has proved to be intellectually stimulating and rewarding career-wise (Brennan *et al*., 1988; McKusick *et al*., 1986; O'Donnell *et al*., 1987; Ross and Seeger, 1988).

An additional source of negative attitudes towards AIDS care is its association with homosexuality and the consequent negative impact the disease has had on attitudes to homosexuals, IDUs and prostitutes. In the USA and in Australia, the main HIV transmission category is homo/bi-sexual men and instances of negative attitudes to homosexuality among HCWs have been documented in both countries (Barrick 1988; D'Augelli, 1989; Kelly *et al*., 1988, Stiernborg 1992). Less attention has been given to attitudes to IDUs, but studies have consistently shown HCWs to be negative towards this group (Hayward and Shapiro, 1991; Cole and Slocumb, 1993). Hardly any studies have focussed on attitudes to FCSWs (Horsman and Sheeran, 1995). In a few related publications FCSWs have generally been characterized negatively and scapegoated for spreading HIV (Breault and Polifroni, 1992; Richardson, 1989).

According to some reports that describe and analyse Thailand's HIV-epidemic, anecdotal evidence indicates that PLWHAs are shunned by the community and that some HCWs avoid or refuse to care for them (Ford and Koetsawang, 1991; Gould, 1993; Brown and Sittitrai, 1995). A Bangkok survey of 274 HCWs found that more than 50 per cent of HCWs would prefer not to work with PLWHAs (Phanuphak *et al*., 1989). Abel *et al*. (1994) reported on a study with 118 nurses at two government hospitals in Khon Kaen province (north-east region of Thailand) in which the nurses expressed fears about contagion and stigmatization if infected. Fifty-five per cent of the respondents believed that there was a "big risk" of getting infected at the workplace.

Increasing numbers of people living with HIV/AIDS (PLWHA) in Thailand and the consequent growing demand for medical care, counselling and support will put pressure on the country's National Health System. Similarly, as numerous studies from developed countries can testify, the biomedical and psychosocial complexities of HIV/AIDS will make the health care worker's role a demanding one. As nurses are in the front-line of the prevention and control of the epidemic – they are the largest group of health professionals available for preventive HIV/AIDS education and to provide 24-

hour care of patients – this study focused on nurses.

The purpose of the present study was (1) to determine Chiang Mai Hospital nurses' knowledge about HIV/AIDS and their attitudes to providing care to PLWHAs, fear of attracting HIV infection at work as well as attitudes to homosexuality and FCSWs; and (2) to assess any possible impact of in-service training on knowledge and attitudes.

Method

Knowledge and attitude were measured by a self-administered questionnaire. Respondents were a sample of registered nurses, enrolled nurses and nursing aides. The total sample was 881 (response rate: 88 per cent).

Instrument

The instrument was an adapted version of a questionnaire used in two previous studies with nursing students and nurses in Sydney (Stiernborg,1992 and 1994). This original questionnaire was developed in 1988-89 based on literature review and input from various groups experienced in HIV/AIDS care (Stiernborg, 1994). Since then it has been used by post-graduate students and others in different contexts.

In the Sydney study, knowledge was measured in the two key areas, transmission modes and precautions to take when providing care to PLWHA, by 15 true-false items and ten true-false items, respectively. For the present study, only about two-thirds of the items in the original questionnaire were used: (1) TRANS - transmission routes and non-transmission routes of the virus (18 true-false items; Cronbach's alpha = 0.73); and (2) PREC - precautions to take when providing nursing care to PLWHAs (10 true-false items; Cronbach's alpha = 0.55). The knowledge items included a don't know alternative. A construct validation was conducted by an analysis of the responses to the individual knowledge items for the 881 respondents. The

empirical relationship between items was examined using an exploratory principal component analysis with rotation to oblique simple structure. The eigenvalue-one criterion indicated that nine factors should be extracted. The nine factors explained 52.7 per cent of the total variance.

Most of the transmission items loaded significantly on two factors with one to two items loading on each of another four factors. The precaution items loaded significantly on the remaining three factors. Although the distribution of items on the nine factors reflected the conceptual difference between the two knowledge areas, it was not possible to make conceptual sense of the division of items on the nine factors. The validation effort, therefore, proceeded with a second-order factor analysis of the correlations between the nine first-order factors. Both the eigenvalue-one criterion and the scree test indicated that three factors should be extracted. Hence, three factors were extracted followed by oblique rotation. The three factors explained 44.6 per cent of the total variance. Factor 1 was identified as the transmission knowledge factor. The second and third factors were identified as precaution knowledge factors. A characteristic conceptual feature of all four items loading on factor three was that these items included using gloves for precaution.

In the original questionnaire, attitudes were measured in four key areas through 27 five-point Likert items:

(1) CARE - nurses' readiness and willingness to care for HIV/AIDS patients (7 items);
(2) FEAR - fear of attracting the virus when caring for HIV/AIDS patients (6 items);
(3) HOMO - attitudes to homosexuality (8 items).
(4) GEN - measured included items on the right of PLWHAs to continue to work in different work situations as well as their right to care (6 items);

Content validity for the knowledge and attitude questions was determined by a panel of three nurses with expertise in infectious diseases control and HIV/AIDS.

Only those items on which at least 80% of the experts agreed with the a priori groupings were retained.

The twenty-seven attitude-items were construct validated by using an exploratory principal component analysis with oblique rotation to simple structure. The eigenvalue-one criterion indicated that five factors should be extracted. These five factors explained 51.4 per cent of the total variance. The empirical relationships matched well the conceptual foundation of three of the scales. The integrity of these scales was maintained as follows:

(1) CARE - five out of seven items loaded significantly on factor 1.
(2) FEAR - all six items loaded significantly on factor 2.
(3) HOMO - seven out of eight items loaded significantly on factor 3.

In the fourth attitude scale only two of the items loaded significantly on factor 4. The fifth factor contained mainly negative loadings and a few insignificant positive loadings. . The internal consistency had a satisfactory level for group comparisons: Cronbach's alpha ranged from 0.69 to 0.85.

In the present study the same four attitude scales, CARE, FEAR, HOMO and GEN, were used but with a reduction in the number of items. Attitudes were measured by six scales with 5-point Likert-type items: (3) CARE - readiness and willingness to care for PLWHAs, 6 items; (4) FEAR - fear of contracting the virus at work, 4 items; (5) GEN - attitudes to PLWHAs' right to work in different situations as well as their right to health care, 6 items; (6) HOMO - attitudes to homosexuality and homosexuals, 4 items; (7) ATTFCSW - attitudes to FCSWS, 7 items; and (8) HEALTHFCSW - attitudes to health care for FCSWS, 7 items. Two new scales, scales (7) and (8), were developed by the authors for use in this study, reflecting the expectation that increasing numbers of infected FCSWs would use the study hospital's health care services.

The attitude scales were construct validated by subjecting the 34 attitude items in the questionnaire for the 881 respondents to principal component analysis with oblique rotation to simple structure. The eigenvalue-one criterion indicated that nine

factors should be extracted (the nine-factor solution with 52.6 per cent of the total variance explained, did not provide an interpretable outcome) while the scree-test indicated four factors. As conceptually six dimensions were measured, a six-factor solution was imposed which explained 46.9 per cent of the total variance. The integrity of the six scales was maintained as follows:

CARE - the six relevant items loaded significantly on factor 1.

FEAR - the four relevant items loaded significantly on factor 1.

GEN - four out of the relevant six items loaded significantly on factor 3.

HOMO - the four relevant items loaded significantly on factor 5.

ATTFCSW - six out of the seven relevant items loaded significantly on factor 2.

HEALTHFCSW - four out of the seven relevant items loaded significantly on factor 6.

All items from the CARE and FEAR scales loaded on factor 1, indicating that for this sample issues regarding care of PLWHAs are closely related to perceptions of work-related risk of contracting the virus. Correlations between factors were generally low (range 0.0 1 – 0.15) except between factor 1 (CARE/RISK) and factor 4 (GEN) which amounted to 0.31. The integrity of the six scales was either fully (CARE, FEAR and HOMO) or substantially maintained (GEN, ATTFCSW, and HEALTHFCSW; criterion used: at least 57 per cent of the total number of items in a scale).

As the items constituting the four scales CARE, FEAR, HOMO and GEN were used in a study with Australian nurses , the validation measures can be compared for the Australian and Thai studies. The fact that mainly the same factor structure was confirmed in two different cultures with different languages (Australia and Thailand) is an indication of the robustness of these attitude scales. The three attitude scales, CARE, HOMO and FEAR, therefore, seem to have trans-cultural conceptual equivalence and are equivalent in construct operationalization across cultures (Hui and Triandis, 1985).

Apart from the differences in the Knowledge and Attitude scales discussed above, the questionnaires in the two studies differed in the language employed. For purposes of the Thai study, the questionnaire was translated from English into the Thai language and back translated into English to ensure semantic equivalence. The final version of the instrument was reviewed by bilingual health professionals for clarity and translation accuracy.

Trans-cultural researchers have raised the issue of cultural bias in response sets when using knowledge and attitude instruments translated from one language to another (Triandis and Triandis, 1962; Zak and Takahashi, 1967; Triandis, 1972; Chun *et al.,* 1974; Hui and Triandis, 1989). Great care was taken, therefore, in the pretesting of the instrument to detect any tendency to limit the use or overuse of the end-points of the Likert scales. No such tendency was detected.

Sample

A 50 per cent stratified sample was drawn from the 2002 registered nurses (RN), practical or enrolled nurses (EN) and nursing aides (NA) with simple random sampling within units. The selection was stratified by working unit. The response rates for the three staff categories were: RNs - 84 per cent (n = 368), ENs - 91 per cent (n = 367) and NAs - 91 per cent (n = 146). The overall response rate was 88 per cent. Of the 881 respondents 42 per cent were RNs, 42 per cent ENs and 17 per cent NAs. The majority of respondents was female (91 per cent). Fifty-four per cent were married, 43 per cent were unmarried, and 3 per cent divorced; 47 per cent had children.

Procedure

The questionnaires, accompanied by a letter explaining the purpose of the survey, were sent through internal mail to the selected staff. Responding to the questionnaire was taken as consent to participate in the survey. Respondents returned the completed questionnaires to the research coordinator at the hospital in unmarked sealed envelopes. SPSS was used for data analysis. Differences between groups were tested by simple ANOVA followed by Scheffe's post-hoc test with $p < 0.05$.

Results

Knowledge

As Table 1 shows the mean score on the transmission scale was 13.7 (mean percentage score 76). The RNs had the highest transmission knowledge score (14.6) which was significantly higher ($F = 31.4$, $p < 0.0000$) than the scores of ENs (13.1) and NAs (12.5). The mean score on the precaution knowledge scale was 6.6 (mean percentage score 66). The scores for the three staff categories showed similar patterns to the transmission scale. The mean for RNs (7.3) was significantly higher ($F = 87.7$, $p < 0.0000$) than that for ENs (6.2) and NAs (6.0). Most of the respondents (97 per cent) knew about the three proven transmission routes, but showed knowledge deficits on some of the ways in which the virus is not transmitted. For example, 44 per cent of respondents believed that the virus could be contracted by providing CPR to a PLWHA. An additional 15 per cent stated don't know. The corresponding figures for "kissing a person who is HIV-infected" were 39 per cent and 12 per cent, respectively. To clean up vomit from an PLWHA was perceived as a potential transmission source by 27 per cent; an additional 9 per cent did not know. Relatively few (8 per cent) believed that mosquitos or similar insects would be able to transmit the virus. An additional 12 per cent did not know. In terms of precaution to take, 68 per cent was of the view that needles should be recapped before disposal.

Table 1: Mean Knowledge Scale Scores by Staff Category

Knowledge scale	Staff Category				F-ratio	Scheffé post-hoc test ($p<0.05$)
	(1) RN (n=367) mean (SD)	(2) EN (n=366) mean (SD)	(3) NA (n=145) mean (SD)	Total (n=878) mean (SD)		
Transmission routes (max. Score = 18)	14.6 (2.7)	13.1 (3.5)	12.5 (3.6)	13.7 (3.3)	31.4	1 > 2, 3
Precautions to take (max. score = 10)	7.3 (1.2)	6.2 (1.3)	6.0 (1.5)	6.6 (1.4)	87.7	1 > 2, 3

The two knowledge scales showed generally weak or no correlations at all with the attitude scales and with background variables such as gender and age. The highest correlation ($r = 0.24$, $p < 0.000$) was between TRANS and FEAR, which means that those with more knowlege were more likely to have less fear of HIV contagion.

A large majority of respondents (92 per cent) believed they had sufficient knowledge to protect themselves from contracting HIV/AIDS, but knowledge about infection control procedures was rated lower (79 per cent). NAs had the lowest level of self-assessed knowledge in these respects with 85 per cent and 73 per cent, respectively.

Attitudes

The GEN scale had a slightly negatively skewed distribution which meant that positive values were more frequent than negative values. The mean GEN score for the three staff categories is shown in Table 2. RNs had a significantly higher ($F = 35.1$, $p < 0.0000$) mean score (14.3) compared to ENs (12.6) and NAs (11.8). Respondents strongly endorsed (89 per cent) PLWHAs' entitlement to the same care as any other patient and 48 per cent believed that infected hospital staff should be assigned to care for infected patients.

Table 2: Mean Attitude Scale Scores[1] by Staff Category

Attitude scale (max. Score)	Staff Category				F-ratio	Scheffé post-hoc test (p<0.05)
	(1) RN (n=367) mean (SD)	(2) EN (n=366) mean (SD)	(3) NA (n=145) mean (SD)	Total (n=878) mean (SD)		
GEN (24)	14.6 (2.7)	13.1 (3.5)	12.5 (3.6)	13.7 (3.3)	31.4	1 > 2, 3
CARE (24)	11.2 (4.1)	12.2 (4.3)	12.2 (4.1)	11.8 (4.2)	6.6	2, 3 > 1
FEAR (16)	7.2 (3.0)	6.4 (3.1)	6.1 (2.7)	6.7 (3.1)	10.2	1 > 2, 3
HOMO (16)	6.3 (2.6)	5.9 (2.8)	5.7 (2.7)	6.0 (2.7)	3.4	1 > 3
ATTFCSW (28)	11.7 (4.6)	12.1 (4.3)	12.0 (4.3)	11.9 (4.4)	1.0	n.s.
HEALTHFCSW (28)	15.4 (3.3)	14.4 (3.2)	13.6 (3.4)	14.7 (3.3)	17.7	1 > 2, 3

[1] A higher score means more favourable attitudes

The CARE scale was normally distributed with a mean of 11.8 (theoretical mid-point 12.0). Negative scores were as frequent as positive ones. Both ENs and NAs had a mean of 12.2 which was significantly higher ($F = 6.6$, $p < 0.0015$) than the RN mean (11.2). Analysis of individual items showed that there were as many respondents (31 per cent) who did not want to take care of PLWHAs as there were those who would like to. Fifty-five per cent wanted to work in a hospital where there were no PLWHAs. Few (11 per cent), however, would be prepared to resign from their positions rather than care for PLWHAs.

The FEAR scale distribution was positively skewed with a mean of 6.7 (mean percentage score 42 per cent, theoretical midpoint 8), indicating that more respondents believed that there was a clear risk of contracting the virus at work than those who did not believe this to be the case. RNs (7.2) had significantly more positive attitudes ($F = 10.2$, $p < 0.0000$) than Ens (6.4) and NAs (6.1). In terms of responses to individual items, 77 per cent believed that HCWs can contract the virus even if they follow the precautions guidelines and 42 per cent believed that "If I have to take care of AIDS patients I'm afraid that I can transfer HIV to my family or friends."

As Table 2 shows, the HOMO scale was positively skewed with a low mean score of 6.0. Only 16 per cent of respondents had scores of 9 or higher and 14 per cent were at the theoretical mid-point 8, which means that the majority of respondents had a negative attitude to homosexuality. The difference between RNs (mean = 6.3) and NAs (mean = 5.7) was significant ($F = 3.4$, $p < 0.033$), but the difference between RNs and ENs (mean = 5.9) was not statistically significant. Sixty-six per cent disagreed with the statement that "Homosexuality is a natural expression of love and affection".

The ATTFCSW scale was slightly positively skewed with a low mean of 11.9 (Table 2) with the majority having a negative attitude (63 per cent). There was no significant difference between the three staff groups. An analysis of individual items showed that only 12 per cent found it acceptable for a woman to do sex work if she could not find any other job. Twenty-eight per cent would not talk to a friend if they knew that she was a sex worker.

The HEALTHFCSW scale was negatively skewed with a mean score of 14.7; 52 per cent showed positive attitudes while 33 per cent had negative attitudes. Once again the RNs had the highest mean score (15.4) which was significantly higher ($F = 17.7$, $p < 0.0000$) than the mean scores for ENs (14.4) and NAs (13.6). In terms of individual items, respondents (93 per cent) strongly supported the view that FCSWs have the same rights to receive health care as other people. Twenty-four per cent would feel comfortable caring for a patient who is a sex worker while 25 per cent would not. This item had a very high proportion (52 per cent) of uncertain responses indicating that many respondents were unsure about their views.

Correlations between the six attitude scales were generally moderate with most in the 0.31-0.56 range. The lowest correlation was between FEAR and ATTFCSW ($r = 0.09$) and the highest between FEAR and CARE ($r = 0.56$). Correlations between attitude variables and background variables were consistently low.

Training

Forty-five per cent of the respondents had participated in some form of HIV/AIDS training at the faculty, department or ward level. Very few had received training outside the faculty or the hospital. Most RN respondents (62 per cent) were trained, while smaller proportions of the EN (43 per cent) and NA (21 per cent) respondents were trained. Most of the training was of short duration (2 - 4 hours) and consisted of a few periodic talks by one of the hospital nurses or a guest lecturer focusing on transmission modes of the virus and methods of infection control. The longer training (1- 2 days) had the same content as the short training but the topics were covered more extensively and HIV/AIDS counselling was included. Knowledge and attitude mean scores for staff who had participated in the short and the long HIV/AIDS training and staff not trained in HIV/AIDS are shown in Table 3. Trained staff had significantly higher knowledge scores compared to untrained staff. In terms of knowledge about transmission, the group with the longer training had significantly higher scores compared to those with shorter training. For the attitude scales, trained staff had significantly higher mean scores than untrained staff on GEN, FEAR and HEALTHCSW. Those who had the longer training had significantly more positive attitudes on GEN and HEALTHCSW than those with the short training. On ATTFCSW, untrained staff and staff with the long training had significantly higher scores (more favourable attitudes) than those who had the short training. One explanation for the lower knowledge level of respondents from the short training could be that the short training did identify FCSWs as a risk group but did not have sufficient time to properly discuss implications and preventive measures. There were no differences on the CARE and HOMO scales between trained and untrained staff.

Table 3: Mean knowledge and attitude scale scores by respondents with and without HIV-training

Scale	(1) No training n = 493 mean (SD)	(2) Short training n = 260 mean (SD)	(3) Long training n = 65 mean (SD)	F-ratio	Scheffé post-hoc test ($p < 0.05$)
TRANS	13.4 (3.4)	13.9 (3.2)	14.9 (2.4)	4.4	3 > 1, 2; 2 >1
PREC	6.4 (1.4)	6.9 (1.3)	7.3 (1.2)	10.3	3 > 1; 2 > 1
CARE	17.7 (4.1)	17.7 (4.4)	17.6 (3.6)	0.4	n.s.
FEAR	10.4 (2.9)	11.1 (3.2)	11.7 (3.0)	5.6	3 > 1; 2 > 1
GEN	18.8 (3.7)	19.7 (3.7)	20.8 (3.0)	6.9	3 > 1, 2; 2 > 1
HOMO	10.0 (2.7)	10.2 (2.8)	10.4 (2.5)	1.4	n.s.
ATTFCSW	19.3 (4.4)	18.5 (4.5)	19.6 (4.3)	5.1	1 > 2
HEALTHFCSW	21.3 (3.3)	22.0 (3.1)	23.1 (3.0)	6.2	3 > 1, 2; 2 > 1

Respondents were asked what HIV/AIDS training they would like to have in the future. Only 315 (36 per cent) responded and about 60 per cent of these respondents suggested issues related to prevention control of the epidemic and 50 per cent suggested various topics where the unifying theme was ethics.

Summary and Discussion

The study response rate was high (88 per cent) and the sample represents well the population of nurses at the hospital. Although non-respondents' knowledge, attitudes and experience may differ from that of the respondents, their number is too small to influence the results to any significant degree. The six attitude scales were construct validated through exploratory principal component analysis and the results showed that the conceptual integrity of the six scales was maintained. An interesting and noteworthy finding was that three of the four attitude scales which had been used in a previous study in Australia - measuring readiness and willingness to care for

PLWHAs, fear of contracting HIV at work, and attitudes to homosexuality and homosexuals - appear to have trans-cultural conceptual equivalence. The study demonstrated the robustness of these three attitude scales as the same factor structure was confirmed in two different cultures with different languages (Australia and Thailand). Most of the scales showed a satisfactory level of internal consistency (Cronbach's alpha ranging from 0.62 to 0.85) for group comparisons. The exceptions were the knowledge scale precautions to take (alpha = 0.55) and the scale measuring attitudes to homosexuality (alpha = 0.58).

Respondents showed reasonable levels of knowledge on transmission and non-transmission routes (mean percentage score 76) and precautions to take (mean percentage score 66). RNs had significantly more knowledge than ENs and NAs. Almost all the respondents knew about the three proven transmission routes. There were, however, some knowledge deficits in terms of how the virus is not transmitted: for example, 51 per cent regarded kissing an HIV-infected person as a potential transmission source and only about two-thirds knew that cleaning up vomit from a PLWHA did not constitute a transmission risk. Of serious concern is the fact that as many as 68 per cent believed that needles should be recapped before disposal. This is a matter that will need attention in the hospital's inservice training programme. Becker *et al*. (1989) reported from a US-hospital study on non-compliance with universal precautions policy that the percentage of recapped needles was always greater than 25 percent and that the reasons for recapping included inadequate knowledge (also a misperception that recapping was a way to avoid needlestick injury), forgetfulness and "being too busy".

The respondents' self-assessed knowledge on how to protect oneself from contracting HIV/AIDS and on infection control procedures was high. There was, however, a negative gap between this and their demonstrated knowledge, indicating that respondents may have overestimated their knowledge.

Respondents' general attitudes to HIV/AIDS were slightly positive. PLWHAs' right to health care was given strong endorsement, with nine out of ten

respondents believing that PLWHAs are entitled to the same care as any other patient. The majority of respondents had a positive attitude to health care for FCSWs. However, a little more than half of the respondents would prefer to work in a hospital where there were no PLWHAs and one in four would ask for a transfer to another unit if they had to care for PLWHAs. Only a quarter of the respondents would feel comfortable caring for an FCWS patient.

From the above, it is evident that sizeable proportions of nursing staff at the hospital have reservations on providing care for PLWHAs and FCSWs. One reason is likely to be fear of contagion, identified as a major concern in many surveys of health care workers throughout the western world (Blumenfield *et al.,*1987; Barrick, 1988; van Servellen *et al.,* 1988; Gallop *et al*., 1991; Gallop *et al*., 1992). Fear has also been associated with avoidance of patients in several studies (Scherer *et al*., 1989; Wallack, 1989). A large majority of respondents (77 per cent) in the current study believed that there was a clear risk of contracting the virus at work even when universal precaution guidelines were followed. Although in the higher range, the result is consistent with those from western countries. For example, van Wissen and Siebers (1993) reported that 69 per cent of registered and enrolled nurses in a New Zealand survey were concerned about contracting both hepatitis and HIV and an additional five per cent about contracting HIV. Parsons *et al.* (1995) found that 28 per cent of nurses in an Australian infectious disease hospital were concerned about getting HIV/AIDS while working at the hospital and four per cent were fearful or extremely fearful.

Fear of infection is to some extent influenced by HCWs' perception of occupational transmission risk, which they generally seem to overestimate, despite numerous surveillance and prospective studies showing the risk to be low (Geddes, 1986; Gerberding *et al*., 1987; McEvoy *et a1.,* 1987; Allen, 1988; Klein *et al.,* 1988; Marcus, 1988; Orient, 1990; Taylor *et al.,* 1990; Mosley, 1993). Some studies also reveal that compliance with universal precautions is often poor. Of particular concern is percutaneous injuries involving hollow-bore needles. A significant number of these injuries occur despite the use of gloves. The risk for HIV infection from all types of reported percutaneous exposure to HIV infected blood is estimated at 0.2-0.4 per cent

(Fahrner and Gerberding, 1992; Tokars *et al*., 1993). However, HCWs also seem to relate risk to the extent to which they are involved in invasive procedures - the more the involvement the higher the perceived risk. Even where the risk is correctly identified by HCWs as very low, they still seem to express fear and stress (Treiber *et al*., 1987; Link *et al*., 1988; Dow and Knox, 1991; Epstein *et al*., 1993).

It would seem that the perception of HIV infection risk can be reinforced by other factors, which in turn can intensify the stress of caring for PLWHAs. Several factors may prompt the overestimation of the risk of HIV infection. Hazards that are rare, are perceived to be dramatic or are uncontrollable tend to be overestimated (Nisbett and Ross, 1980; Slovic *et al*., 1981; cited by Sim, 1992). Psychodynamic explanations of fear have also been offered. Stevens and Muskins (1987) hypothesize that the underlying dynamics of the fear of HIV/AIDS is "an unconscious fear of loss of control of powerful primitive impulses concerning pleasure" (p.542). The PLWHAs are perceived as having lost impulse control and the HCW may have an unconscious identification with the PLWHA, which leads to a need for externalising the fear, with the result that the HCW develops a conscious experience of being different, which interferes with and constrains the HCW's empathy and compassion capacity.

Taerk *et al.* (1993) suggested that some of the fear of contagion can be a displacement of other negative attitudes, such as homonegativity or negativity towards FCSWs. Some support for this explanation is found in studies where HCWs feel stigmatized as a result of caring for PLWHAs (Blumenfield *et al*., 1987; Pascreta and Jacobsen, 1989;Taylor *et al*., 1990; Bredfelt *et al*., 1991; Hearn *et al*., 1991; Breault and Polifroni, 1992). Munodawafa *et al*. (1993) compared perceived vulnerability to HIV/AIDS among nursing students in the US and Zimbabwe. Among the US respondents, 30 per cent were worried they would be perceived to be homosexual if they became infected with HIV, while 74 per cent of the Zimbabwe respondents were worried that they would be perceived as FCSWs.

As stated earlier, HCWs are at low risk for HIV infection. Nevertheless, for the HCWs themselves the risk is real and measurable. The perception of risk and fear is

determined by a combination of factors, such as HIV/AIDS knowledge (infectious disease control) and the thrust of that knowledge, experience of caring for PLWHAs, frequency of occupational exposure to blood, the amount, duration and route of exposure to infected blood, consistent policies on precautions for HIV/AIDS, perception of stigmatization and discrimination. The accumulated evidence of the literature suggests that there are multiple pathways to reduce risk and fear and that cultural and local institutional factors need to be taken into account. As Eldridge and St Lawrence (1995) point out, reducing fear of occupational exposure cannot be achieved merely by presenting a few facts and putting in place infection control policies. It is also necessary for the institutional environment "to develop an appreciation of the cognitive and emotional aspects of fear, and to incorporate that knowledge into fear-reduction efforts" (p.53). It is important that the legitimacy of staff concerns of fear of contagion is recognized, and that an open and continuous dialogue among staff and between staff and administration is encouraged and supported in any institutional strategies to be employed.

Almost half of the respondents had undergone HIV/AIDS training, participating in either a short 2 to 4 hour training or a longer training lasting 1 to 2 days. Trained staff had significantly more knowledge than untrained staff and there was also clear indication that the longer training provided significantly more knowledge than the short training. This shows that even fairly short periods of training are useful and may lead to significant increases in knowledge and skills (Harnett, 1987; Turner *et al*., 1988; Flaskerud *et al*., 1989; McKinnon *et al*., 1990). However, training did not seem to have any influence on attitudes to care for PLWHAs, attitudes to homosexuals and homosexuality, and attitudes to female commercial sex workers, areas that were not directly dealt with in the training. On the other hand, the three attitudinal areas - FEAR, GEN and attitudes to health care for FCSWs - which were directly addressed by the training seemed to have some effect. Although the provision of in-service training appears to have had demonstrable effects, there still remains a definite need to improve knowledge and attitudes. Allocating more time to inservice training and making it a continuous activity, as well as expanding the current experiential-based training on counselling may result in further benefits compared to traditional training as has been

shown in other instances of HIV/AIDS training (Carroll, 1991; Stiernborg, 1996, Stiernborg *et al*., 1996). This will also allow nursing staff to have a more active involvement in the training and provide a forum for discussion of their concerns. The formation of an HIV/AIDS staff support group could also be considered as a focal point for an ongoing dialogue and interaction between staff.

A limitation of the study was that it measured knowledge only in two areas: transmission of HIV and precautions to take. Hence the demonstrated level of knowledge in these two areas cannot be extrapolated to other areas of HIV/AIDS knowledge. Another consideration is that the use of true/false questions gives an inflated picture of knowledge. Furthermore, the possibility that the study attracted socially desirable responses because of the sensitivity attaching to HIV/AIDS cannot be ruled out.

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