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Nurse's comfort of care of HIV/AIDS patients and knowledge about HIV transmissions routes in Tanzania.

MINOR FIELD STUDY

Empirical Study

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Abstract. In the present study a comparison between Tanzanian nurses' HIV transmission-route knowledge and self-rated levels of comfort of carrying out basic nursing procedures for HIV/AIDS patients was accomplished at two hospitals in Dar es Salaam. Nurses (n= 71) at Hospital 1 were subjected to a 3-week full-time General Infection Prevention Training as opposed to those (n= 54) at Hospital 2. The results indicated that nurses at both hospitals exhibited a passing level of HIV/AIDS transmission-route knowledge recorded through a close-ended Transmission Route Knowledge Questionnaire in which the two staffs' answers did not differ in contrast to their open-ended answers on HIV transmission routes ($p < 0.01$). By way of Nursing Comfort Care Scale it was indicated that the two hospitals differed from each other ($p < 0.0001$). The nurses at Hospital 2, not exposed to infection prevention training, felt more comfortable with basic nursing procedures when caring for HIV/AIDS patients than those at Hospital 1. The results were discussed in terms of two levels of HIV/AIDS awareness: accurate basic knowledge simultaneously with erroneous understanding of HIV transmission; both types were made use of but the latter might connect to fear of contagion. Accurate basic knowledge did not automatically imply a good attitude towards HIV/AIDS patients.

Key words: HIV/AIDS, Tanzania, HIV transmission route, nursing comfort

Abstract. I föreliggande studie jämfördes sköterskor från två sjukhus i Dar es Salaam, Tanzania med avseende på kunskap om HIV/AIDS smittvägar samt på rangordnad grad av otvungenhet med olika grundläggande vårdåtgärder för HIV/AIDS patienter. Personalen på sjukhus 1 (n= 71) hade genomgått en tre veckor lång heldags infektionspreventions- träning i motsats till sköterskorna (n= 54) på sjukhus 2, som ej erhållit sådan träning. Resultaten gav för handen en passabel kunskapsnivå för personalen vid de båda sjukhusen. Vid administrerandet av ett frågeformulär kallat Transmission Route Knowledge Questionnaire med slutna svarsalternativ, befanns sköterskornas kunskap inte skilja sig mellan de båda sjukhusen, vilket den däremot gjorde mätt med öppna svar om Hiv-smittvägar ($p < 0.01$). Med hjälp av Nursing Comfort Care Scale kunde man visa att sjukhusen skiljde sig från varandra ($p < 0.0001$). Personalen vid sjukhus 2, som ej erhållit infektionspreventions- träning, skattade sig som mera otvungen med olika grundläggande vårdåtgärder för HIV/AIDS patienter, än de sköterskor som fått sådan träning. Resultatet diskuterades i termer av två nivåer av simultant existerande HIV/AIDS kunskap: den grundläggande adekvata och den som innehöll felaktig uppfattning om HIV/AIDS:s smittvägar. Den senare kunde kopplas till rädsla för smitta. Grundläggande adekvat kunskap relaterade ej automatiskt till en god attityd mot HIV/AIDS patienter.

Key Words: HIV/AIDS, Tanzania, HIV smittvägar, otvungenhet att vårda

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1 INTRODUCTION

1.1 Human acquired immunodeficiency virus and Acquired immunodeficiency syndrome

1.1.1 Sub-Saharan Africa

Sub-Saharan Africa includes about 10% of the world's population, but comprises more than 60% of all people living with Human acquired immunodeficiency virus (HIV) —25.8 million [23.8 million–28.9 million]. In 2005, an estimated 3.2 million [2.8 million–3.9 million] people in the region became newly infected, while 2.4 million [2.1 million–2.7 million] adults and children died of Acquired immunodeficiency syndrome (AIDS). Among young people aged 15–24 years, an estimated 4.6% [4.2–5.5%] of women and 1.7% [1.3–2.2%] of men suffered from HIV in 2005 (UNAIDS, 2005). Most of HIV-infected persons are going to die, because antiretroviral therapy (ART) is not available for those who need it (Kallings, 2005). A total of 315,000 people solely in Tanzania need ART (KNW, 2006).

1.1.2 Tanzania: HIV prevalence and incidence

The United Republic of Tanzania (mainland Tanzania and the island of Zanzibar) is the biggest country in East Africa. In Tanzania, in Kagera region, the first three AIDS cases were reported in 1983, and already by 1986, all regions in Tanzania Mainland had registered AIDS cases. It had an estimated 1.6 million people living with HIV/AIDS at the end of 2003 (KFF, 2005), which number turned out to be 1.8 million 2003 (THIS, 2005). About 14% have ever been tested for HIV/AIDS (*ibid.*). With a population of about 38 million people in 2003 (Landguiden, 2006) and an annual growth rate of 2.8 per cent and a high HIV prevalence Tanzania faces serious challenges (Tanzania, 2003). The prevalence of HIV among adults aged 15–44 years increased gradually from 5.9% in 1994–1995 to 6.6% in 1996–1997 and 8.1% in 1999–2000. The incidence of HIV increased from 0.8 to 1.3 per 100 person-years during 1994–1997 and 1997–2000, respectively (Mwaluko; Urassa; Isingo; Zaba & Boerma, 2003).

1.2 Knowledge about HIV/AIDS in Tanzania

In Tanzania, knowledge of AIDS is widespread, which means that a total of 98.9% of the women and 99.1 % of the men have heard about AIDS. Of women 100% and of men 98.9 in Dar es Salaam city have heard about AIDS. As regards knowledge of HIV prevention methods 77.7 to 96 % women in Dar es Salaam suggested using condoms and limiting sex to one uninfected partner or abstaining from sex as means to reduce the risk of getting HIV.

For men in Dar es Salaam knowledge of HIV prevention methods varied from 71.3 to 91.2% (THIS, 2005). Nevertheless, according to Nyblade et al., (2003) an urban Tanzanian man noted, “When they see that someone has HIV, they see him as already dead.” This means that persons are unaware that they know people with HIV until those people have AIDS and are near death. For many individuals, correct knowledge coexists with incorrect knowledge. While people know that HIV can be transmitted from mother to child, they do not necessarily know how this occurs, nor that it does not occur in every case. Similarly, people know that HIV is transmitted through blood or sperm, but not the details of the circumstances in which this transmission can or cannot happen (*ibid.*) In spite of a modest increase in knowledge during the study period, it has been found that most individuals continued to feel that they were not at risk of HIV, and sexual risk behaviour remained in the main unchanged, except for a small increase in condom use. HIV transmission levels continued to be higher in a trading centre than in close rural villages within a small geographical area (Mwaluko; Urassa; Isingo; Zaba & Boerma, 2003).

1.2.1 Health-care workers’ knowledge about HIV/AIDS

Health-care workers with good knowledge stigmatizes to a lesser extent HIV infected patients as opposed to those lacking knowledge (Kalichman et al., 2005). Because the syndrome is acquired, HIV-infected persons are generally stigmatised (Visser, Makin, & Lehobye, 2006), due to the transmission routes of the disease, such as high-risk sexual behaviour or drug abuse. People’s disapproval is expressed as; “they are themselves to be blamed” (Kohi & Horrocks, 1994; Martin & Bedimo, 2000; Mbanya, Zebaze, Kengne, Minkoulou, Awah, & Beure, 2001; Reis et al., 2005; Visser et al., 2006).

In China, 50% of the nurses reported that contact with HIV patients was something they avoided, because they lacked knowledge, and they felt very frightened (Chen, Han, & Holzemer, 2004). An educational program about HIV/AIDS for Chinese nurses showed that HIV knowledge was low among the nurses but increased after a workshop about HIV. Nevertheless, the attitude and willingness to care for the patient group remained neutral (Williams, Wang, Burgess, Wu, Gong & Li, 2006). In Thailand, nurses (19.3%) considered seriously of leaving work because of concerns of acquiring HIV infection or AIDS. Nurses’ fear could be related to deficient knowledge about HIV/AIDS (Juan, Siebers, Wu, Wu, Chang, & Chao, 2004). The lack of knowledge about HIV/AIDS among nurses from Nigeria reflected as a negative attitude towards HIV patient. They realized that they needed more education (Reis et al., 2005). After a HIV/AIDS educational program, Nigerian

student-nurses changed their attitudes in a positive direction towards the infected (Uwakwe, 2000).

The knowledge about HIV/AIDS among Iranian students seemed to be high even though some misconceptions about transmission routes were common. The attitude among the students was negative towards the patient group, for example, a large part of the students thought that people infected with HIV should not be allowed to take part in ordinary school education (Tavoosi, Zaferani, Enzevaei, Taijk, and Ahmadiezhad, 2004). German students embraced good knowledge about HIV/AIDS and its transmission routes, they also held a positive attitude towards infected patients (Lohrmann, Valimaki, Suominen, Muinonen, Dassen, & Peate, 2000). In Cameroon according to Mbanya et al., (2001) health-care workers lacked knowledge about HIV, and some of the nurses had not even heard of HIV. In Tanzania knowledge about HIV/AIDS was found to be quite good, as opposed to that of the HIV transmission routes. Despite good knowledge nurses' attitudes remained negative towards HIV infected patients (Kohi & Horrocks, 1994). In other words, health-care personnel's good knowledge does not automatically lead to a positive attitude towards HIV/AIDS patients (Williams, Wang & Burgers, 2006).

1.3 Tanzanian people's attitudes towards HIV/AIDS

Tanzanian adults generally have accepting attitudes towards those living with HIV/AIDS. Altogether 87.7% women and 89.5% men would be willing to care for a relative sick with AIDS in the own household, women 52.2% and 62.5% men would buy fresh vegetables from a shopkeeper or vendor who had the AIDS virus; 70.5% women and 69.8% men believes a female teacher who has the AIDS virus but is not sick should be allowed to continue teaching (THIS, 2005).

1.3.1 Health-care workers feelings and attitudes in relation to HIV/AIDS patients

The risk for a health care worker to contract HIV/AIDS when caring for an infected individual is very small; globally the risk for nurses receiving the virus from syringe needle stick or other accidents is less than 0.1% (Moberg, 2000). In sub-Saharan Africa, 57% of the health care workers had at least one needle stick in 2005, and 82% reported ever being stuck by needles (Nsubuga & Jaakkola, 2005). In Cameroon, nurses seldom protect themselves with gloves, but needles were almost always recapped after use. "Nonopep", is an abbreviation of non-occupational post-exposure prophylaxis, and this can be used if a person has been exposed to the virus. The prophylaxis is an expensive anti-retroviral therapy (ART). The treatment has side effects, and it must be accomplished within 72

hours. In London 72% of health workers knew about this nonopep regime, but it was not available in every clinic. Nonopep is not even available at all hospitals in London because of its high-cost (Hayter, 2004).

A Swedish study revealed nurses' both emphatic attitudes towards HIV-infected patients, as well as a low degree of fear of contagion, but the finding also indicated that 36% of the professional nurses would refrain from caring of the patients if possible (Rondahl, Innala, & Carlsson, 2003). Health-care workers in Louisiana showed a more positive attitude towards patients who had been infected from blood transfusions as opposed to those drug-addicts. Health-care workers displaying negative attitudes lacked experience from caring for HIV patients. On the other hand, nurses suffered when caring for HIV/AIDS-patients from feelings of helplessness, emotional stress, fatigue, fear, anger, frustration and occupational-related concerns, but they also felt empathy for the patients and their families (Smit, 2005). Also according to findings of Moore (2001) nurses, because of investing much empathy in HIV/AIDS-patients, were subjected to feelings of burn out and social anxieties, besides those of emotional stress and increased fear of death.

Long-term HIV survivors' need for professional care is on the rise due to a growing access to ART. It is also known that caring for those in advanced stages of AIDS is one of the most uncomfortable tasks for a nurse (Martin & Bedimo, 2000). The Tanzanian Ministry of Health has developed a plan for care and treatment of HIV/AIDS aiming at providing ART for 100.000 people by the end of 2006. The target includes an expansion of treatment from 96 to 200 centres (Ministry of Health, 2003).

According to Juntunen and Nikkonen (1996) the nurses' experience of comfort when caring for HIV-patients has to be looked upon to understand the nurses' specific need of support and knowledge, in order to provide quality care for the vulnerable group of HIV/AIDS patients at Muhimbili National Hospital in Dar es Salaam, Tanzania and other hospitals and treatment centres in the country. Tanzania is one of the poorest countries in the world. In some hospitals the relatives bring food to the patients because there is no food available at the hospital (*ibid*).

The dilemma of giving priority to different patient groups was considered to be of importance on the basis of the Swedish pilot study. It indicated the nurse students were prejudiced towards prostitutes, that is, this group of patients got the lowest priority of care.

It is shown that the feelings of fear and anxiety among nurses to care for HIV/AIDS infected individuals is related to concerns about the form of transmission of the virus and the latency period between infection and visible symptoms (Christensen, 2005). Adequate knowledge about HIV/AIDS and groups at risk, various routes of transmission and preventive strategies brings out more positive attitude towards the patients (Joshua, 2006). HIV/AIDS professional educational programmes encourage participants to identify personal fear, prejudices and assumptions that will increase their willingness to care for the patient group and improve their attitudes (Williams, 2006).

1.4 The aim of the present study

The aim of the present study was to compare nurses at two hospitals in Dar es Salaam, Tanzania with regard to both their knowledge about HIV transmission routes as well as their rated comfort level of carrying out basic nursing procedures for HIV/AIDS patients (Cf. Juntunen & Nikkonen, 1996).

1.5 Framing of the questions

1. What level of knowledge about transmission routes of HIV/AIDS do the nurses at two Tanzanian hospitals exhibit?
2. What kind of non-scientific HIV/AIDS transmission routes and non-scientific care are nurses at two Tanzanian hospitals familiar with?
3. What kind of care and prevention for HIV/AIDS patients do the nurses at two Tanzanian hospitals recommend?
4. Which levels of caring comfort do the nurses at the two Tanzanian hospitals experience when they care for different groups of patients infected with HIV?

1.6 Definitions

Acquired means “anything that is not present at birth but develops some time later. In medicine, the word "acquired" implies "new" or "added." An acquired condition is "new" in the sense that it is not genetic (inherited) and "added" in the sense that was not present at birth” (Medterms, 2006)

Human immunodeficiency virus (HIV) denotes a virus of the genus *Lentivirus*, separable into two serotypes (HIV-1 and HIV-2), that is the etiologic agent of the acquired immunodeficiency syndrome (AIDS). HIV-1, which comprises at least three subgroups (M, N, and O), is of worldwide distribution, while HIV-2 is largely confined to West Africa;

transmission and manifestations are similar. HIV-1 was formerly called human T-cell lymphotropic virus type III and lymphadenopathy-associated virus (Dorlands lexicon, 2006).

Acquired Immunodeficiency Syndrome (AIDS) stands for the most severe manifestation of infection with HIV. The CDC lists numerous opportunistic infections and neoplasms (cancers) that, in the presence of HIV infection, constitute an AIDS diagnosis. In 1993, the CDC (Centres for Disease Control and Prevention) expanded the criteria for an AIDS diagnosis to include CD4 cell count at or below 200 cells/mm³ in the presence of HIV infection. In persons (age 5 and older) with normally functioning immune systems, CD4 cell counts usually range from 800 to 1,500 cells/mm³. Persons living with AIDS often have infections of the lungs, brain, eyes, and other organs, debilitating weight loss, diarrhea, and malignancies (AMFAR, 2006).

Protein CD4: HIV can only replicate inside human cells. The process typically begins when a virus particle bumps into a cell that carries on its surface a special protein called CD4. The spikes on the surface of the virus particle stick to the CD4 and allow the viral envelope to fuse with the cell membrane. The contents of the HIV particle are then released into the cell, leaving the envelope behind (AVERT, 2006).

CDC: The Centres for Disease Control and Prevention recognizes the faith community's influence on knowledge, attitudes, beliefs, and behaviours about health. Since 1996, CDC has provided resources to faith-based organizations and worked to make them part of HIV prevention efforts. (Department of Health and Human Services (CDC, 2006).

2 METHODS

2.1 Design

The design of the study was descriptive and comparative with a quantitative approach.

2.2 Data Collection

Data was collected using questionnaires containing scales and open ended questions. An application was approved from Hospital 1 and Hospital 2 in Dar es Salaam, Tanzania.

2.3 Measuring instruments

Based on the idea from Questionnaires for knowledge questions (Jfr Aids Partnership Org, 2006), a questionnaire named Transmission Route Knowledge Questionnaire (TRKQ) was constructed for the present use. The nurses' rated comfort level of care in 18 different basic nursing procedures for HIV/AIDS patients was recorded by means of the standardized Nursing Care Comfort Scale (NCCS) developed by William et al., (1992). Questions about scientific versus non-scientific traditional and complementary medicine beliefs concerning transmission routes of HIV/AIDS were constructed for the present use.

2.4 Participants

The participants (n 125) who were employed at different wards at Hospital 1(n 71), where they had received a 3-week full-time General Infection Prevention Training and Hospital 2(n 54) in Dar es Salaam, Tanzania, lacked such training.

The General Infection Prevention Training was developed by the government of Tanzania with assistance from the World Health Organisations Global Programme on AIDS under the creation of the national HIV/AIDS Control Programme (NACP) under the Ministry of Health (THIS, 2005). The demographics of respondents from Hospital 1 comprised 6 (4,3%) males and 65 (95,7%) females. Respondents' job titles at Hospital 1 comprised "general nurse, student nurse, midwifery, nursing officer, counsellor, senior nursing officer and nursing manager". The demographics of the respondents at Hospital 2 comprised 1 (0,5%) male and 53 (99,5%) females. The respondent's professions at hospital 2 were almost the same it only differed from hospital 1 by add clinic officer and medical field, and exclude counsellor. The participants from both hospitals consisted of nurses caring for different patient categories (Table 1, Figure 2).

5.1 Table 1. Staff's demographic variables and experience of patient groups*

<i>Staff</i>	<i>Male</i>	<i>Female</i>	<i>Age</i>	<i>Education</i>	<i>Medical Education</i>	<i>Experience of HIV/AIDS</i>			
	<i>(n)</i>	<i>(n)</i>	<i>(Yrs.)</i>	<i>(Yrs.)</i>	<i>(Yrs.)</i>	<i>(Yrs.)</i>			
Hospital 1	6	65	41.3	13.3	8.1	12.8			
Hospital 2	1	53	36.9	12.0	5.5	6.5			
Patient group	<i>Hetero- sexuals</i>	<i>Homo- sexuals</i>	<i>Bi- sexuals</i>	<i>Prostitutes</i>	<i>Drug- addicts</i>	<i>Infant</i>	<i>Children</i>	<i>Elderly</i>	<i>Other</i>
	<i>(n)</i>	<i>(n)</i>	<i>(n)</i>	<i>(n)</i>	<i>(n)</i>	<i>(n)</i>	<i>(n)</i>	<i>(n)</i>	<i>(n)</i>
Hospital 1	28	24	22	35	38	33	45	47	30
Hospital 2	24	33	26	41	45	42	48	41	23

*Can be more than one

2.2.1 Convenience sampling

The participants were convenience sampling from the two Tanzanian hospitals in Dar es Salaam by a manager nurse at both hospitals. The sample sizes corresponded to the sizes of the two clinics and the selected nurses were invited to participate in the study. Those nurses who agreed to participate in the present study were, according to ethical principles, given written and verbal information about the study (see Ethical consideration and research approval). Altogether 71 nurses from Hospital 1 and 53 nurses from Hospital 2 participated in the present study. From the 135 distributed questionnaires 92.59 % were answered.

2.2.2 Compensation for participation

Each participating nurse received 1000 Tanzanian Shillings, which is about 5.6 SEK per participant and completed questionnaire in the present study.

2.3 Questionnaires

The questionnaires were examined and approved by the Ethical committee of Dalarna University of Sweden and the management at Hospital 1, Dar es Salaam, Tanzania. To measure HIV/AIDS knowledge a Transmission Route Knowledge Questionnaire (TRKQ) (Jfr Aids Partnership Org. 2006) was constructed and used. In addition, to measure attitudes towards patients infected with HIV/AIDS the Nursing Care Comfort Scale (NCCS) described by William et al. (1992) was used. Choice of instrument was done after comparing different tools and the NCCS seemed to fit the aim of the present study (Appendix 1).

2.3.1 Transmission Route Knowledge Questionnaire

Based on HIV/AIDS facts from the complete HIV/AIDS resource "The Body"(2006) a total of 40 questions about HIV transmission routes were constructed (TRKQ) (Jfr Aids Partnership Org. 2006). The TRKQ was prior to its distribution in Dar es Salaam, Tanzania, administered to Swedish nurse students to ensure that the questions served their purpose. Necessary changes were undertaken. The questions comprised five alternative answers: Not at all likely, Rather Unlikely, As Unlikely/As Likely, Rather Likely and Most likely. The correct answer gave one point out of a maximum of 40 points. The greater the sum of points, the better the knowledge about HIV transmission routes. Over 21 points on the TRKQ indicated fairly good knowledge about HIV/AIDS transmission routes (Appendix 1).

2.3.2 Nursing Care Comfort Scale

Nursing Care Comfort Scale (NCCS) comprised 18 statements about different aspects of experienced comfort of care of HIV/AIDS patients. The investigators report a *test-retest reliability* coefficient of 0.94. To establish *content validity*, Williams et al. (1992) asked five nurse educators to review items on the NCCS for *inclusiveness as basic nursing procedures*. The ranking of nursing comfort were as follows: 1. I would be so uncomfortable that I would not be able to do this. 2. I would be very uncomfortable but able to do this. 3. I would be uncomfortable but able to do this. 4. I would be comfortable. 5. I would be very comfortable. The nursing tasks comprised statements such as e.g. “Giving a bath to a patient with AIDS” or “Measuring the quantity of emesis of a patient with AIDS” (Appendix 2).

2.3.3 Open-ended questions

Open-ended questions about traditional and complementary medicine beliefs concerning transmission routes of HIV/AIDS as well as open-ended questions about nursing comfort towards the patient with HIV/AIDS were constructed. The dilemma of giving priority to different patient groups was touched upon in some questions. Also information about participants sex, medical education, profession and HIV/AIDS experience was collected (Appendix 3 & 4).

2.4 Procedure

The questionnaires at hand were distributed at the two Tanzanian hospitals by two administrative nurse officers after permission from the two hospital management. Nurses are educated in English in Tanzania and therefore expected to understand questionnaires in that language. Based on HIV/AIDS facts from the complete HIV/AIDS resource “The Body” 40 questions about HIV transmission routes (TRKQ) were asked. In addition, both the Nursing Care Comfort Scale (NCCS) described by William et al. (1992) comprising 18 statements about different aspects of experienced comfort of care of HIV/AIDS patients were given to the nurses for completion. Furthermore, both open-ended questions about traditional and complementary medicine beliefs concerning transmission routes of HIV/AIDS as well as open-ended questions about nursing comfort towards the patient with HIV/AIDS were administered. The dilemma of giving priority to different patient groups was exposed in some questions. Also information about participants’ sex, education, medical education, profession and HIV/AIDS experience were collected. The questionnaires had been administered to Swedish nurse students prior to the start of the study in Dar es Salaam, Tanzania to ensure that the questions served their purpose.

2.5 Data analyze

Data was analyzed by means of unpaired t-test, when normality of distribution was assumed to be at hand, and by X^2 -test when a difference between frequencies or categories was computed. Results from some of the open-ended questions (appendix 3) are presented in table 3,7,8,9 and 10. Open-ended question is about the staff Non-scientific Ways a person can get infected with HIV (table 3) “HIV transmission routes (table 7) Ways to protect a person from HIV (table 8), The best way to care for a HIV patient (table 9), Non-scientific HIV/AIDS “cures“(table 10).

2.6 Ethical consideration and research approval

An application for ethical and research approval was submitted to the management at Hospital 1, Dar es Salaam, Tanzania. An ethical application was also approved by the Ethical Committee of Dalarna University, Falun, Sweden for completion of the study. The participants were informed verbally and in written. They participated out of free will and the participation had no consequences for them. Furthermore, the participants were free to interrupt their answering at any time of the study, no question asked. Data was handled with confidentiality.

3 RESULTS

3.1 HIV transmission routes

Measured by means of TRKQ nurses at Hospital 1 exhibited a mean of 24.14 (SD 4.02), (min 15 & max 32 out of 40 points) similar to nurses' TRKQ mean at Hospital 2, 24,07 (SD 3.86), (min 15 & max 32 out of 40 points). With regard to HIV-infection routes recorded by means of open-ended questions a difference ($p < 0.01$) between the staff at the two hospitals was found (Table 3).

The question whether health-care workers get HIV through amniotic fluid was based on the answer rate the most difficult subject at both at Hospital 1 (11.3 %) as well as at Hospital 2 (17 %). The next difficult questions were whether health-care workers get HIV from fluid surrounding brain and spinal cord, fluid surrounding bone joints as well as from saliva, tears and faeces.

The question ‘Can a person get HIV from vaginal sex’ scored the highest rate of correct answers at Hospital 1 (98.6 %) and 2 (100 %); followed by the question ‘Can a person get HIV from anal sex’, Hospital 1 (98.6 %) versus 2 (98.1 %).

The question 'Are latex condoms better than other condoms in preventing HIV if used correctly and frequently' got the most 'I don't know' answers. A total of 23 (32.4 %) out of 71 nurses from Hospital 1 did not know compared to 16 (29.6 %) out of 54 nurses at Hospital 2.

Also 14 (19.7 %) out of 71 nurses at Hospital 1 did not know the answer to the question 'Can a person get infected with HIV from a bite from an infected chimpanzee' and 11 (20.4 %) out of 54 nurses from Hospital 2 did not know that answer either.

5.2. Table 3. Suggested HIV-transmission-routes

<i>Ways a person can get infected with HIV</i>	Hospital Staff 1 (n)	Hospital Staff (n)
Unsafe sex	74	50
Mother to child	45	19
Breastfeeding	16	12
Blood transfusion	57	39
Body fluids	10	13
Deep kissing	2	1
Circumcision/Mutilation	1	10
Injuries from sharp instruments	39	14
Sharing needles	30	23
$X^2 = 21.86, p < 0.01$		

Table 3. Nurses from hospital 1 and hospital 2 both reported that they knew that unsafe sex was the most common way to get infected with HIV. At hospital 1 the most seldom answer was Circumcision/Mutilation to be compared with hospital 2 were deep kissing were the most seldom answer.

The staff at the two hospitals differed as regards 3 subjective beliefs about HIV transmission (Table 4, 5 & 6).

5.3. Table 4. Open sores and HIV transmission.

<i>If I do not have open sores I am out of risk to get HIV</i>				
	Yes	No	Do not know	Total
Hospital 1	25	42	0	67
Hospital 2	15	34	5	54
Total	40	76	5	121
$X^2 = 7.065 \quad p < 0.05$				

Table 4. It is shown that at Hospital one 42 (62,6%) of the staff did think that open sores on ones hand were one source of getting infected with HIV. Hospital 2 scored almost exactly the same by 34 (62,9%) of the staff thinking so.

5.4. Table 5. Awareness and HIV transmission

If I know that the patient do not have HIV/AIDS I do not need gloves

	Yes	No	Total
Hospital 1	18	50	68
Hospital 2	1	52	53
Total	19	102	121

$X^2=13.6$ $p<0.001$

Table 5. When staff at Hospital 1 knew that the patients were not infected with HIV/AIDS 50 (70,4 %) of them thought wearing gloves were not necessary. As much as 52 (96,2%) of the nurses at Hospital 2 did not find gloves necessary to wear in that case.

5.5. Table 6. Patient's looks and HIV transmission

If the patient looks healthy without any AIDS symptom I do not need to wear gloves

	Yes	No	Total
Hospital 1	7	60	67
Hospital 2	0	54	54
Total	7	114	121

$X^2=5.99$ $p<0.025$

Table 6. 60 (84,5 %) of the staff at Hospital 1 thought they should protect themselves from being infected from HIV, by wearing gears such as gloves, even thou the patient look healthy. All 54 (100 %) of the staff at Hospital 2 like to wear gears even thou the patient look healthy without any symptoms of AIDS.

3.2 Non-scientific “HIV-transmission routes”

The staffs at the both hospitals were asked to mention all non-scientific “HIV-transmission routes” they have heard of. They differed ($p < 0.025$) in their frequency of familiarity with the non-scientific “HIV-transmission routes” (Table 7).

5.6. Table 7. Difference between the staff's familiarity with non-scientific "HIV-transmission routes" at two Tanzanian hospitals.

<i>Non-scientific "HIV transmission routes"</i>	Hospital Staff 1	Hospital Staff 2
	(n)	(n)
Insect bites	6	9
Shaking hands/hugs/touching	13	8
Saliva/tears/faeces/sweat	8	6
Living together/sharing utensils/food	16	9
Local/traditional belief	1	5
Superstition/witched	9	9
Do not know	11	3
		$X^2 = 9.45, p > 0.05.$

Table 7. Living together, to share utensils and food is reported to be one of the most common non-scientific beliefs of HIV transmission routes, known by the nurses from Hospital 1, 16 (22,5 %) as well as on Hospital 2, 9 (16,6 %).

3.3 Staff's recommendations about HIV prevention

The staff at the two hospitals differed ($p < 0.05$) in their recommendations to protect a person from HIV (Table 8).

5.7 Table 8. Recommended ways for an individual how to avoid HIV.

<i>Ways to protect a person from HIV</i>	Hospital Staff 1	Hospital Staff 2
	(n)	(n)
Safe sex	74	60
Abstain from sex	22	27
Education	8	3
Safe blood transfusion	13	25
HIV testing	3	8
Gears/gloves	19	16
Sterile instruments	19	33
		$X^2 = 13.77, p < 0.05$

Table 8. The most common answer from Hospital 1 as well as from Hospital 2 of what recommendation to give to people about how to avoid get infected with HIV is Safe sex. By safe sex was mentioned using condom and be faithful to one partner.

3.4 Staff's recommendations about the best care

The staff was asked to recommend the best way to care for a HIV/AIDS patient.

A difference ($p < 0.025$) between the staff at the two hospital was found in this respect (Table 9).

5.8. Table 9. Difference between the staff's recommended best way to care for a HIV/AIDS patient at two Tanzanian hospitals.

<i>The best way to care for a HIV patient</i>	Hospital Staff 1 (n)	Hospital Staff 2 (n)
Counselling	26	12
Education/information	11	4
Psychological support	19	13
Antiretroviral therapy	19	5
Protection	25	30
Nutrition	13	10
Avoid/remove stigma	9	3
Precaution/prevention	16	3
		$X^2 = 16.17, p < 0.025$

Table 9. Nurses at Hospital 1, 26 (36,6 %) scored counselling to be the best way to care for an HIV patient. At Hospital 2, 30 (55,5 %) of the staff, mentioned protection to be the best way to care for an HIV patient.

3.5 Is there a cure for HIV/AIDS?

Most of the staff at both hospitals did not acknowledge a cure for HIV/AIDS. Out of 59 persons at hospital 1, 4 acknowledge a cure and 1 “does not know” as opposed to 1 out of 35 at Hospital 2 stating that there is a cure for HIV/AIDS. With regard to familiarity with non-scientific HIV/AIDS “cures” a difference ($p = 0.0009$) between the staff at the two Tanzanian hospitals was found (Table 10).

5.9. Table 10. Difference between the staff's familiarity with non-scientific HIV/AIDS "cures" at two Tanzanian hospitals.

<i>Non-scientific HIV/AIDS "cures" »</i>	Hospital Staff 1 (n)	Hospital Staff 2 (n)
God/church	21	15
Traditional medicine/witch doctor	18	3
Healer/traditional healer	3	8
Local herbs/drugs	16	24
Drinking urine	2	4
Other	2	9
		$X^2 = 20.70, p = 0.0009$

Table 10. Nurses at the both Hospital were familiarly with non-scientific beliefs among the patients, non- scientific beliefs of how to get cured from HIV/AIDS. At Hospital 1 21 (29,5 %) of the nurses mentioned God and church as one of the most common belief of how to get cured. Staff at Hospital 2 showed that local herbs and drugs where the most common non-scientific belief among the patient of how to get cured from HIV/AIDS.

3.6 The dilemma of giving priority to different patient groups. The staffs at both hospitals were asked to complete questions about giving priority to the care of a certain HIV/AIDS patient groups. No difference (*n.s.*) between the groups of hospital staff was discovered (Table 12).

5.1.1. Table 11. The dilemma of giving priority to HIV/AIDS care for a certain patient group.

<i>Is the former group of patients entitled to the same care as the latter group?</i>	Yes (n)	No (n)	I do not know (n)
Are H/A ¹ elderly(>65) entitled the same care as H/A infants			
Hospital 1	38	23	3
Hospital 2	37	13	3
H/A elderly (>65) entitled the same care as H/A children			
Hospital 1	40	21	1
Hospital 2	39	10	4
H/A homosexuals entitled the same care as H/A heterosexuals			
Hospital 1	55	4	7
Hospital 2	42	7	4
H/A bisexuals entitled the same care as H/A non-bisexuals			
Hospital 1	42	11	14
Hospital 2	40	7	6
H/A prostitutes entitled the same care as H/A non-prostitutes			
Hospital 1	59	4	2
Hospital 2	42	5	4
H/A drug addicts entitled the same care as H/A non-drug addicts			
Hospital 1	46	17	3
Hospital 2	36	12	5
		$X^2 = 2.54$	$p > 0.05$

¹H/A=HIV/AIDS

Table 12. Staff at Hospital 1, 55 (70,4 %) thought that prostituted were entitled the same care as a non-prostituted, while 42 (77,7 %) of the nurses at Hospital 2 thought so. Nurses at Hospital 1 scored the lowest rate at the question about if elderly were entitled the same care as infant, 38 (53,5 %) thought so, while 46,5 % did not agree. At Hospital 2 nurses 36 (66,6%) scored the lowest points to the statement “if drug addicts were entitled the same care as H/A non-drug addicts”.33,4% disagreed with that assertion.

3.7 Nursing Care Comfort Scale

The nurses at the two Tanzanian hospitals were presented with the NCC scale. The result revealed that the staff at Hospital 2 was significantly more comfortable with 15 out of 18 nursing tasks compared to the staff at Hospital 1(Appendix 1). (P-value < 0.0001) (Figure 1). The differences between each of nursing comfort tasks are shown in Table 11, from which it can be seen that question number 3, that is, comfort of giving mouth care to a patient with HIV/AIDS, was rated as the most uncomfortable nursing task. In contrast, question number 17 implying giving an oral medication to a patient with AIDS was rated as a task the nurses were most comfortable with.

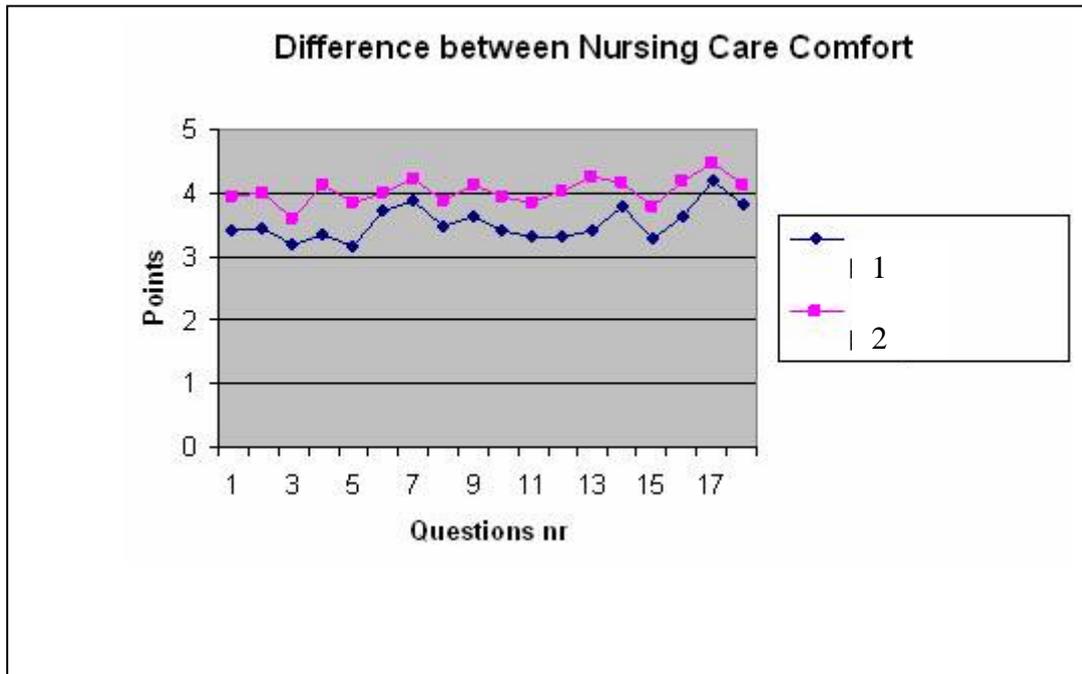


Figure 1. Difference in Nursing Care Comfort Scale between two Tanzanian Hospitals ($p < 0.0001$). Confidence interval: The mean of group one minus group two equals -0.506, 95% confidence interval of this difference: from -0.6708 to -0.3425

4 DISCUSSION

4.1 Conclusion of the main result

Nurse's mindset separated when regarding to comfort care, Hospital 2 showed more positive mindset towards HIV patients than Nurses at Hospital 1. Nurses at Hospital 1 and Hospital 2, both exhibited a satisfactory level of Knowledge about HIV transmission routes, though Hospital 1 a mean of 24.14 (SD 4.02), (min 15 & max 32 out of 40 points) scored to have slightly better knowledge about HIV transmission routes, compared to Hospital 2 24.07 (SD 3.86), (min 15 & max 32 out of 40 points).

4.2 Discussion of results

4.2.1 HIV/AIDS knowledge

Out of a population of about 38 million people in Tanzania 2003 (Landguiden, 2006) 1.8 million persons are living with HIV/AIDS (THIS, 2005). In the present study a comparison between nurses' HIV transmission-route knowledge and rated level of comfort of carrying out basic nursing procedures for HIV/AIDS patients was accomplished at two hospitals in Dar es Salaam, Tanzania. Nurses at Hospital 1 had been subjected to a 3-week full-time General Infection Prevention Training as opposed to those at Hospital 2. The results indicated that both hospitals exhibited a passing level of HIV/AIDS transmission-route knowledge in agreement with findings of Kohi and Horrocks (1994), who claimed that Tanzanian nurses have a satisfactory or passing level of knowledge about AIDS but that their knowledge is more consistent with that of the general public. This claim was supported by the present results from close-ended questions about HIV transmission routes (TRKQ) where no difference between hospitals was found. Five nurses even acknowledged a cure for AIDS, despite the fact that there is no cure for the disease yet (The Body, 2001). In addition, in the study at hand 10.4% of nurses at Hospital 1 thought that they do not need gloves if a patient looks healthy. On the other hand, Tanzania has been affirmed to exhibit a large increase in the level of basic knowledge about HIV/AIDS over the last five years. The proportion who knows that it is possible for a healthy looking individual to suffer from the AIDS virus has enhanced from 69% in 1999 to 79% in 2004 among women and among men from 77% to 84% in Tanzania mainland (THIS, 2005). Nyblade et al. (2003) pointed out that for many individuals, correct knowledge coexists with incorrect knowledge. While people know that HIV can be transmitted from certain conditions, they do not necessarily know how and when this occurs, a fact, which is confirmed by the present results. Nurses at both hospitals reported that people think that they may contract HIV from insect bites, shaking hands, hugging, touching, saliva, tears, faeces, sweat or only by living together, sharing utensils and food. Further, people also

endure beliefs of superstition, e.g., that they have contracted the disease through witchcraft. These results are in agreement with earlier findings (Kalichman & Simbayi, 2004; Norman & Carr, 2003; Tavoosi, Zaferani, Enzevaiei, Tajik & Ahmadinezhad, 2004).

As regards “non-scientific Aids cures” the nurses most often reported that people believed in the cure of God or church. Kalichman and Simbayi (2004) and Mufune (2005) found that AIDS is thought to be God’s punishment brought about by disobedience. Followingly, it is natural to ask God to prevent from or destroy His punishment. Then again, Sian et al. (2006) found that 75% of their investigated HIV/AIDS patients had strengthened their faith and used positive religious coping strategies (e.g. God’s love and care) to handle the disease. In accordance, persons believed that when “cursed” by traditional medicine/witch doctors/ healers or traditional healers, these “authorities” also have the capacity to remove their “curses” (Mufune, 2005).

The staff of the two hospitals differed between answers about HIV-transmission routes on open-ended questions. This fact slightly hints to the possibility that a 3-week full-time General Infection Prevention Training may add to a nurse’s specific body of HIV/AIDS knowledge. Based on the present results Nyblades et al., (2003) observations about two levels of knowledge are supported: accurate knowledge is at hand simultaneously with erroneous understanding and both are made use of.

4.2.2 Nursing Care Comfort

The nurses at the two Tanzanian hospitals were presented with the NCC scale. The results revealed that the staffs at Hospital 2 was significantly more comfortable with 15 out of 18 nursing tasks compared to the staff at Hospital 1. In other words those who were not familiar with the content of the General Infection Prevention Training were more at ease with the basic nursing procedures for HIV/AIDS.

The more HIV/AIDS patients the nurse had cared for the better the knowledge. However, increased knowledge was not associated with a positive attitude towards these patients (Williams et al., 2006). According to Datta and Bandyopadhyay (1997) nurses showed satisfactory HIV/AIDS knowledge but misconceptions regarding, e.g. precautionary measures, - presently in the form of “*If I know that the patient has HIV/AIDS I do not need gloves*” agreed on by 15.7% - and exhibited a negative attitude as well as unwillingness to care for the diseased. In other words, knowledge deficits lead to fear of contagion. Nurses'

fear of contagion when caring for persons with AIDS remains high despite increased levels of knowledge (Chen et al., 2004; Gallop, Lancee, Taerk, Coates & Fanning, 1992;). Fear of AIDS seems to express itself in many ways:” (a) support for policies which would protect me from AIDS, (b) fear of contact with blood and bodily fluids of AIDS patient, (c) turning against those who have AIDS, (d) only care for those who deserve to be helped, (e) concern that I would have no help if I had AIDS, (f) concern about the financial burden of AIDS, and (g) loss of self-worth for one who has AIDS” (Wang, Faan & Paterson, 1996). In other words, “turning against those who have AIDS” is presently expressed as a lower score on NCCS by infection-prevention-trained nurses from Hospital 1. If nurses from Hospital 1 fear more than those at Hospital 2, lacking infection-prevention training a conceivable explanation might be that the former group of nurses has diminished the gap between the two levels of knowledge: accurate knowledge is increased simultaneously with decreased erroneous understanding, but knowledge deficits are still at hand, presently several times indicated in the results. Deficient knowledge leads to fear (Datta & Bandyopadhyay, 1997; Gallop et al., 1992). Fear is, according to Effa-Heap (1997) a factor that can blur judgement and compromise the quality of nursing care.

4.3 Method discussion

4.3.1 Response rate

The participants were selected by means of convenience sampling from the two Tanzanian hospitals in Dar es Salaam by a manager nurse at both hospitals. The sample sizes corresponded well to the sizes of the two clinics. A satisfactory high rate of questionnaires (92.59 %) was answered.

4.3.2 Reliability and validity of the instruments

The choice of nursing-care comfort instrument was made after comparing different tools. The Nursing Care Comfort Scale (NCCS) was considered the most appropriate for the aim of this study. It has been confirmed to be a valid instrument in practice by Williams et al. (1992) reporting the stability of the instrument by assessing a test–retest reliability coefficient of 0.94. Furthermore, Williams et al. (1992) established content validity by asking five nurse educators to review items on the NCCS for inclusiveness of the 18 basic nursing procedures. The content validity of the knowledge questionnaire was based on the subjective judgement of the constructors to answer the question “how representative are these questions on the HIV/AIDS topic founded on facts from the complete HIV/AIDS resource “The Body”(2006)”. The formed 40 questions about HIV transmission routes were also administered to Swedish nurse students to ensure that the questions served their

purpose, prior to their distribution in Dar es Salaam, Tanzania. Necessary changes were undertaken. The face validity of the knowledge questionnaire was based on the judgement of the Ethical committee of Dalarna University of Sweden where the instrument was thoroughly examined and approved. In addition, also the management at Hospital 1, Dar es Salaam, Tanzania considered both instruments suitable for the present purpose. TRKQ did not discriminate between nurses either educated in infection prevention course or not. Moreover the questionnaire seemed to be difficult, because theoretically more than one option of HIV/AIDS transmission is always possible. The authors' enhanced understanding of the concept "HIV/AIDS knowledge" comprises presently two levels of TRKQ, that is, basic facts as well as a more in-depth understanding. This means that the questions are to be complemented with in-depth questions, such as the infection receiver's state, e.g. impaired immune defence, wounded mucosa, blood temperature as well as HIV-infectors' condition (e.g. level of CD4), (Oral Communication, A. Olis, Spring 2006) to enhance the concurrent validity of this instrument.

4.3.3 Limitations of the study

Personal factors such as knowledge of the English language might have biased the present study. Swahili, the first language in Tanzania, would have been the language of choice as it showed that some of the nurses had difficulties to understand the questions and to complete the questionnaires. However, Swahili was beyond the authors' knowledge. In addition, the pilot study was tested in English on Swedish nurse students. The pilot study might have yielded a better result in case it would have been done within the Tanzanian cultural frame. After diverse complications in forms of application permission difficulties, two administrative nurse officers were obliged to distribute the questionnaires to nurses at each hospital. The participating nurses acknowledged acquaintance with homo- and bisexual patients, a fact the authors seriously doubt based on the reality that it is illegal to be homo- or bisexual in Tanzania. Sexually deviant persons are likely to end up in jail.

Open-ended questions seemed to be more difficult to fill in. The completions of the questionnaires were out of reach and could not be supervised. When analyzing the questionnaires it was noticed that many of the participants had filled in them together and consequently, they answered exactly in the same way. This means that administration variations were beyond the authors' control. Consequently, the authors suspect error of measurement and the accuracy of the answers. In addition, a total of 60 000 Tanzanian shillings (335 SEK) were paid both to Hospital 1 as well as to Hospital 2, that is, about 5.6

SEK (approximately 3% of a nurse salary) per participant and completed questionnaire. However, it was not possible to supervise the completion of the questionnaires in Tanzania. The nurses even got a few days to fill in the questionnaires and then return them to the two administrative nurse officers at the two hospitals.

4.4 Conclusion

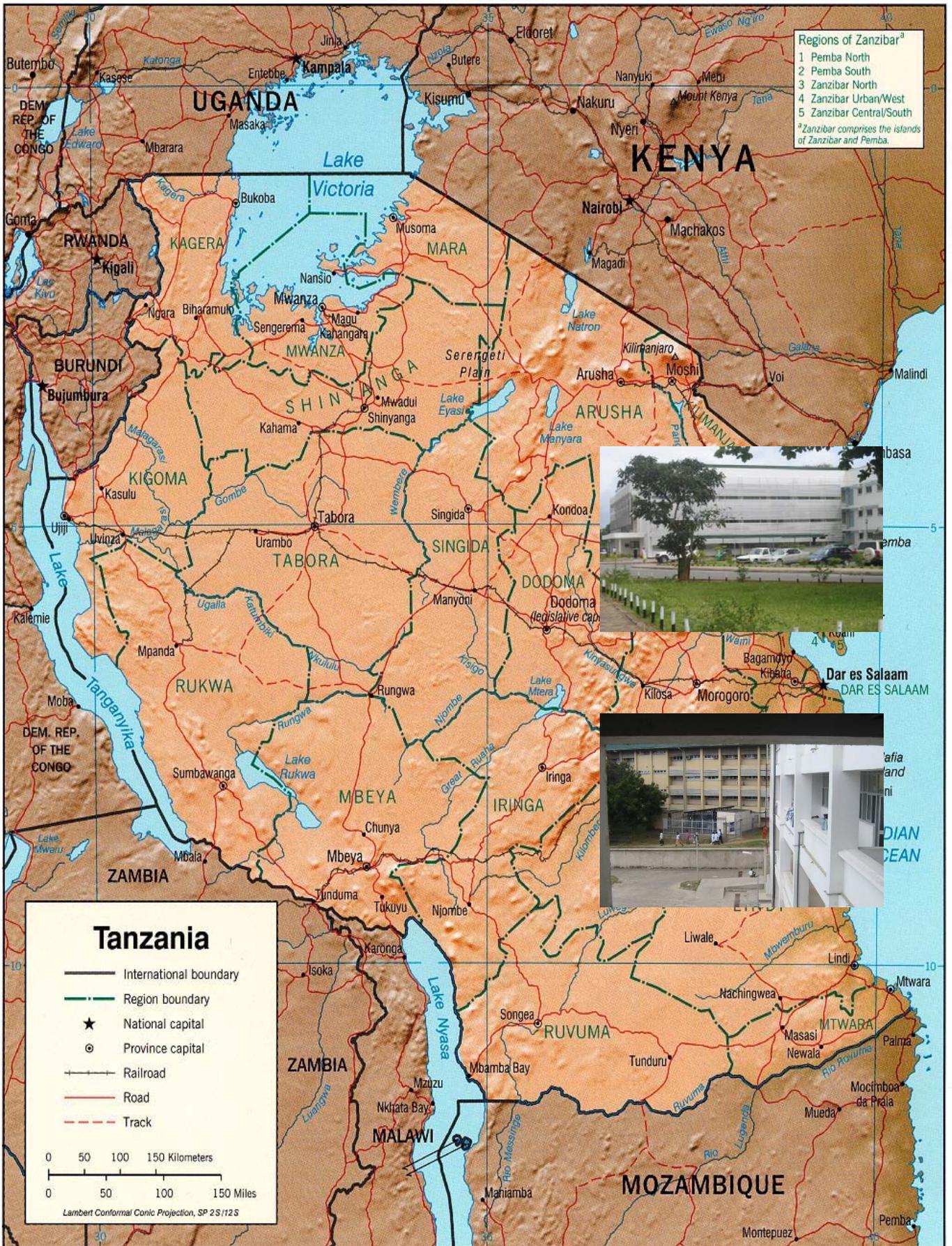
A comparison between nurses at two Tanzanian hospitals in Dar es Salaam yielded that their level of knowledge about HIV/AIDS transmissions routes differed on open-ended questions but not on a close-ended questionnaire (TRKQ). However, two levels of knowledge seemed to be at hand: correct knowledge coexisted with invalid information and both were made use of. Infection-prevention-trained nurses from Hospital 1 exhibited a poorer mind-set, recorded by means of NCCS, towards HIV/AIDS diseased than nurses from Hospital 2, lacking such training. A plausible explanation might be that infection-prevention trained nurses diminished the discrepancy between levels of knowledge in their mind. They increased their factual knowledge about the disease but not sufficiently to attain a mind-set of wellbeing or comfort when caring for HIV/AIDS patients. Deficient knowledge leads to fear (Datta & Bandyopadhyay, 1997; Gallop et al., 1992) especially fear of death (Moore, 2001) through HIV contagion, a fact that can compromise the quality of nursing care.

4.5 Suggestion for further research

On request from the boss of the Clinical Services at Hospital 1, the study is to be repeated in accordance with that performed by Kohi and Horrocks (1994) in order to understand the development in Tanzanian nurses' knowledge and attitudes over the last decades. The present design can be repeated as well but the questions are to be complemented with in-depth questions, such as the infection receiver's state, e.g. impaired immune defence, wounded mucosa, blood temperature as well as HIV-infector's condition (e.g. level of CD4).

4.6 Acknowledgement

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5 MAP OF TANZANIA

Figure 2. Map of Tanzania. The two hospitals compared in the present study were located in Dar es Salaam. Authors' pictures.

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