



VIDA MOCKIENE

The Impact of an Education Intervention  
on Nurses' Knowledge of and Attitudes towards HIV  
and Willingness to Take Care of HIV-positive People  
in Lithuania



ACADEMIC DISSERTATION

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of the Arvo Building, Lääkärintäti 1, Tampere,  
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UNIVERSITY OF TAMPERE

## ACADEMIC DISSERTATION

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## **Abstract**

The overall goal of the study was to identify the areas which need to be improved in order to develop the quality of nurse education related to HIV infection and HIV-positive people. The hypothesis for the study was as follows: education intervention increases nurses' knowledge level, their positive attitudes, and their willingness to care for HIV-positive people or those with AIDS.

The study was conducted in three phases during the period of 2006 to 2010. First, an international descriptive cross-sectional survey was conducted with a sample of registered nurses in Finland (n=322), Estonia (n=191), and Lithuania (n=168) (the total n=681). Second, a descriptive literature review related to nurses' education interventions based on 16 articles was performed. Third, a randomized control trial (RCT) with two experimental groups and one control group was done in Lithuania. The baseline data consisted of 206, and the follow-up data of 185 participants.

The international cross-sectional survey revealed that there were some differences in the knowledge, attitudes, and willingness to care for people living with HIV or AIDS (PLWHA) between Finland, Estonia and Lithuania, with Lithuanian nurses showing the lowest knowledge level and less positive attitudes compared to the others. The literature review did not allow draw the conclusions as to what type of education intervention would be best to have a beneficial impact on nurses' HIV and AIDS-related knowledge, attitudes, and willingness to care of HIV-positive people. However, it is clear that different teaching methods in nurses' supplementary education should be combined.

Based on the randomized controlled trial (RCT), a two-day education intervention, combined with written materials, increased the nurses' knowledge level and positive attitudes, thus confirming a hypothesis. Contrary to expectations, it did not increase the nurses' willingness to care for HIV-positive people or those with AIDS. The distribution of written materials alone did not improve the nurses' knowledge level, their positive attitudes towards people with HIV, and their willingness to provide care for them.

In order to improve nurses' HIV and AIDS-related knowledge, attitudes, and willingness to care for HIV-positive patients in an effective way, several educational methods should be combined. The using of written materials alone in continuing education is undoubtedly cheaper, but it is insufficient to achieve a positive effect on nurses' knowledge level in the present context.

The study produced information on the areas which need to be improved in order to develop the quality of nurse education related to HIV and HIV-positive people. It demonstrated changes in nurses' knowledge, attitudes, and willingness to take care of HIV-positive patients. The knowledge can be used to offer better preventive care services and health care for HIV-positive patients. The study offers implications for different fields including nursing practice, education, clinical research, and nursing science.

**Keywords:** AIDS, attitude, education intervention, HIV, knowledge, Lithuania, nurse, teaching, willingness to care.

## Tiivistelmä

Tämän tutkimuksen tarkoituksena oli kuvata koulutusintervention vaikutusta hoitajien tietotasoon HIV:stä ja AIDS:sta, heidän asenteitaan HIV:ä ja AIDS:ia kohtaan ja heidän halukkuuttaan hoitaa HIV-positiivisia henkilöitä. Asetetut tutkimushypoteesit olivat seuraavat: koulutusinterventio lisää hoitajien tietotasoa, heidän positiivisia asenteitaan ja halukkuuttaan hoitaa sekä HIV-positiivisia että AIDS:ia sairastavia potilaita.

Tutkimus toteutettiin kolmivaiheisena vuosina 2006–2010. Ensimmäiseksi kansainvälinen, kuvaileva poikkileikkaustutkimus tehtiin sairaanhoitajille (n=681) Suomessa (n=322), Virossa (n=191) ja Liettuassa (n=168). Toisena vaiheena oli kuvaileva kirjallisuuskatsaus hoitajille kohdennetuista koulutusinterventioista pohjautuen 16 artikkeliin. Kolmantena vaiheena oli satunnaistettu koekontrolliasetelmalla tehty tutkimus kahdella koeryhmällä ja yhdellä kontrolliryhmällä. Alkumittauksiin osallistui 206 osallistujaa ja seurantamittauksiin 185 osallistujaa.

Kansainvälinen kuvaileva tutkimus osoitti eroja hoitajien tietotasossa, asenteissa ja halukkuudessa hoitaa HIV-positiivisia ja AIDS:ia sairastavia henkilöitä Suomen, Viron ja Liettuan välillä. Liettualaisten hoitajien tietotaso oli matalin ja asenteet vähemmän positiivisia muihin verrattuna. Kirjallisuuskatsauksen perusteella ei voitu päätellä millainen olisi paras koulutusinterventio, jolla olisi positiivinen vaikutus hoitajien tietotasoon HIV:sta ja AIDS:sta sekä heidän asenteisiinsa ja halukkuuteensa hoitaa HIV-positiivisia potilaita. Voidaan kuitenkin todeta, että erilaisia opetusmetodeja pitää yhdistää hoitajien täydennyskoulutuksessa.

Koekontrolliasetelmalla toteutettu kahden päivän koulutusinterventio yhdistettynä kirjallisen materiaalin käyttöön lisäsi hoitajien tietotasoa ja positiivista asennoitumista ja täten vahvisti esitettyjä hypoteeseja. Koulutusinterventio ei kuitenkaan oletusten vastaisesti lisännyt hoitajien halukkuutta hoitaa HIV-positiivisia tai AIDS:ia sairastavia ihmisiä. Kirjallisen materiaalin käytöllä yksinään ei ollut positiivista vaikutusta hoitajien tietotasoon, positiivisiin asenteisiin tai hoitohalukkuuteen.

Useampien opetusmetodien yhdistäminen on tarpeen pyrittäessä lisäämään tehokkaasti hoitajien HIV:iin ja AIDS:iin liittyvää tietoa, positiivisia asenteita ja halukkuutta hoitaa HIV-positiivisia ihmisiä. Kirjallisen materiaalin käyttö yksinään täydennyskoulutuksessa on kaikin tavoin halvempaa, mutta sillä ei saavuteta riittävää vaikutusta hoitajien tietotason lisäämiseksi tässä kontekstissa.

Tämä tutkimus tuotti tietoa kehittämisalueista parannettaessa hoitajien koulutuksen laatua HIV:in ja HIV-positiivisten potilaiden suhteen. Tutkimuksessa tuotiin esille se, miten ja missä määrin hoitajien tiedot, asenteet ja halukkuus hoitaa HIV-positiivisia henkilöitä muuttuu. Tätä tietoa voidaan käyttää parannettaessa hoitajien koulutusta, jotta he pystyvät tarjoamaan entistä parempaa ennaltaehkäisevää palvelua väestölle sekä hoitoa HIV-positiivisille henkilöille. Tutkimuksella on merkitystä sekä hoitotyön käytännölle, koulutukselle, tutkimukselle että tieteelle.

**Asiasanat:** AIDS, asenne, koulutusinterventio, HIV, tieto, Liettua, hoitaja, opetus, halukkuus hoitaa



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## ABBREVIATIONS

AIDS	= acquired immunodeficiency syndrome
ANOVA	= analysis of variance
ART	= antiretroviral therapy
AVERT	= averting HIV and AIDS
CD4	= cluster of differentiation 4
CDC	= centers for disease control
CMV	= cytomegalovirus
DNA	= deoxyribonucleic acid
ELISA	= enzyme linked immunosorbent assay
IDU	= injection drug use(r)
HAART	= highly active antiretroviral therapy
HCV	= hepatitis C virus
HIV	= human immunodeficiency virus
PLWA	= people living with AIDS
PLHIV	= people living with HIV
PLWHA	= people living with HIV and AIDS
PEP	= post exposure prophylaxis
RNA	= ribonucleic acid
UNAIDS	= Joint United Nations Program on HIV and AIDS
UNDP	= United Nations Development Program
UNGASS	= United Nations General Assembly Special Session on HIV and AIDS
WHO	= World Health Organization

## LIST OF PAPERS

The dissertation is based on the following publications which are referred to in the text by their Roman numerals from I to V.

- I Suominen, T., Koponen, N., Mockiene, V., Raid, U., Istomina, N., Vänskä, M-L., Blek-Vehkaluoto, M. & Välimäki, M. (2010) Nurses' knowledge and attitudes of HIV/AIDS – an international comparison between Finland, Estonia and Lithuania. *International Journal of Nursing Practice*, 16(2), 138-147.
- II Välimäki, M., Makkonen, P., Blek-Vehkaluoto, M., Mockiene, V., Istomina, N., Raid, U., Vänskä, M-L. & Suominen, T. (2008) Willingness to care for patients with HIV/AIDS – an international comparison in Finland, Estonia and Lithuania. *Nursing Ethics*, 15(5), 586-600.
- III Mockiene, V., Suominen, T., Välimäki, M. & Razbadauskas, A. (2010). Impact of intervention programmes on nurses' knowledge, attitudes, and willingness to take care of patients with Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome: a Descriptive Review. *Medicina*, 46(3), 159-168.
- IV Mockiene, V., Suominen, T., Välimäki, M., Razbadauskas, A., Caplinskas, S. & Martinkenas, A. The impact of an education intervention to change nurses' HIV-related knowledge and attitudes in Lithuania: A randomized controlled trial. *Journal of the Association of Nurses in AIDS Care*. In Press.
- V Mockiene, V., Suominen, T., Välimäki, M., Razbadauskas, A., Caplinskas, S. & Martinkenas, A. Nurses' willingness to take care of people living with Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) – does a teaching intervention make a difference? *Nurse Education Today*. In Press.

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# 1. Introduction

Human immunodeficiency virus and acquired immunodeficiency syndrome (HIV and AIDS) have an impact on the daily lives of many millions of people. The HIV epidemic is a global crisis and a formidable challenge to the development and social progress, because it often affects people vulnerable in other ways, as well as countries with limited resources. Many of the world's poorest countries are among those most affected in terms of numbers of infections and the scale of the epidemic's impact. By the end of 2008, an estimated 33.4 million people were living with HIV, of whom 2.1 million were children. An estimated 2.7 million people were newly infected in 2008, and 2 million died of AIDS (UNAIDS/WHO, 2009). According to the new data in the AIDS epidemic update in 2009, new HIV infections have been reduced by 17% over the past eight years. However, in some countries there are signs that HIV incidence is rising again (WHO, 2009).

HIV has been estimated to have inflicted the single greatest reversal in human development in modern history (UNDP, 2005). The epidemic has heightened the global consciousness of health disparities and catalyzed unprecedented action to confront some of the world's most serious development challenges. Few diseases in history have prompted a comparable mobilization of political, financial, and human resources, and no development challenge has led to such a strong level of leadership and ownership by the communities and countries most heavily affected (UNAIDS, 2008). The HIV and AIDS pandemic has profoundly affected the economy, the work force, individual workers and their families, health care expenditures, the cost of labor, savings, and investments (ILO/WHO, 2009). In most countries, a strong foundation now exists on which to build an effective HIV response with increasing political commitment and partner coordination at a country level. Overall HIV-related funding totaled more than US\$ 3.1 billion from 1989 until July 2009 (WHO/UNAIDS, 2009). From the individual point of view, people living with the HIV infection confront challenges reducing their life quality, such as frequent episodes of AIDS-related loss (e.g. the death of friends or family members sick with AIDS), the loss of one's employment or housing, failure to receive emotional support from family members and friends, and vacillating feelings of hopelessness, anxiety, and anger (Heckman, 2000). Stigma and discrimination against people associated with or living with HIV is often cited as one of the primary hurdles in addressing prevention and care issues and as a stumbling block in ensuring access to essential services (Osborne, 2009).

Nevertheless, nurses provide life-saving and life-enriching care to PLWHA throughout the world. Quite often, they are among the first care providers, or even the primary care providers for patients with HIV. However, even though the HIV virus and AIDS disease have already been in their fourth decade, nurses continue to harbor fear of the disease. The unrealistic fear of contagion may lead to biased and prejudiced nursing care for HIV and AIDS patients (Gurung & Sangchart, 2008).

While medically focused trainings provide a valuable service to the doctors in HIV care, nurses need training that is geared to their competencies and roles (Family Health International, 2007). A strong nursing work force of the future will require new approaches to recruitment, preparation, and retention of nurses, interdisciplinary partnerships, and infusion of support from a variety of sources (Sorensen, 2001).

There is still a need to develop nurses' education, so that nurses could be HIV prevention leaders. Individual health worker barriers to HIV prevention identified in previous research (e.g. Mbanya et al., 2001; Ezedinachi et al., 2002) include knowledge deficit, HIV and AIDS stigmatizing attitudes, reluctance to discuss HIV and AIDS and sexuality, and risky behavior in personal lives. Despite the benefits of nurses' education (e.g. Williams et al., 2006) and a number of recommendations aiming to ensure that nurses receive information (International Center for HIV and AIDS Research and Clinical Training in Nursing, 2010; Lithuanian Nursing Staff Training and Specialized Center, 2010), differences in the impact of nurses' education on clinical practice have been found. In order to develop nurses' education and to be sure of the quality of education, it is necessary to explore user perspectives, to involve them in the development process, and to develop definite instructions to provide those interventions in clinical practice.

The main focus of the present study was on nurses' education. The overall goal of the study was to identify the areas which need to be improved in order to develop the quality of nurse education related to HIV infection and HIV-positive people. In the study, we can recognize the resources of the nurses, the possible barriers, and their willingness to act. The results of the study contribute to the knowledge of nursing practices, to the development and implementation of nurses' education interventions, and to the support to education in the hospital setting and public health.

The framework of the study is based on the thinking presented by Bloom and his colleagues (1956). They stated that there is more than one type of learning. Bloom et al. (1956) identified three domains of educational activities. Those activities were named as categories of taxonomies: knowledge (K), attitude (A), and skills (S), (KAS).

Knowledge acquisition involves complex cognitive processes: perception, learning, communication, association, and reasoning (Oxford English Dictionary, 1989). The knowledge may aid in decision making in the event of an occupational exposure to HIV, as well as allow a more complete understanding of the medical issues facing HIV-positive patients. In addition, knowledge may provide a context in which to understand the evolving HIV epidemic throughout the world (Petroll et al., 2008). Attitudes may become so rigidly adhered to that, instead of assisting an individual in understanding his environment and the events taking place within it, they become the perception. The process of changing attitudes requires that the individual objectively examines the critical elements of the attitude and identifies those components that are valid and those that are prejudgments (Gross, 1987). Cultural norms may affect the attitudes of health care workers towards people infected with HIV (Chiamaka et al., 2008). Staff caring for PLWHA need to acquire new attitudes, knowledge, and skills as they become involved in the multi-disciplinary

problems of AIDS care and prevention (Beker et al., 1998). Furthermore, they should be willing to act as health care providers. Willingness to care is defined as the caregiver's attitude towards providing emotional, physical, and instrumental support to people living with HIV (PLHIV) (Abell, 2001).

Nurses are on the front lines of HIV care, prevention and advocacy. It is essential that they receive HIV and AIDS education, both to reduce the risk of HIV infection among their clients and to improve the quality of care delivered to Lithuanian patients living with HIV or AIDS. For many years, the problem of HIV and AIDS has been underestimated by Lithuanian authorities and social institutions because of a concentrated prevalence as compared to other countries in the region. In 2003, the real danger was realized after uncovering an epidemic among injecting drug users (IDU) (Čaplinskas, 2004).

The present study includes both an international cross-sectional survey and a nationwide research approach. The national approach is used in the evaluation of an education intervention. In the national approach, the study environment consists of the biggest country hospitals defined as health services providing medical care (Ministry of Health of the Republic of Lithuania, 2010), and people living with HIV in Lithuania. The country has a population of approximately 3.5 million and is surrounded by countries where HIV is highly prevalent; nevertheless, the global HIV pandemic arrived late in Lithuania, and Lithuania has a concentrated HIV prevalence rate (Čaplinskas, 2004). The said topic area has not been so much highlighted in nurses' education in Lithuania. A supplementary education programme developed as part of our study may be seen as the first step aiming to contribute to and to update Lithuanian nurses' competence in the area.

The literature search for the present study covered the time span from 1990 to 2010 and used the keywords: *HIV infection, AIDS disease, people living with HIV, nurses\*, intervention, education, knowledge, attitude, willingness to care, treatment, and transmission*. The keywords were used both alone and interchangeably. The review is based on the databases of Tampere University, World Health Organization website, Lithuania AIDS Centre website, and manual search by the researcher. The basic databases were those of Medline, Cochrane Library, and ERIC. Other limitations of search in databases were *English language, abstract, and full text*. The manual search included articles found in the references of the examined articles from the databases, websites, and relevant literature. The result of the literature search (87 full text articles) consisted mainly of the studies which were in touch with nurses' knowledge level and attitudes to HIV-positive, however, nurse education methods or duration have not been the focus of the studies. The literature search to explore the principles of nurses' education in general was performed to describe requirements which are desired in the nursing care.

## 2. People living with HIV infection and AIDS disease

### 2.1 HIV infection, AIDS disease, and their care

#### 2.1.1 HIV infection and its transmission

HIV belongs to a subset of retroviruses called lentiviruses (or slow viruses), which means that there is a significant interval between the initial infection and the onset of symptoms. Upon entering the bloodstream, HIV infects the CD4<sup>+</sup> T cells and begins to replicate rapidly. AIDS is the final stage of HIV infection (Offiah & Turnbull, 2006). The US Centers for Disease Control and Prevention established the definition of AIDS as a condition which occurs in HIV-infected people with fewer than 200/mm<sup>3</sup> CD4<sup>+</sup> T cells and/or people with HIV who develop certain opportunistic infections (CDC, 2008). HIV-infection is much like the Trojan horse which defeated the ancient Greeks. It breaks down one's defenses from the inside and allows all kinds of diseases and infections to reign (Uys, 2000).

AIDS, caused by the retroviruses human immunodeficiency virus type 1 and type 2 (HIV-1 and HIV-2), has reached pandemic proportions. Therefore, it is critical to understand how HIV causes AIDS. Primarily, HIV-infection leads to a gradual loss of CD4<sup>+</sup> T cells which function as regulators and amplifiers of the immune response. In the absence of effective antiretroviral therapy, the hallmark decrease in CD4<sup>+</sup> T lymphocytes results in a weakened immune system, impairing the body's ability to fight infections or certain cancers during AIDS, and death eventually ensues (Alimonti et al., 2003).

In order for infection to occur, the virus has to enter the body and attach itself to the host cells. HIV infects CD4<sup>+</sup> cells which organize the body's overall immune response to foreign bodies and infections. HIV infects T-helper cells and macrophages. In order for a person to become infected, the viruses attach themselves to the surface of CD4<sup>+</sup> cells and macrophages. Once the virus attaches itself to the cell's surface, it penetrates the wall. After the penetration, the virus cannot be destroyed by the body's defense mechanisms. Inside the cell, it copies its ribonucleic acid (RNA) into deoxyribonucleic acid (DNA) and integrates into the host genome. The integration allows the cell to produce new HIV viral proteins and viruses. Those viruses break out of the cell and go on to infect more CD4 cells. (Whiteside & Sunter, 2001).

The acute retroviral syndrome characteristic of primary HIV-infection, which is seen with ca. 50% of those infected, includes prominent features of immune activation, such as fever, night sweats, myalgia, arthralgia, and lymphadenopathy. For a small proportion of people with HIV, those symptoms may become chronic, indicating persistent activation of the immune system (Rogers et al., 2008).

HIV cannot be transmitted through casual contact, i.e. working with someone who is HIV-positive or sharing the same space in a bus, school, party, or home with an infected person. It cannot be transmitted by toilet seats, swimming together in a swimming pool, through telephones or sharing clothing and eating utensils. One cannot be infected by eating food prepared by an infected person. It is also not possible to contract HIV through a mosquito bite (ILO/WHO, 2005; AVERT; averting HIV and AIDS, 2009).

HIV can be transmitted by 4 bodily fluids: blood, semen, vaginal fluids, and breast milk. There are 3 major routes by which the above named fluids can transmit HIV from an infected person to an uninfected person. Parenteral exposure to blood containing HIV can occur in injecting drug users shared needles or in healthcare workers through needlestick injuries or “occupational exposures” (however, occupational transmission to healthcare workers is uncommon and can be prevented by applying standard blood precaution practices). Sexual contact can transmit HIV either by allowing the virus direct access to the bloodstream through traumatic tearing of the skin or mucosal tissues or by infection of the macrophages that line the mucosal surfaces of the vagina or rectum. Vertical transmission of HIV (from mother to child) can occur through several routes, including exposure to blood or vaginal secretions during labor or by breast-feeding (Petroll et al., 2008). Epidemiological data indicate that breast-feeding is associated with a high HIV transmission risk (Ferris & Kabaabetswe, 2003).

People with advanced HIV infection are vulnerable to infections and malignancies that are called 'opportunistic infections', because they take advantage of the opportunity offered by a weakened immune system. A partial list of the world's most common HIV-related opportunistic infections and diseases includes:

- Bacterial diseases, such as tuberculosis, mycobacterium avium complex, bacterial pneumonia, and septicaemia (blood poisoning);
- Protozoal diseases, such as toxoplasmosis, microsporidiosis, cryptosporidiosis, isosporiasis, and leishmaniasis;
- Fungal diseases, such as pneumocystis pneumonia, candidiasis, cryptococcosis, and penicilliosis;
- Viral diseases, such as those caused by cytomegalovirus, herpes simplex, and herpes zoster virus;
- HIV-associated malignancies, such as Kaposi's sarcoma, lymphoma, and squamous cell carcinoma (AVERT, 2009).

Many of the opportunistic infections that occur at a late stage of the disease can be fatal (UNDP, 2010).

Infection with HIV is the most potent risk factor for the progression from latent or newly acquired *tuberculosis* infection to active disease (Centers for Disease Control and Prevention, 2000). However, recent observational studies conducted both in low



and high tuberculosis incidence countries have consistently shown that the risk of developing active tuberculosis is decreased by 70–90% for HIV-infected people who receive highly active antiretroviral therapy (HAART), as compared with untreated patients (Girardi et al., 2000; Jones et al., 2000; Badri et al., 2002; Santoro-Lopes et al., 2002). As a consequence, incidences of HIV-associated tuberculosis have generally decreased in the countries where HAART has become a standard of care for HIV-infected people. Nonetheless, HIV-associated tuberculosis continues to occur in the context of a wide use of HAART (cit. Girardi et al., 2004). Surveillance data suggest that among people who develop AIDS the proportion of patients with tuberculosis tends to be higher among those who are treated with HAART and are less immunosuppressed, as compared with those who have major immunosuppression in spite of HAART, or are not treated (Wagner et al., 2001). Finally, there is some evidence that the clinical presentation of HIV-associated tuberculosis may also have changed after the introduction of the use of HAART (Girardi et al., 2002).

Co-infection between *hepatitis C* virus (HCV) and HIV is a serious clinical condition. Worldwide, over 3% of the population have chronic hepatitis C, the leading cause of progressive liver disease and cirrhosis. HIV-positive patients are at high risk for infection by HCV, with an estimated prevalence of 30%-35%. In the population of injecting drug users, the prevalence of HCV can be higher than 80% (Sulkowsky et al., 2000; Wasley & Alter, 2000). Progression to cirrhosis in chronic HCV-infected individuals can be precipitated by some “co-factors”, such as alcohol abuse and co-infection with HIV. End-stage liver disease is one of the most important causes of hospital admissions and death in HIV-infected patients, in whom the severity of hepatocellular necrosis, portal inflammation, and fibrosis appears to be more intense (Braga et al., 2006). Survival of individuals infected with HIV has dramatically improved with HAART; however, chronic hepatitis C has emerged as a significant health concern in this population (Braga et al., 2006).

In an epidemiological study, Mohsen et al. (2001) found an increased frequency of HCV infection among HIV-positive individuals, particularly in drug users. Studies in Italy (Di Perri et al., 2001), and the USA (Bica et al., 2001) have confirmed a negative impact of co-infection on HCV-induced liver disease, with a higher incidence of decompensated cirrhosis and hepatocellular carcinoma.

The number of people living with HIV worldwide continued to grow in 2008, reaching an estimated 33.4 million (31.1 million – 35.8 million). The total number of people living with the virus in 2008 was more than 20% higher than the number in 2000, and the prevalence was roughly threefold higher than in 1990. The latest epidemiological data indicate that, globally, the spread of HIV appears to have peaked in 1996, when 3.5 million (3.2 million – 3.8 million) new HIV infections occurred. In 2008, the estimated number of new HIV infections was approximately 30% lower than at the epidemic’s peak 12 years earlier (UNAIDS/WHO, 2009).

Consistent with the long interval between HIV seroconversion and symptomatic disease, annual HIV-related mortality appears to have peaked in 2004, when 2.2 million (1.9 million–2.6 million) deaths occurred. The estimated number of AIDS-related deaths in 2008 was roughly 10% lower than in 2004. An estimated 430.000 (240.000 – 610.000) new HIV infections occurred among children under the age of

15 in 2008. Most of those new infections are believed to stem from transmission in uterus, during delivery, or post-partum as a result of breastfeeding. The number of children newly infected with HIV in 2008 was roughly 18% lower than in 2001 (UNAIDS/WHO, 2009).

The epidemic appears to have stabilized in most regions, although its prevalence continues to increase in Eastern Europe and Central Asia and in other parts of Asia due to a high rate of new HIV infections. Sub-Saharan Africa remains the most heavily affected region, accounting for 71% of all the new HIV infections in 2008. The resurgence of the epidemic among men who have sex with men in high-income countries is increasingly better-documented. Differences are apparent in all regions, with some national epidemics continuing to expand, even as the overall regional HIV incidence stabilizes (UNAIDS/WHO, 2009).

Eastern Europe and Central Asia are the regions where HIV infections clearly remain on the rise. An estimated 110.000 (100.000–130.000) people were newly infected with HIV in 2008, bringing the number of people living with HIV in Eastern Europe and Central Asia to 1.5 million (1.4 million –1.7 million), compared with 900.000 (800.000 – 1.000.000) in 2001 (a 66% increase over that time period). The Ukraine and the Russian Federation are experiencing especially severe and growing national epidemics. With adult HIV prevalence higher than 1.6%, the Ukraine has the highest inflection level reported in all Europe (Kruglov et al., 2008). The HIV and AIDS rates in Latvia are among the highest in the EU (ECDC, WHO, 2009); in 2008, the HIV incidence rate in Latvia was nearly three times higher as that in the EU: 157.6 per million population as compared to 60.6 per million in the EU. In the late 2009, 4.614 HIV cases were registered in the country, and 824 of these were AIDS cases (UNGASS, 2010). According to the National Institute of Public Health data, since the beginning of the HIV and AIDS epidemic in Poland (1985) to the end of the year 2010, 12.757 HIV infections were diagnosed (among them 5.516, i.e. 43%, were related to IDU), moreover, there were 2.313 AIDS cases and 1.022 AIDS-related deaths. It is estimated that every third person does not know their serological status, therefore, there may be as many as 30 to 35.000 people in Poland living with HIV, with ca. 25% of them women. Each year, approximately 800 new HIV infections are diagnosed in the country (Krajowe centrum ds. AIDS, 2008). In the late 2009, 10.690 HIV cases were registered in Belarus. According to official statistics, at the end of 2009, HIV prevalence among residents of Belarus amounted to 91.1 per 100.000 population. In compliance with cumulative data (1987-2009), 52.7% of HIV infections were related to IDUs (Национальный отчет, 2010).

Injecting drug use remains the primary route of transmission in Eastern Europe and Central Asia. In many countries, drug users are frequently engaged in sex work, magnifying the risk of transmission (UNAIDS, 2010). Use of contaminated equipment during injecting drug use was the source of 57% of newly diagnosed cases of HIV infection in Eastern Europe in 2007 (van de Laar et al., 2008). Between 38.5% and 50.3% of injecting drug users in the Ukraine are believed to be living with HIV (Kruglov et al., 2008). In the Russian Federation, 37% of the country's 1.8 million injecting drug users are estimated to be HIV-infected (Mathers et al., 2008). The last 5 years in Lithuania show a decreasing tendency of infection through injecting drug use and an increasing tendency of infection through sexual

relationship, especially among women. Relatively, the number of HIV infection in women has annually increased, along with the constantly decreasing male/female HIV ratio. In 2003, the ratio was 7:1, and decreased up to 2.3: 1 in 2007 (Lithuanian country report, 2007).

Both in Finland and the Baltic States, the HIV situation causes concerns. In the face of globalization, neighboring areas should engage in active cross-border co-operation to prevent infection diseases. The HIV/AIDS epidemic reached Finland in the mid-1980s. In Finland (with a population of approximately 5.35 million), 2,592 (1,893 males and 699 females) HIV infections were reported by the end of 2009. AIDS and AIDS-deaths peaked in Finland in 1994. Of these, 526 developed AIDS, and 285 of them died of AIDS. Most of the cases in 2009 were associated with sexual transmission, heterosexual transmission being the most frequent mode. Only 17 HIV cases associated with injecting drug users (IDUs) were reported in 2008-2009. However, regarding HIV among men, 86 infections were associated with men having sex with men and 70 with heterosexual activity in 2008-2009. Two mother-to-child transmissions were reported, but the infections occurred prior to their arrival in Finland. Furthermore, in 2008-2009, a certain proportion (44%) of all the new HIV cases were non- Finnish citizens (Salminen, 2008; UNGASS, 2010).

The first HIV case in Estonia (with a population of approximately 1.37 million) was registered in 1988. By the end of 2009, 7,320 people were diagnosed with HIV. In 1992, the first AIDS case was diagnosed, and by the end of 2009, there were 290 AIDS diagnoses. From 1988, the main mode of HIV transmission in Estonia was sexual (both homosexual and heterosexual). The epidemics in Estonia remains mainly concentrated among IDUs and their sexual partners. According to the data of the AIDS counseling services, in 2001, the IDUs constituted 90% of the new cases detected by the services, while in 2006, they accounted for 48%. The first HIV-positive pregnant woman in Estonia was diagnosed in 1993. The first childbirth by an HIV-positive mother took place in 1999. The total number of HIV-positive pregnant women was 631 by the end of 2006. The HIV-infected people are mainly young 15-29-year-olds, and the majority are Russian-speaking (Estonian Ministry of Social Affairs, 2008; Health Board, 2010).

Lithuania has a population of approximately 3.5 million and is surrounded by countries where HIV is highly prevalent (i.e. Russia, Kaliningrad district, Belarus, Latvia, Estonia and Poland); nevertheless, it is considered to be a country with concentrated HIV prevalence. In Lithuania, the first HIV-positive person was not identified until 1988. During 1988-2009, totally 1,401 HIV infection cases were identified. According to the data of 1 January 2009, the main routes of transmission were: intravenous drug use (1,028 cases), heterosexual intercourse (184 cases), homosexual intercourse (92 cases), and unknown in 96 cases. The first case of HIV mother-to-child transmission was registered in 2007. In Lithuania, infected women have given birth in total to 30 children (Lithuanian AIDS Center, 2009).

### 2.1.2 Testing and treatment of HIV

HIV infection is primarily diagnosed by testing for HIV antibodies. Early or acute HIV infection can be identified by using nucleic acid amplification assays that directly test for the presence of viral RNA in the plasma. RNA tests are not commonly used diagnostically in clinical settings because of their high cost and the potential of generating false positive results, but they can be used by public health departments and in other situations in which batch testing is feasible. The initial screening test performed is an enzyme-linked immunosorbent assay (ELISA). Because ELISA tests are highly sensitive, a negative result at this step is considered definitive. An exception to that is patient who may have been infected with HIV less than 4 weeks before testing, but has not yet developed HIV antibodies. If that is clinically suspected, additional testing must be carried out to confirm true negativity. A positive result in the screening test requires confirmation with a Western blot assay because other infections or autoimmune disorders can result in false-positive ELISA results. A positive result on this test is considered a definitive indication of HIV infection (Petroll et al., 2008).

Testing for resistance to HIV medications is typically performed in each patient before initiating antiretroviral therapy. Other factors to consider when constructing a medication regimen include interactions with other medications, other medical conditions, dosing schedules, and the adverse effects of each antiretroviral medication.

After the initial diagnosis, HIV-positive patients are usually referred to specialists in HIV treatment. The first step in assessing a newly diagnosed patient is measuring the CD4 cell count. Normal values for CD4 cells vary, however, they usually range from 500 to 1200 cells/mL. The decision to begin antiretroviral therapy is usually based on a patient's CD4 cell count. Antiretroviral medications are generally started if a patient's CD4 count is less than 350 cells/mL. However, medications can be started at higher CD4 counts if a patient is having symptoms thought to be related to HIV viremia. Additional elements that are considered are the patient's willingness to start medication and the state of other concurrent medical or psychosocial conditions (Petroll et al., 2008).

More than 32 antiretroviral medications have been approved for HIV treatment. Those drugs are classified by the enzyme or the protein they target in the HIV life cycle. The mainstay of therapy consists of drugs from 6 classes of antiretroviral drugs: nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, and protease inhibitors, fusion inhibitors, entry inhibitors-CCR5 co-receptor antagonist, and HIV integrase strand transfer inhibitors. HAART consists of at least 3 drugs: 2 nucleoside reverse transcriptase inhibitors and either 1 non-nucleoside reverse transcriptase inhibitor or 1 protease inhibitor. HAART gained acceptance as the standard of care for antiretroviral treatment in 1996, because it demonstrated potent and durable suppression of viral replication (Petroll et al., 2008). Current HAART regimens suppress viral replication, provide significant immune reconstitution, and have resulted in a substantial and dramatic decrease in AIDS-related opportunistic infections (OIs) and deaths both among adults and children (Gortmaker et al., 2001; Gona et al., 2006; Nesheim et al., 2007).

Post-exposure prophylaxis (PEP) is generally understood to mean the medical response given to prevent the transmission of blood-borne pathogens following a potential exposure to HIV (Rapiti et al., 2005). In the context of HIV, post-exposure prophylaxis refers to the set of services that are provided to manage the specific aspects of exposure to HIV and to help prevent HIV infection in a person exposed to the risk of getting infected by HIV. Those services might comprise first aid, counseling including the assessment of risk of exposure to the infection, HIV testing, and depending on the outcome of the exposure assessment, the prescription of a 28-day course of antiretroviral drugs, with appropriate support and follow-up. PEP should be initiated as soon as possible after exposure, within the first hours and no later than 72 hours after exposure. PEP should not be offered beyond 72 hours after exposure (WHO, 2007). There are some criteria presented for individuals when to use PEP for HIV. Additional factors to consider are whether the potentially exposed individual is not infected or not known to be infected with HIV, whether mucous membrane or non-intact skin was significantly exposed to a potentially infectious body fluid, and whether the source is HIV-infected or the HIV status is unknown (WHO, 2010).

## 2.2 Everyday life with HIV and AIDS

HIV and AIDS deeply affect the lives of people who suffer from HIV and AIDS. However, recent advances in the treatment of HIV infection and AIDS disease have brought increased life expectancy and improved quality of life among PLWHA. The development of powerful drug therapies has changed AIDS from a disease of which patients died shortly after the diagnosis to one that is long term and progressive. However, in spite of this accomplishment, people living with AIDS (PLWA) are still at risk for Kaposi's sarcoma, pneumocystic carinii pneumonia, and other opportunistic infections and neurological dysfunctions, often resulting in impairment, functional limitation, and disability (Zonta et al., 2003). As people living with HIV and AIDS (PLWHA) live longer with their illness, symptom management has become an even higher priority of nursing care. The care for PLWHA requires both active treatment and care throughout the disease trajectory to relieve the pain associated with opportunistic infections and adverse effects of therapy (Jones, 2002).

HIV and AIDS are more than just a medical term for a physical dysfunction; it represents a broader social construct associated with fear and stigma. It is the family, as the basic social unit of society, which will largely bear the brunt of the possible catastrophic impact of HIV and AIDS in the decade to come (Smit, 2007). HIV and AIDS not only affect the physical and psychological well being of people living with those, but also their ability to socially interact with others (Vidanapathirana et al., 2009). Throughout the world, PLWHA are subject to varying levels of discrimination and stigmatization in the workplace, in communities, and within the family (UNAIDS: Joint United Nations Programme on HIV and AIDS, 2001). Unfortunately, HIV-positive individuals and those perceived to be infected experience stigma and discrimination also in the health care sector

(UNAIDS, 2001; Nyblade et al., 2003). Studies show that HIV-related stigma in this context is pernicious, and that its physical and mental health consequences to patients can be damaging (Surlis & Hyde, 2001; Khakha, 2003; Mahendra et al., 2006; UNAIDS, 2007).

There are several psychosocial factors related to HIV that should also be considered. Depression is one of the most common mental health disorders reported among individuals with chronic illnesses (Meade-D'Alisera et al., 2001), and depression among adults living with HIV is well documented (Komiti et al., 2003). Depressive symptoms have been shown to predict an increased risk of developing disease progression in PLWHA (Leserman, 2008). Although an association between depression and disease progression may be due to the lack of a “protective” effect of positive affect or mood (Moskowitz, 2003), it may also be partially mediated by behavioral mechanisms that include substance use and non-adherence. Depressed individuals may be more likely than others to turn to using alcohol and other drugs as a strategy of self-medication (Khantzian, 1985). Depression may also affect the AIDS disease progression by undermining treatment adherence (Ironson et al., 1994). There is a large body of literature showing that depression is associated with poor HIV and AIDS treatment adherence (cf. Chesney, 2003).

Traumatic and other stressful life events are highly prevalent among people who are HIV-positive (Whetten et al., 2008). Childhood sexual abuse and other traumatic life events seem to be risk factors for sexual risk behavior, injecting, and other drug use associated with HIV infection (Gore-Felton & Koopman, 2002). Clinical evidence suggests that stressful life events predict more rapid HIV progression (Leserman, 2008). For instance, research found that for every severely stressful life event per 6-month interval the risk of early HIV progression doubled (Evans et al., 1997). Although physiological changes associated with stress (e.g. neuroendocrine and sympathetic nervous systems) may account for the relationship between stress and the progression of HIV infection (Leserman, 2008), behaviors associated with stress can also have deleterious effects on health outcomes. One route for stress to affect HIV progression may be through health behaviors. For example, many individuals who experience stress have poor exercise activity, use tobacco, alcohol, and other drugs (Pillai, 1991).

Passive coping strategies, such as denial, have been associated with HIV-1 progression. Moreover, individuals who use more active coping strategies were less likely to develop HIV-related symptoms over a 1-year period (Gore-Felton & Koopman, 2008). Active coping would be expected to reduce disease progression among HIV-positive people because such strategies would likely enable individuals to incorporate safer sexual behavior and develop behaviors that increase adherence to complex regimens in highly active antiretroviral therapy (Ironson et al., 1994). For individuals with HIV whose disease has progressed and requires regular medical monitoring and intervention, the psychological process of being aware of one's needs may be a salient factor in activating adherence to medical treatment. For individuals with a robust immune profile, factors other than coping, such as alcohol or drug use, may be more salient for their disease trajectory. Although it remains unclear what actually mediates the relationship between coping and the disease progression, it is likely that certain behaviors are enacted by passive coping

strategies, such as substance use, unsafe sex, missed appointments, and poor adherence to complex medication regimens (Gore-Felton & Koopman, 2008).

Potential sources of social support are often burdened and impaired by the high levels of stress in the lives of people living with HIV. An AIDS diagnosis is associated with lower levels of practical and emotional support from family members (Gore-Felton & Koopman, 2008). Leserman et al. (2002) found that social support was associated with slower progression to AIDS and a clinical AIDS condition. Furthermore, problems with inadequate social support may have physiological, as well as psychological, consequences. In general, greater social support has been associated with better immune system functioning (Leserman et al., 1999).

Among HIV-positive people, those with less deterioration in CD4 positive-lymphocyte cell count were significantly more likely to report greater social support availability (Theorell et al., 1995). Consistent with the research suggesting that more social support is associated with better immune function, bereavement, or a loss of an important source of social support, has been associated with two functional immune decrements, namely, decreased natural killer cytotoxicity and decreased lymphocyte proliferative response to phytohemagglutinin (Gore-Felton & Koopman, 2008). Social support has also been associated with treatment adherence (Power et al., 2003). Furthermore, the social network's influence on drug use has been well established (Needle et al., 1995). The research evidence identifies negative and positive influences, such as having high levels of drug use in a person's social network that serve as a barrier to quitting drug use, as well as having sexual partners who inject drugs and having unprotected sexual intercourse (Gore-Felton & Koopman, 2008).

All the issues presented above make individuals very vulnerable and dependent on nursing as well. Nurses take an important part in supporting patients (Ezedinachi et al., 2002; Williams et al., 2006) when they are in contact with the health care system. Nurses' knowledge level, attitudes, and willingness to care are widely accepted to have an impact on how they succeed in performing this demanding task.

## 3. Nursing care for patients with HIV and AIDS

### 3.1 Components affecting the nursing care for HIV-positive people

The evolution of HIV infection into a chronic disease has implications on nursing across all clinical settings. Every nurse should be knowledgeable about the prevention, testing, treatment, and chronicity of the disease in order to provide high-quality care to people with, or at risk for, HIV. It is therefore important to have an understanding of the changing epidemiology of the disease, the latest testing recommendations, the developments in screening technology, the implications of aging with HIV infection, and the nursing implications of the ongoing epidemic (Bradley-Springer, 2010).

When the epidemic started, we did not have any HIV nurse specialists, and the situation is still unchanged in a number of countries. This caused the situation that the practicing nurses were not, and still are not, always willing to care for HIV-positives due to a perception of personal risk, particularly when the basic materials they needed were not provided by the hospitals despite the grim reality that HIV and AIDS patients were growing at a perplexing rate (Sowunmi & Ikhemuembe, 1996). Presently, there are professional nursing organizations in the world which foster high quality in HIV and AIDS nursing, promote the health, rights, and dignity of people affected by HIV and/or AIDS, and prevent the spread of HIV infection, e. g. the Canadian Association of Nurses in AIDS Care (CANAC) (<http://www.canac.org>), the Association of Nurses in AIDS Care (ANAC) (<http://www.nhivna.org.uk>). Master's level education on HIV care is offered for nurses not only in the USA (e.g. at the University of San Francisco) (<http://nurseweb.ucsf.edu>), but in some European countries as well, e.g. at the University of Copenhagen in Denmark (<http://www.mhiv.ku.dk>).

Internationally, there is an acute shortage of nurses, which undoubtedly has an impact on the nursing care of patients with HIV and AIDS. One reason for the shortage is due to the work environment in which nurses practice. In a recent review of the empirical human factors and ergonomic literature specific to nursing performance, nurses were found to work in generally poor environmental conditions. DeLucia and colleagues (2009) concluded that the profession of nursing as a whole is overloaded because of the shortage of nurses. Each individual nurse is overloaded. They are overloaded with the number of patients they oversee and with the number of tasks they perform. They work under cognitive overload, engaging in multitasking and encountering frequent interruptions. Chen et al. (2010) conducted a



study to explore HIV health care services from the perspectives of both healthcare providers and patients in order to understand how to optimize HIV nursing care. They found that patients who were diagnosed with HIV in a general hospital often did not discuss their condition with a healthcare provider before being sent to a specialist hospital. Furthermore, since the patients had already been diagnosed, healthcare providers in the specialist hospital did not deal adequately with the disclosure process and emotional reactions to the diagnosis. They reported feeling overwhelmed in their role of providing healthcare services. Nurses reported that they were responsible for many “non-nursing” tasks and did not have the opportunity to give the type of care they were trained to offer.

Human resource problems identified by the WHO include the problems of the quantity and quality of personnel, demoralization of health-care workers, and huge gaps in both initial and in-service training. An extreme shortage of trained health workers is an important factor that requires both national and international attention (Aiken et al., 2004). Nurse satisfaction and turnover rates are important indicators of the quality of nursing care at a hospital. Flexible scheduling and nurse empowerment can help prevent nurse burnout and result in a higher quality of care (Ertl-Rosner & West, 2010).

The HIV and AIDS epidemic is a major additional factor that is overwhelming the health system in a number of countries. Over 50 per cent of hospital beds in the countries of sub-Saharan Africa are occupied by people with HIV-related illnesses, although most of the latter are cared for at home. The traditional domestic and nurturing roles mean that women and girls bear most of the burden of care, not only health care professionals (WHO, 2004).

Even nurses who do not work in HIV care can make a difference in the epidemic. The nurses’ knowledge level of HIV and AIDS may have an impact on the quality of services provided. Nurses are seen as trustworthy resources for information on HIV prevention and testing, and they should be comfortable discussing those topics with a wide range of people. In addition, nurses may be the first care providers to recognize HIV-related symptoms or risk factors in a patient. Symptoms can be non-specific; it is important to remember that HIV often belongs to a differential diagnosis, and clinicians should keep that in mind. When working with HIV-infected patients, nurses can play a pivotal role in medication adherence, symptom management, positive behavior change, and patient education (Bradley-Springer, 2010).

In order to have a pivotal role, one central demand is to have a sufficient knowledge level. Thus, e.g., the Finnish home nursing staff have a high level of knowledge of HIV and AIDS (Suominen et al., 2000). Older and more experienced nurses tend to be less knowledgeable about AIDS. The personal knowledge of AIDS patients and the experience of treating them were associated with a high level of knowledge, positive attitudes, a low level of homophobia, and willingness to care for such patients. In settings where poor working conditions exist, particularly concerning the possibilities of application of general blood precautions, health care professionals may be exposed to risk of blood-borne infections, such as HIV, HBV, and HCV. We do not know very much about the nurses’ roles and nursing or health care situations specifically in Estonia and Lithuania, because there are not many

studies in the area. In Estonia, health staff largely blamed the injection drug users (IDUs) (the latter accounted for 90% of the new HIV-cases in 2001, 66% in 2003, 54% in 2007, and 48% in 2009) for not caring about their own health, while IDUs and their advocates tended to relate the problems to the care provision services. In particular, stigma and discrimination towards IDUs seemed to still be major contributors to the existing problems of inadequate access to care and treatment (Evaluation of fighting HIV/AIDS in Estonia, 2008).

In 1990, the Lithuanian AIDS Centre conducted an anonymous survey. In accordance with the results, 72% of health care workers claimed not to have enough knowledge about HIV, 19% stated that HIV could be caused by a mosquito bite, and as many as 78% of health care workers maintained that they would not allow their children to stay in the same group with HIV-infected children. The attitude of health care workers towards HIV-infected has changed but a little. Social assessment provided the general negative attitude of the Lithuanian society to the HIV-infected and once again reflected the fact that knowledge often did not change the provisions of existing human behavior stereotypes (Lithuanian National AIDS Program Evaluation, 2005).

HIV and AIDS raise several ethical issues. They evoke feelings not only among patients and their family or friends, but also among health care professionals; and they provoke discussions and questions about refusing to care. HIV can exert a social, mental, and physical impact on an individual and HIV-positive environment. Levels of psychological distress are the highest at early stages of diagnosis of HIV infection. That is caused by the anxiety about the repercussions of being HIV-positive. Coping with the knowledge of being HIV-positive is difficult. People fear to be stigmatized and rejected by family and friends (Xudu & Karstaed, 2001; Holzemer & Uys, 2004; Makoae et al., 2008), which should be considered by health care professionals. The withholding of treatment, hospital staff refusing to treat patients, HIV testing without consent, lack of confidentiality, and denial of hospital facilities and medicines are all ways of stigma and discrimination in healthcare settings that PLWHA can experience. Such responses are often fuelled by the ignorance of HIV transmission routes among doctors, midwives, nurses, and hospital staff. Lack of confidentiality has been repeatedly mentioned as a particular problem in health care settings. Many PLWHA do not get to choose how, when, and to whom to disclose their HIV status. Studies by the WHO in India, Indonesia, the Philippines, and Thailand found that 34% of the respondents reported breaches of confidentiality by health care workers (AVERT, 2009). Various ethical considerations are to be taken into account when dealing with HIV and AIDS in health care. On the other hand, PLWHA have the duty to respect the rights, health, and physical integrity of those who are HIV-negative and to take appropriate steps to ensure that this respect is accorded when necessary (Geyer, 2004).

One aspect behind the refusal to care could also be possible risk contacts at work. Needlestick injuries among health care workers are a relatively common occurrence. An estimated 380.000 needlestick injuries occur in US hospitals each year (Panlilio et al., 2004). Nurses reported most needlestick and sharp injuries (Falagas et al., 2007). This is in accordance with reports from other countries (Tan et al., 2001; Foley, 2004). In some parts of the world, the risk of occupational exposure to HIV among health care workers is likely to be increasing. This is partly because

increasingly more people living with HIV are coming into contact with health systems for treating HIV infection and partly because the proportion of people living with HIV who have invasive procedures is increasing (WHO, 2007). It also reflects a lack of proper use of universal precautions for blood exposure.

Transmission of HIV to healthcare workers through occupational exposures is relatively rare; however, fifty-seven cases of HIV seroconversion following occupational exposures among US healthcare workers were documented between 1981 and 2006. Of the 57 documented cases, 24 occurred in nurses (CDC, 2006). The risk of infection after an occupational percutaneous exposure is roughly 1 in 300 (0.3%); after a mucous membrane exposure, the risk of seroconversion is approximately 9 in 10,000 (0.09%) (Bradley-Springer et al., 2010). That could be due to the fact that most countries, especially those with a prevalence of HIV-infected population, have never instituted surveillance systems that would capture data on such cases (Jagger, 2007).

The risk of exposure to HIV will certainly increase as more patients with HIV infection enter hospitals in Finland, Estonia, and Lithuania, unless proper precautions are in place in all invasive procedures, including venipuncture. Patients are not all open about their HIV-positive status. Furthermore, nurses are bound by professional secrecy to keep a patient's HIV-status confidential. The result is that nurses may face some risk of contracting HIV in their work setting. The risk of contracting HIV from infected patients is possible through repeated exposure to contaminated blood and body fluids (Van Dyk, 2002). However, until the year 2001, there were no occupational HIV cases reported among the health care workers in Lithuania, although 11 accidents took place at hospitals and 4 in police detention spots in 2001 while handling the HIV contaminated materials or servicing the HIV-positive people (Čaplinskas, 2004).

In the event of occupational exposures, consultations with an expert are generally recommended. The appropriate use of PEP (in the present context, the use of antiretroviral medications is called PEP, i.e. post-exposition prophylaxis) requires assessing both the type of exposure and the status of the "source" patient. An exposure involving a deep percutaneous injury, a hollow needle, or a device removed from a patient's artery or vein or containing visible blood is considered to be more severe. Exposures involving a superficial injury or a solid needle are considered less severe (CDC, 2005). Because HIV transmission can also occur from other types of blood exposure, there are also criteria for exposures involving the mucosal membranes or non-intact skin of the healthcare specialist. Blood exposures to intact skin are not considered to be a risk for HIV infection, and PEP is not recommended in such situations. (Petroll et al., 2008) Within the health care sector, PEP should be provided as part of a comprehensive universal precautions package that reduces staff exposure to infectious hazards at work. The availability of PEP is likely to reduce the risk of transmission. It is believed to contribute to the increase in staff motivation to work with people infected with HIV and may help to retain staff concerned about the risk of exposure to HIV in the workplace (WHO, 2010).

### 3.1.1 Nurses' knowledge of HIV and AIDS

Knowledge can be defined as expertise and skills acquired by a person through experience or education; the theoretical or practical understanding of a subject in a particular field or in general; and facts and information, or awareness of, or familiarity with a fact or situation gained by experience. Knowledge acquisition involves complex cognitive processes: perception, learning, communication, association, and reasoning. The term of *knowledge* is also used to mean the confident understanding of a subject and the ability to use it for a specific purpose, whenever appropriate (Patel et al., 2010).

All health care professionals should have appropriate knowledge and skills to engage in basic tasks of HIV prevention, risk assessment, and care (Wolf et al., 2004). A low knowledge score was recorded among nurses in Oyeyemi et al. study (2006-1) despite the prior AIDS education and its reported effectiveness.

Scattered reports have shown that most nurses in developing countries are not well prepared during their pre-service education in the knowledge, skills, and attitudes needed to provide quality care related to HIV and AIDS (WHO, 2002; Bharat & Mahendra, 2007; Gurung & Sangchart, 2008). The study of Kermode et al. (2005) found that only 11% of the nurses correctly identified the risk of HIV infection from a needle stick injury as 0.3%. A low level of nurses' knowledge was demonstrated in a number of studies (Walusimbi & Okonsky, 2004; Chen et al., 2004; Oyeyemi et al., 2006-1), which could have affected their role in safety precautions against HIV infection. The study of Bektas and Kulakac (2007) also revealed a variable lack of knowledge about HIV. There were many misconceptions about how HIV was transmitted, e.g. shaking hands, using the same toilet or bathroom, etc. This problem was also addressed by previous researchers, such as Tavoosi et al. (2004).

In many studies, the HIV and AIDS knowledge was associated with a level of education, professional rank, frequency of care, and previous training. Delobelle et al. (2009) stated that HIV infection and AIDS disease had increased nurses' workload because of lengthy counseling procedures, a lack of trained staff, and an increasing number of patients with HIV and AIDS. Nurses voiced concerns about their lack of knowledge regarding care and treatment of those patients and advocated for training all the nursing staff, regardless of their professional rank. Although HIV and AIDS-related knowledge was moderately adequate in the study, some gaps and misconceptions relating to occupational HIV transmission, disease presentation, and HIV risk prevention were found. The study of Uwakwe (2000) showed that continuous training is necessary to keep up with the knowledge and best practices on HIV among nurses.

A dramatic number of opportunities and challenges for generating knowledge for the nursing discipline and professional practice are both exciting and awe-inspiring in the review of national and international nursing research priorities and future directions for nursing research. But no challenge is greater than translating nursing knowledge into nursing practice and using knowledge to shape health policy (Hinshaw, 2000). The HIV epidemic challenges nurses to become key players in the prevention and management of HIV, to increase their knowledge about this serious

issue, and to provide effective HIV prevention and care to their patients (Williams et al., 2006).

Regular continuing education is necessary to update the knowledge and improve the competence in nursing practice. AIDS education, including clinical clerkship, structured experience, and guided discussion on ethical scenarios, is recommended as an essential component of a nursing curriculum. As future providers of nursing care, students should be assisted in identifying and exploring their attitudes and values to improve behavior through enriched professional socialization (Oyeyemi et al., 2006-1).

### 3.1.2 Nurses' attitudes toward HIV-positive people

According to Baron and Byrne (1991), there are three structural components of attitude, and those are: several affective components which refer to positive or negative emotions about something; the behavioral component which involves intentions to act in certain ways and to engage in behavior that is somehow relevant to one's attitude; and the cognitive component which refers to the thinking and interpreting that goes into the forming or using an attitude.

Attitude is gained through experience and contact with the world around us (Davis & Houghton, 1995). They may be altered by new experiences and information. Essentially, attitudes are formed through a learning process which can occur in a number of ways: classical conditioning, operant conditioning, observational learning, and imitation. The nursing of HIV-positive and AIDS patients requires special skills. Staff caring for those patients need to acquire new attitudes, knowledge, and skills, as they become involved in the multi-disciplinary problems of AIDS care and prevention (Beker et al., 1998).

A number of studies on health care workers' attitudes towards HIV and AIDS have revealed relatively similar results. Negative attitudes and biases of care providers towards people living with HIV are reported from across the world, and care providers also admit that there is reluctance among some of them to provide adequate care (Hentgen et al., 2002; Hong & Van Anh, 2004; Gurung & Sangchart, 2008). Negative attitudes towards PLHIV can interfere with the quality of nursing care and can cause stress to nurses and patients alike. In the study by Bektas and Kulakac (2007), there was a substantial negative attitude towards AIDS and HIV-positive patients. There was a similarity between the UK (Earl & Penney, 2003) and Turkish samples on this subject: both samples indicated quite similar findings in that the greatest stigma was attached to persons who had developed AIDS through injecting drugs, possibly because the illness was seen as a result of their actions. A study in India reported that only 15% doctors agreed to admit HIV-positive women for delivery at their clinics (Mhase & Reddy, 2000). In a four-state survey in Nigeria, about 9% of the total sample of 1,103 health care professionals (doctors, nurses, and midwives) working directly with HIV-positive patients were reported refusing to care for positive patients, and a similar proportion was reported as refusing them hospital admission. Nearly a third reported observing other

professional colleagues refusing to care for patients with HIV, and 43% observed others refusing people with HIV hospital admission (Letamo, 2001).

Cultural norms may affect the attitudes of health care workers towards people infected with the HIV virus. Those beliefs may translate into reluctance to care for and treat PLWHA. Issues related to sexuality, blame, conditional duty and care, and discriminatory care should be assessed, and appropriate wide-ranging in-service education and support should be provided to health care professionals. Improvement in clinical practice is not always guaranteed, nor does it always persist following educational interventions (cited after Chiamaka et al., 2008).

### 3.1.3 Nurses' willingness to care for HIV-positive people and those with the AIDS disease

Willingness to care is defined as the informal caregiver's attitude towards providing emotional, physical, and instrumental support to the PLWHA (McDonnell et al., 1991). Although its assessment is similar to that of a caregiver burden, it is different in that the caregiver may be asked to anticipate his or her responses to the sick person's current or future needs. When willingness to care is assessed in the context of an existing relationship, the primary concerns are whether the relationship can be sustained over time and what issues or perceptions may need to be addressed to make it mutually functional for caregiver and care recipient (Abell, 2001).

Willingness is the readiness of health care workers to care for PLWHA without coercion. Some studies reported that physicians and nurses were uncomfortable when administering medical procedures to HIV-infected patients (Oyeyemi et al., 2006-1; Oyeyemi et al., 2008), while in one study (Fransman et al., 2000), more than half of the respondents were found to be reluctant to perform invasive procedures on HIV-infected children. Another study (Martin & Bedimo, 2000) emphasized that nurses had relatively low avoidance and high empathy towards people living with AIDS and were willing to take care of HIV-infected individuals. More knowledgeable nurses in Uganda showed a positive attitude, and the positive attitude was significantly associated with the nurses having completed a formal educational programme on HIV and AIDS (Walusimbi & Okonsky, 2004).

Willingness to care is needed in different areas. Lynch and Wilson (1996) reported that willingness to care for HIV-positive individuals varies across three major domains. First, emotional support is needed; the caregiver may be called on to offer comfort when the sick person is in distress, to listen to expressions of anger or grief, or to accept the PLWHA's choice of friends or companions. Instrumental support is the second need involving e.g. preparing a meal for a person, cleaning house, or providing transportation to medical appointments. The third need is for physical or nursing support, including changing soiled bed linen, bathing, or assisting the PLWHA in and out of bed. The experience of caring for PLWHA is not necessarily associated with a positive attitude towards those patients or with willingness to care for such patients in the future (Williams et al., 2006.).

## 3.2 Educational solutions for nurses' education related to HIV or/and AIDS

Nurses' knowledge, their attitudes, and their willingness to care for those with HIV have a major impact on the quality of care for HIV-positive and also on preventive work. Advanced education may have an impact on nurses, too. Effective education of nurses related to HIV and care for PLWA has not been researched extensively. However, there is considerable research on how to change nurses' knowledge, how to change nurses' attitudes, and how to change their willingness to care for people with the help of education.

In the intervention review by Farmer et al. (2008), which included 23 studies, it was noticed that printed educational materials (PEMs) were widely used as passive dissemination strategies to improve knowledge, awareness, attitudes, skills, and professional practice. Traditionally, they were presented in paper formats, such as monographs, publications in peer-reviewed journals, and clinical guidelines and appeared to be the most frequently adopted method for disseminating information. RCTs, controlled clinical trials (CCT), controlled before and after studies (CBAs), and interrupted time series analyses (ITS) were included to evaluate the impact of printed educational materials on healthcare professionals' practice. Brunero et al. (2010) reviewed the evidence for empathy education programmes in nursing. A review of CINAHL, Medline, Psych Info, and Google Scholar was carried out by using the keywords *empathy*, *person centeredness*, *patient centeredness*, *client centeredness*, *education*, and *nursing*. Seventeen studies from the literature review were found to meet the inclusion criteria. Of the 17 studies, 11 reported statistically significant improvements in empathy scores. Several variables were found to be able to affect empathy education that needed to be accounted for in future studies, such as gender, cultural values, and clinical specialty experience. The models of education that showed most promise were those that used experiential styles of learning. However, the interventions described ranged significantly in length. Statistically significant results were evident from the shorter duration studies of 11 hours, with the longest program of 105 hours showing only trend improvement. The length of education is a significant variable, as there are high costs associated with delivering education programs to nurses. Of the 17 studies, 11 described using experiential learning styles within their training programs, with five using didactic styles of learning and one study using a self-directed learning package. Of the 11 studies that used experiential style learning, eight were reported to have statistically significant positive results on empathy skill improvement.

Some studies were also found on training nursing students on HIV-related issues. Thus, e.g., Polit and Beck (2008) in their literature review examined articles about nurses' student education. The articles ranged in dates from 1991 to 2003. 11 articles were selected. Education and knowledge were found to be the factors that affected the willingness of the nurses to care; simultaneously, the way in which the education was delivered was just as important.

Nurses need to be offered information on HIV and AIDS not only as part of their vocational education and examination, but also as supplementary education later on. The number of HIV-positive cases may have increased significantly, and the

treatment and care may have advanced a lot after their basic education. The nursing of HIV-positive and AIDS patients requires special skills. They include the identification and management of specific clinical problems, counseling techniques, the administration of patient care, and the ability to communicate effectively with individuals, families, and community groups. Staff caring for HIV-positive and AIDS patients need to acquire new attitudes, knowledge, and skills as they become involved in the multi-disciplinary problems of AIDS care and prevention. They need to be ready to learn from personal experience and from their colleagues. When talking about attitudes, feelings, and values, it is essential to remain objective, to empathize without becoming emotionally involved, to listen with respect, and to challenge received wisdom where necessary (Effa-Heap, 1997).

Education has a key role to play both in preventing HIV and AIDS and in mitigating their effects on individuals, families, communities, and society. The literature is abundant with calls for a curriculum reform in nursing education, advocating curricula that are responsive to changes in the health care delivery system, are research-based and collaborative, and apply pedagogical innovation (Giddens & Brady, 2007). Training should be headed in new directions: personal experience, group support, and group experiences are useful in that they allow participants to assist each other in understanding material; learners want to know how the things they learn will be applied to workplace (Kowalski & Vaught, 2002). Continuing education also offers many different forms. Some examples of continuing education may include workshops, conferences, grand rounds, hospital-wide continuing education programmes, professional organization-based continuing education programs, on-line educational programs, journal articles, journal clubs, and unit-based presentations and programmes (Skees, 2010).

Different programmes have been designed to improve nurses' knowledge level related to HIV and AIDS. Thus, e.g. Uwakwe (2000) included knowledge about HIV and AIDS into a 7-week information, education, and communication (IEC) programme in an experimental group. A sensitization to a problem-based participatory approach to learning was adopted and incorporated into 28 lectures, seminars, multimedia presentations, and discussion sessions. The intervention by Bluespruce et al. (2001) consisted of interactive training that involved role-plays and case stories. Ezedinachi et al. (2002) organized an intervention that consisted of expert lectures (two days), role plays, "*Train the Trainer*" workshop and seminars, group discussions, and a videotape presentation. The lectures by Buskin et al. (2002) concentrated on presenting information and allowing time for a brief discussion of the topic. Williams et al. (2006) organized a 5-day workshop consisting of didactic lectures interspersed with activities designed to elicit discussion of participants' values and personal feelings about HIV and AIDS. Pisal et al. (2007) had a 4-day HIV and AIDS-related health education programme using the training-of-trainers model and qualitative research involving participatory methods, discussions, and debates. However, all the previous authors drew conclusions that knowledge, attitudes towards PLWHA, and willingness to provide nursing care to those patients were each improved at the conclusion of the workshop.

Excellence in nursing practice involves a commitment to learn and apply new knowledge (Krugman, 2008). The public demand for competence and safe practice obliges the profession to meet the challenges of high-quality care with current



knowledge and skills (Estabrooks, 1998). Thus, it is important to understand the views of health care professionals and their educational perspective related to HIV and AIDS. However, according to the previous literature, the impact of education on nurses' knowledge, attitudes, and willingness to care have not been given special attention in studies related to the HIV and AIDS context.

### 3.3 Theoretical frame of the study

The theoretical frame of the study was based on the taxonomies presented by Benjamin Bloom (1956). He identified three domains of educational activities; cognitive: mental skills (Knowledge), affective: growth in feelings or emotional areas (Attitude), and psychomotor: manual or physical skills (Skills). The domains can be thought of as categories. Trainers often refer to the three categories as KSA (Knowledge, Skills, and Attitude). The taxonomy of learning behaviors can be thought of as "the goals of the learning process", i.e., after a learning episode, the learner should have acquired new skills, knowledge, and/or attitudes.

#### Cognitive Domain

The cognitive domain (Bloom, 1956) involves knowledge and the development of intellectual skills. That includes the recall or recognition of specific facts, procedural patterns, and concepts that serve for the development of intellectual abilities and skills. There are six major categories from the simplest behavior to the most complex. The categories can be thought of as degrees of difficulties, i.e., the first one must be mastered before the next one can take place.

#### Affective Domain

The affective domain (Krathwohl et al., 1973) includes the manner in which we deal with things emotionally, such as feelings, values, appreciation, enthusiasms, motivations, and attitudes. The five major categories are from the simplest behavior to the most complex.

#### Psychomotor Domain

The psychomotor domain (Simpson, 1972) includes physical movement, coordination, and use of the motor-skill areas. Development of those skills requires practice and is measured in terms of speed, precision, distance, procedures, or techniques in execution. Those major categories are also created from the simplest behavior to the most complex. One subcategory is called Set: Readiness to act. It includes mental, physical, and emotional sets. The three sets are dispositions that predetermine a person's response to different situations (sometimes called mindsets).

In the present study, the nurses' knowledge level represents the cognitive domain, the nurses' attitudes to the affective domain, and the nurses' willingness to care is representing one subcategory, Set, from the psychomotor domain.

## 4. The purpose of the study, research questions and study process

The overall goal of the study was to identify areas which need to be improved in order to develop the quality of nurse education related to HIV infection and HIV-positive people. The purpose was to describe the impact of an education intervention on nurses' knowledge level of HIV and AIDS, attitudes towards, and willingness to care for HIV-positive people.

### **The hypothesis of the study was as follows:**

Educational intervention improves nurses' knowledge level, their positive attitudes, and willingness to care of HIV-positive or those with AIDS.

### **The research questions were as follows:**

1. What is the current state of nurses' knowledge of, and attitudes towards, HIV-positive people and those with AIDS and of the willingness of nurses to care for PLWHA in Finland, Estonia, and Lithuania? (Phase 1)
2. How does current literature describe intervention programmes related to nurses' knowledge and attitudes to HIV and AIDS, nurses' willingness to care for PLWHA, and the impact of the intervention programmes? (Phase 2)
3. What is the impact of the education intervention on nurses' knowledge, attitudes, and willingness to care for HIV-positive or those with AIDS in Lithuania? (Phase 3)
  - 3.1. How was the knowledge level changed?
  - 3.2. How were the attitudes changed?
  - 3.3. How was the willingness to care changed?

### **The study process**

The whole research process in the period of 2006 to 2010 was divided into three phases (Table 1).

In phase 1, an international cross-sectional survey was conducted in three hospitals with 833 registered nurses (in Finland, n=427; in Estonia, n=221; and in Lithuania, n=185) who worked in medical, surgical, and gynaecological units at university-level hospitals in the spring of 2006.

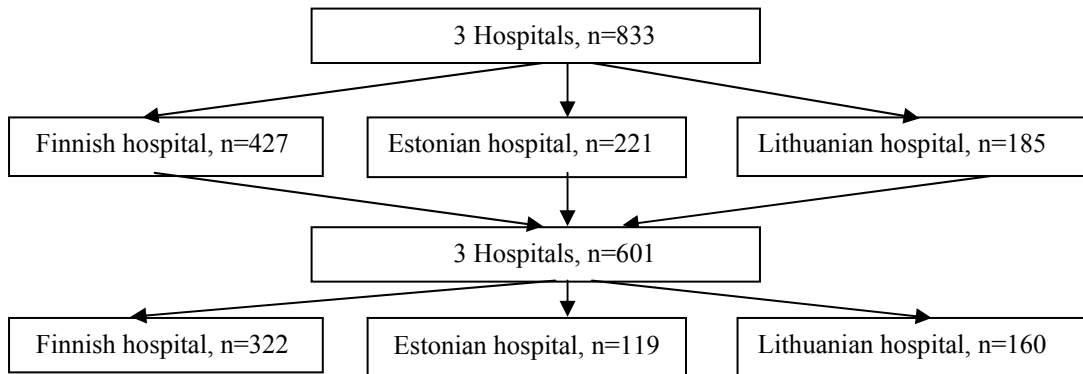
In phase 2, a literature review based on 16 articles on nurses' education interventions by content analysis was produced. The MEDLINE and PubMed, Science Direct, Cochrane Library, Ebsco Host, and ERIC databases were searched for relevant English-language citations.

In phase 3, a RCT with three group participants (n=240) was conducted: two experimental (EG1 and EG2) groups and one control group (CG). The intervention used in the study was an education intervention which was developed based on the earlier phases of the research project (Phases 1 and 2).

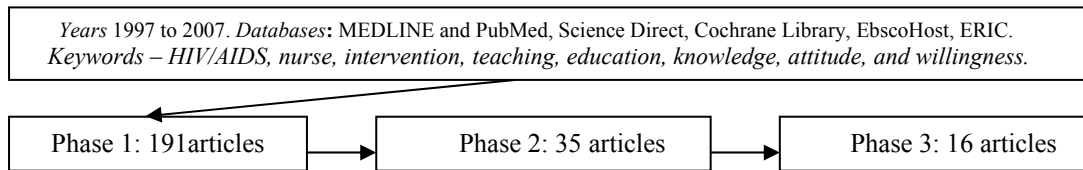
Table 1. Phases, timing of the study, procedures, and articles

Phases	Year	Procedures	Articles
1	2006-2007	Description of the current state (nurses' knowledge of, and attitudes towards, HIV-positive people and those with AIDS and their willingness to care for such people) in Finland, Estonia, and Lithuania (an international comparison).	I, II
2	2008-2009	Description of the intervention studies related to education (nurses' knowledge of, and attitudes towards, HIV-positive people and those with AIDS and their willingness to care for such people).	III
3	2009-2010	Planning and implementation of an educational intervention in Lithuania among practicing health care professionals Comparison of the results before and after the education intervention.	IV, V

**PHASE 1. An international cross-sectional survey (Articles I and II)**



**PHASE 2. A descriptive review (Article III)**



**PHASE 3. An education intervention study (Articles IV and V)**

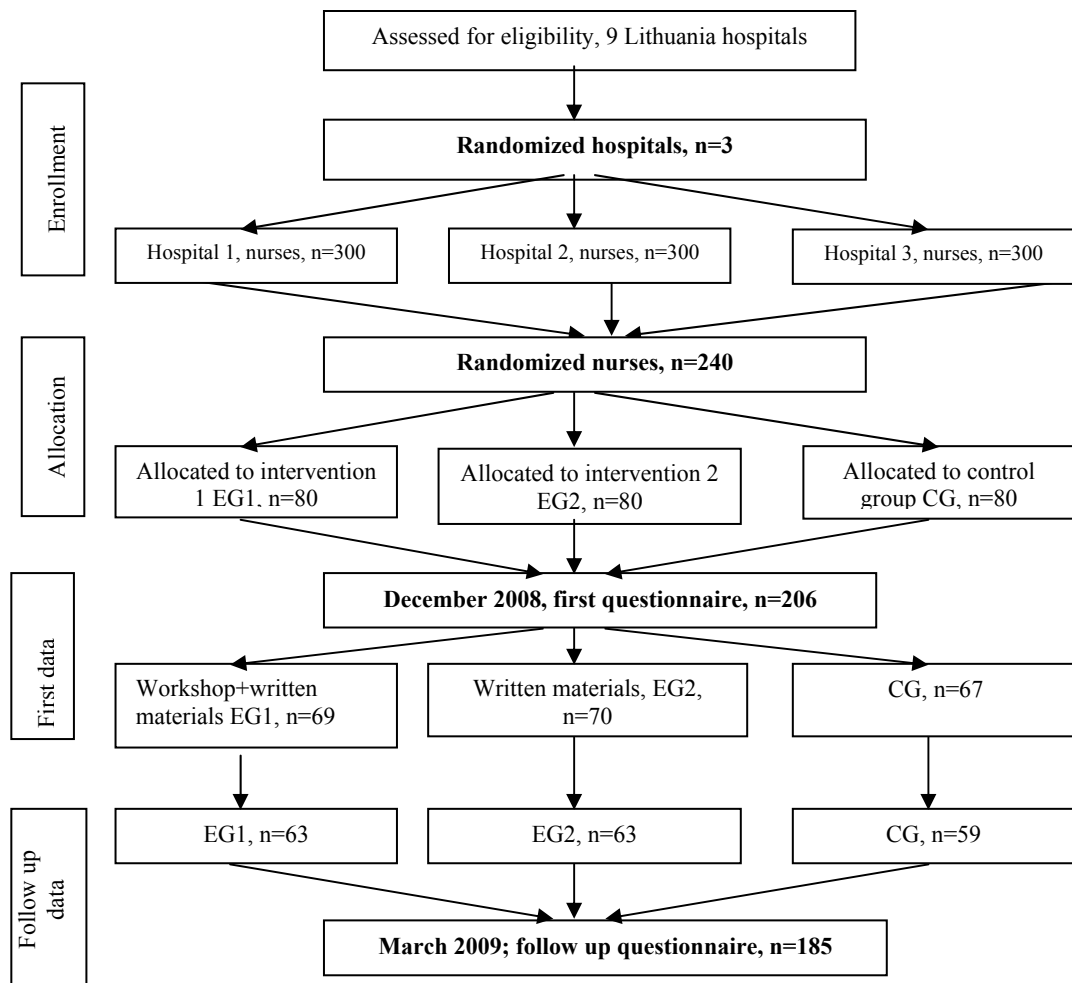


Figure 1. The study process

# 5. Material and methods

## 5.1 Design

### **Phase 1**

An international descriptive cross-sectional survey was conducted to describe nurses' knowledge of, and attitudes towards, HIV and AIDS and willingness to care for HIV-positive people (Articles I and II).

### **Phase 2**

A descriptive literature review was produced. Descriptive literature reviews use the researcher's knowledge and experience to synthesize the literature by evaluating similarities and differences in the purpose, methods, and findings of high-quality research (Fink, 2009) (Article III).

### **Phase 3**

The design used in Phase 3 was a randomized control trial with two experimental groups and one control group. RCT are the most rigorous way to evaluate the effectiveness of interventions, regardless of their complexity. The complex interventions pose methodological challenges and require adaptations to the standard design of such trials because of their multifaceted nature and dependence on the social context (Gueron, 2002; Oakley et al., 2006) (Articles IV and V).

#### *First intervention (EG1)*

The intervention for the first group (EG1) consisted of 2-day workshops (Table 2) and written materials. Different elements were included in the education intervention: lectures, group discussions, conversation with HIV-infected, watching a film about HIV, and distribution of written materials. The content areas were HIV and AIDS epidemiology, history, prevention, transmission, HIV treatment, counseling of HIV-positive patients, and ethical considerations. The written materials consisted of lecture handouts and additionally Lithuanian scientific journal articles (20 pages) on the content areas (Appendix 7).

During day 1, the participants had lectures on HIV and AIDS epidemiology and history and nurses' work with HIV-positive based on Lithuanian legislation and regulations (two hours). Next, lectures about HIV and AIDS disease, transmission, co-infection, and virology (two hours) were given, followed by lectures on treatment, care, and risk contacts at work (two hours). At the end of day 1, the

participants received lecture handouts and articles from Lithuanian scientific journals related to the two-day- lecture subjects (20 pages).

On day 2, the participants had lectures about moral quandaries and ethical dilemmas (two hours). Additionally, there was a group discussion with a researcher and a HIV-infected person (two hours). The second day ended with a film *Health Care Workers and HIV and AIDS* (an educational film on the ways of avoiding the risk of transmission at work). The film with the duration of about 60 minutes was originally made in Finland in 1987, however, the Lithuanian AIDS Centre made the film available in the Lithuanian language in 2004. During the group discussions after the film (two hours), the lecturer updated the information in order to highlight the possible topic-related changes that occurred in the years after the film was made (Health care workers and HIV and AIDS, 2004).

The group discussions provided the participants with an opportunity to ask questions outside the academic environment and with someone who was not going to test them or expect them to perform activities such as might be expected in the context of a classroom-based lesson. This form of education also has the advantage of avoiding the possibility of embarrassment which might make people feel unable to ask a teacher questions they find more difficult to relate to. AVERT, an international AIDS charity organization, recommends to use the participants' conversation with HIV-infected people as one of the education methods in a program. A person with HIV who participates in an education intervention is likely to focus on the information about their personal experience in the health care system and to answer different types of questions (<http://www.avert.org/aidseducation.htm>).

The participants received continuing education credits as a participation incentive. The credits were received by mail, after the participants' sending the follow-up questionnaire to the researcher (in March 2009).

#### *Second intervention (EG2)*

The intervention for the second group (EG2) consisted of the same Lithuanian scientific journal articles (20 pages, the same as for the first group). Additionally, 2 pages of handouts with the new statistics from EG1 lectures were added. The material was mailed to the participants simultaneously with the first education intervention (in December 2008). The participants also got the continuing education credits as a participation incentive. The credits were received by mail, after the participants' sending the follow-up questionnaire to the researcher (in March 2009) (Articles IV and V).

#### *The control group (CG)*

The control group was used as a baseline for comparison of experimental results.

Table 2. 2-day education program for EG1

Date	Time	Themes	Lectors	Hours 1hour=45min
1 day	9.30-10.15	Introduction	Researcher (=nurse)	1
	10.15-10.45	Baseline data collection for EG1 nurses	Researcher (=nurse)	
	11.00-12.30	HIV and AIDS epidemiology and history HIV and AIDS statistics: in the world in Lithuania Prevention Regulations of nurses' work with HIV patients in Labor Legislation of Lithuania	Physician	2
	13.30-15.00	HIV/AIDS disease: Classification Symptoms Causes HIV transmission: Sexual route Blood or blood product route Mother-to-child transmission Co-infection: HIV and other diseases: Co-infection with HIV and HCV TB and HIV and AIDS	Physician	2
	15.15-16.45	Treatment and care HIV test and counseling Risk contacts in work Post-exposition prophylaxis	Physician	2
1 day	10.00-11.30	HIV and AIDS, disclosure and confidentiality Stigma and discrimination in the health sector Anxiety and fear of contagion Moral quandaries Ethical dilemmas	Educator	2
	12.30-14.00	Group discussion	Researcher (=nurse) and HIV-positive person	2
	14.30-16.00	Film <i>Health care workers and HIV and AIDS</i> and group discussion	Researcher (=nurse)	2
		Written materials for participants EG1 (20 pages)		
Total: 2 days				Total: 13 hours

## 5.2 Setting, population, and sampling

### Phase 1

In each country, the hospitals were from the geographical areas where the prevalence of HIV and AIDS was high. The study population (n=833) was formed from registered nurses working in medical, surgical, and gynaecological disease wards of the participating hospitals (in spring 2006). In Finland, 322 (n=322), in Estonia 119 (n=119), and in Lithuania, 160 (n=160) nurses participated. The inclusion criteria for nurses were to be a registered nurse and to work in the included wards, and the exclusion criterion was to be a head nurse holding an administrative position (Articles I and II).

### Phase 2

The review comprised studies concerned with nurses, nurses' knowledge, attitudes, and willingness to care for patients with HIV/AIDS. The MEDLINE and PubMed, Science Direct, Cochrane Library, Ebsco Host and ERIC databases were searched for relevant English-language citations between 1997 and 2007 by using the following search terms: *HIV and AIDS, nurse, intervention, teaching, education, knowledge, attitude, and willingness*. The intervention studies other than those specifically concerned with nurses' knowledge, attitudes, and willingness to care for patients with HIV and/or AIDS or with counseling, teaching, and learning were excluded, e.g., interventions made among the groups of nursing students. The relevant articles related to nurses' education interventions were retrieved, reviewed, and assessed. 16 articles were deemed appropriate and selected for content analysis (Article III).

### Phase 3

The hospitals (n=3) were randomly selected by a statistician by means of Random Integer Generator (<http://www.random.org/integers/>) from nine largest hospitals in Lithuania (Figure 1). Two of the hospitals were randomly assigned to the intervention study, while the third was used as a control site. The nurses in the first hospital were assigned to the first experimental group (EG1), those in the second hospital were assigned to the second experimental group (EG2), and those in the third hospital, to the control group (CG).

The study population consisted of nurses working in surgical, medical, and gynaecological units and in primary health care centres attached to the hospital (on average, ca. 300 nurses from each hospital). The sample sizes in the intervention groups (EG1, EG2) and the control group (CG) were established by the Power Analysis of One Proportion Calculation with PASS module: from approximately 300, the finite population calculation sample size (n) is 55 nurses. Power is 0.96,  $\beta=0.039$  for  $H_0$  0.2 proportion. However, given the fact that not all nurses (~20%) participated in the education intervention to the end, we had to have about 80 nurses (20 nurses from the surgical department, 20 nurses from the medical department, 20 nurses from the gynaecological department, and 20 nurses from the primary health care centre) as a sample size from each hospital area (Articles IV and V). Therefore,



before the study started, two intervention and one control groups had 80 participants in each (in total, 240 nurses in the three groups (EG1, n=80; EG2, n=80; CG, n=80).

The baseline data collection sample included 206 participants, 15% of the invited nurses refused to participate in the study. The response rate was 86.3% (n=69) in the first education group (EG1), 87.5% (n=70) in the second group (EG2), and 83.8% (n=67) in the control group (CG) in December 2008. The follow-up data collection consisted of 185 participants, 10% of the nurses withdrew from the study. The response rate after one reminder letter (in March 2009) was for group EG1: 79% (n=63), for group EG2: 79% (n=63), and for group CG: 74% (n=59).

The participants were selected by a cluster random sampling method from surgical, medical, or gynaecological wards and the primary health care centres attached to the hospitals. A cluster sample was taken by identifying different departments in the hospitals as clusters. A sample of those departments (clusters) was chosen at random, and all the nurses in the selected departments were included in the sample.

### 5.3 Instruments

The instruments used in the study are presented in Table 3, however, because of the copyright issues, they were not presented in the text of the dissertation.

Table 3. The instrument design (Phases 1 and 2).

Instrument	Number of items	Answering scales
The State University of New York at Buffalo School of Nursing AIDS Study Questionnaire (Held, 1993):		
Knowledge	33	Three options: true, false, or don't know
Attitudes :		A 5-point Likert scale:
general attitudes	26	1=strongly agree, 2=agree,
homophobic attitudes	9	3=undecided, 4=disagree, 5=strongly disagree
The Nursing Willingness Questionnaire (Dubbert et al., 1994):		
Willingness to take care	13	A 5-point Likert scale: 1=strongly agree, 2=agree, 3=undecided, 4=disagree, 5=strongly disagree

#### Phase 1

The data were collected by means of questionnaires. A questionnaire consisted of the following parts: the background factors, the knowledge about, and the attitudes

towards, HIV and AIDS, and the willingness to care for HIV-positive. Seventeen background questions were included to ascertain the nurses' basic demographic characteristics (e.g. sex, age, education, years at work, marital status, having or not having children, etc.), as well as the prior experience with HIV and AIDS (e.g. if they had known any PLHIV, if they had asked and if they had ever provided care for a PLHIV, if they had ever refused to care for PLHIV and if they would be willing to provide care for PLHIV).

The first instrument was a modified version of the State University of New York at Buffalo School of Nursing AIDS Study Questionnaire by Held (1993). The questions were related to the knowledge about HIV and AIDS (33 items: HIV immunopathology, models of transmission, universal precautions, etc.) and the attitudes towards people with HIV and AIDS and towards the disease itself (35 items). In the knowledge test, the respondent nurses responded to the statements by circling one of the three options: true, false, or don't know. The attitude-related items were measured by a 5-point Likert scale statements (strongly agree=1, agree=2, undecided=3, disagree=4, strongly disagree=5). The attitude scale had two subscales: a general attitude scale (26 items: the nurses' attitudes towards patient groups as, e.g. intravenous drug users, etc.) and a homophobia scale (9 items: the nurses' attitudes towards homosexually-oriented people) (Article I).

The second instrument was *The Nursing Willingness Questionnaire* (NWQ). The nurses' willingness to care for people with AIDS was evaluated by means of Dubbert et al. (1994) scales. The original self-report instrument used a 370-word vignette and 13 items measured on a 5-point scale, whereas the present modified version was reduced to a vignette of 13 English words to describe a patient with AIDS (Henes) whose health was deteriorating. The symptoms were: diarrhoea, high temperature, double incontinent, vomiting, and mental confusion. Nurses' willingness to carry out certain nursing activities with Henes was explored by 13 items (1-strongly agree, 2-agree, 3-undecided, 4-disagree, 5-strongly disagree) (Article II). The questionnaires were translated for the present research project (Välimäki et al., 2008; Suominen et al., 2010). The translation was obtained by using the back-translation technique (Burns & Grove, 2005).

The questionnaire developed by Held (1993) is a valid and reliable international instrument, and the modification and validity in the year 2005 were done together with the developer of the questionnaire, nursing scholars, and medical experts. A modified version of this instrument was previously used in Finland for exploring nurses' knowledge and attitudes and found to be both reliable and valid. In the previous studies, the Cronbach's alpha values for the attitude scale ranged between 0.80 and 0.93 (Suominen et al., 2010).

The study of Kemppainen (1992) suggests that the NWQ is a reliable and valid instrument. The modified version was previously used in Finland, England, and Germany, and Cronbach's alpha value was found to be good (0.95) (Suominen et al., 2000; Peate et al., 2002).

Before the data collection, the questionnaire (both instruments) was also piloted in Estonia and Lithuania. The pilot data (n=35 in Estonia and n=30 in Lithuania) were not included in the total sample.

## **Phase 2**

The literature review in the present study was based on methods described by Khan et al. (2003). A review earns the adjective *systematic* if it is based on a clearly formulated question, identifies relevant studies, appraises their quality, and summarizes the evidence by use of explicit methodology. The author points out that there are just five steps of the methods behind reviewing, and the quality elements inherent in each step: framing questions for a review (I), identifying relevant work (II), assessing the quality of studies (III), summarizing the evidence (IV), and interpreting the findings (V).

The structure, the type of intervention, and the impact of the intervention were the basis to examine the selected 16 articles of nurses' education interventions by content analysis.

## **Phase 3**

The questionnaire consisted of the background factors (demographic and other) and the instruments measuring the nurses' knowledge level, their attitudes, and their willingness to care. The background questions included age, sex, mother-tongue, marital status, having or not having children, education, work experience in health care, the current workplace, the area of work, work experience in the current ward, and other background variables related to HIV and AIDS (previous experience with HIV and AIDS, e.g. if they had known someone with HIV or AIDS) for all the participants at baseline (Appendix 1). In the follow-up, the background questions included the current work place, the area of work, and work experience in the current ward (Appendix 2).

The instruments used were the same as in phase 1, i.e. a modified version of the State University of New York at Buffalo School of Nursing AIDS Study Questionnaire by Held (1993) (Article IV). The other instrument was the NWQ that evaluated the nurses' willingness to care for people with AIDS by means of Dubbert et al. (1994) scales (Article V).

## **5.4 Data collection**

### **Phase 1**

The international cross-sectional survey was carried out in one Finnish, one Estonian, and one Lithuanian hospital in the spring of 2006. The permission to conduct the study was applied for and received in compliance with the national requirements in each country. The data were collected in the following wards: surgical, medical, and the gynecological clinic in each country. A contact person in each hospital had the main responsibility for ensuring that the data collection procedure was followed in the hospital in compliance with the instructions, and the researcher was the contact person for the total data collection in Lithuania. The

completed questionnaires in sealed envelopes were collected in the wards two weeks later (Articles I and II).

## **Phase 2**

The MEDLINE and PubMed, Science Direct, Cochrane Library, Ebsco Host, and ERIC databases were searched by using the following search terms: *AIDS, HIV, nurse, intervention, teaching, education, knowledge, attitude, and willingness* (Article III).

16 articles were deemed appropriate and selected for the content analysis. Prior to that, three stages were used in systematically selecting articles for the analysis. During the first stage, all the abstracts were counted and reviewed. A total of 191 articles were identified. During the second stage, based on the abstracts, 156 of them were excluded. During the third stage, 35 full text articles were identified. The final number of the articles remaining for the review was 16 (Stage three).

## **Phase 3**

A randomized controlled trial design (RCT) with the participants of three groups was used: two experimental groups (EG1 and EG2) and one control group (CG) (Figure 1, Articles IV and V).

The education intervention process (on 11-12th December 2008) was implemented in three Lithuanian hospitals and in primary health care centres attached to the said hospitals. The research started after the permissions had been received from the authorities of the institutions and the approvals from the Ethical Committees of the three Lithuanian hospitals and the Ethical Committee of one University. The authorities of the institutions received all the information about the research: the research plan, the consent form (Appendix 3) for the participants, and the reminder letters: in December, for EG2 and CG participants (Appendix 5), and in March, the reminder letter for EG1, EG2, and CG participants (Appendix 6).

After the randomization and selection of 80 nurses in each group (EG1, n=80; EG2, n=80; CG, n=80), letters were mailed to each participant. The purpose, the method, and the process of the research were explained in the letters (Appendix 4). The consent form which the participants had to sign provided they decided to participate in the education intervention was attached to the letter as well. The participants got envelopes where they found all the information about the research; provided they decided to participate in the research, they found another envelope (with a stamp and the return address) which they were to return to the researcher. The deadline for returning the letters with the consent form was one week after it had been mailed to them. In case there was no possibility to make a group of 80 nurses, randomization from other nurses from the surgical, medical, gynaecological, and primary health care centers from the same hospital areas was to be organized. However, no extra randomization was needed. The aim was to have 80 nurses from each hospital at the beginning of phase 3. The participants who agreed to participate in the education intervention got invitations.

The participants from the first education intervention (EG1) were informed that,

after the education intervention (participation in 2-day-workshops and filling in the questionnaire in December and in March), they were to get an 18-hour-certificate as a participation incentive. The participants from the second education intervention (EG2) were explained that they were to get a 6-hour-certificate as a participation incentive after they had got acquainted with the written materials, filled in one questionnaire in December and another one, with the questions from the December questionnaire, in March, and returned them to the researcher. As the education intervention was also tested in order to establish a new continuing education programme, the certificates were to be issued both at the time of the research, as well as in the future, provided the programme was to be implemented. In the education intervention, the issue of the certificate may have motivated nurses to participate in the education intervention.

*First education intervention (EG1, teaching and written materials; in Hospital I) (Articles IV and V)*

Only the nurses who had signed the consent form were invited to participate in the education intervention on 11-12th December 2008. At this stage, the researcher knew the participants by names and by their personal ID codes. She divided all the participants into four groups (4x20) in an alphabetic order. On the first day, before the lectures started, the researcher and her assistant prepared the classroom and provided it with all the necessary teaching equipment and materials. There was an envelope on every desk with a participant's name and surname and a questionnaire with a marked ID code inside it.

At the beginning of the first day of the educational intervention, the researcher explained the agenda. On both days, before the lectures started, the participants were to sign in the register. Before the very first lecture, the nurses filled in the questionnaires in order to get the baseline data (n=69). Everyone got the questionnaire with a personal ID code. The participants completed the questionnaires individually and returned them to the researcher in sealed envelopes. They had 20 to 30 minutes to complete the questionnaires. Afterwards, the participants were informed about the follow-up data collection 3 months later (on 9-15th March 2009). A test/posttest design was used to evaluate the accumulated knowledge.

In the follow-up, the participants got the questionnaires by mail wherein there was an envelope with a stamp and the return address which they had to return to the researcher after they had filled the questionnaire. The time limit in which the responses were to be mailed back was one week. The participants (n=13) who did not mail back the completed questionnaire were sent a reminder letter (Appendix 6). A total of 63 responses were received.

*Second education intervention (EG2, written material; in Hospital II) (Articles IV and V)*

After the participants had agreed to participate in the education intervention, the questionnaires were mailed. Next to the questionnaire, an envelope with a stamp and the researcher's return address was enclosed. The time limit in which the responses were to be sent back was one week. The participants (n=16) who did not mail back

the completed questionnaire were sent a remind letter (Appendix 5). A total of 70 responses were received. The researcher mailed the written material to the participants after receiving the filled questionnaires.

Three months after the baseline, on 9-15th March 2009, the follow-up data collection was made. The participants were again mailed the questionnaires wherein there was an envelope with a stamp and the return address which they had to return to the researcher after they had filled the questionnaire. The time limit in which the responses were to be mailed back was one week. The participants (n=14) who did not mail back the completed questionnaire were sent a reminder letter (Appendix 6). A total of 63 responses were received.

#### *Control group (CG; in Hospital III) (Articles IV and V)*

After the participants had agreed to participate in the study, they were mailed questionnaires wherein there was an envelope with a stamp and the return address which they had to return to the researcher after they had filled the questionnaire. The time limit in which the responses were to be mailed back was one week. The participants (n=18) who did not mail back the completed questionnaire were sent a reminder letter (Appendix 5). A total of 67 responses were received.

Three months after the baseline, on 9-15th March 2009, the follow-up data collection was held. The participants were again mailed the questionnaires wherein there was an envelope with a stamp and the return address which they had to return to the researcher after they had filled the questionnaire. The time limit in which the responses were to be mailed back was one week. The participants (n=17) who did not mail back the completed questionnaire were sent a reminder letter (Appendix 6). A total of 59 responses were received.

## 5.5 Data analysis

### **Phase 1**

The demographic variables were analyzed by means of descriptive statistics. Between-country comparisons were conducted by a cross-tabulation and the  $\chi^2$  test.

The nurses' knowledge of HIV and AIDS was first examined by means of descriptive analysis. For the purpose of tabulating the AIDS knowledge data, all the correct answers were recorded as equal to 1, and all the wrong or 'unsure' answers were equal to 2. The data of the 33 AIDS knowledge items were analyzed by totaling each answer, resulting in an individual score between 0 and 33.

The general attitudes and homophobia were also first examined by means of descriptive analysis. Next, the average mean scores for the general attitudes and homophobia scales were formed.

To obtain average scores for the scales, the willingness scores for each nurse were summed up, and the result divided by the number of items (i.e. 13). The higher the average score, the less willing an individual nurse was to perform nursing activities for a hypothetical patient. The average willingness scores among the subgroups of the nurses from each country (e.g. female versus male nurses) were then compared. The distribution of the average scores was evaluated by means of the *Kolmogorov–Smirnov* test, which indicated a non-normal distribution of the average scores. Associations between the nurses' background variables and their average score on the willingness scale were tested by means of a non-parametric *Mann–Whitney* U-test or a *Kruskall–Wallis* test (with post hoc tests). *Pearsons'* product moment correlation coefficients were used to examine the correlations between the willingness scale and the numerical background variables. In addition, *Spearman's* correlation coefficients were calculated to examine the relationships among continuous variables, including the 13 items (for all participants and by the country).

In order to evaluate the significance of the association between the categorical variables, the  $\chi^2$  test was used. The association between the nurses' dichotomous background variables and their average scores on the scales was tested by means of the *Student's* t-test for the normally distributed scores and a non-parametric *Mann–Whitney* U-test for the non-normally distributed scores. The categorical background variables and the scores were tested with a one-way analysis ANOVA with Bonferroni corrections, and the non-normally distributed scores were analyzed with the *Kruskall–Wallis* test and *post-hoc* analyses. The association between the numerical background variables and the scale scores was tested with the *Spearman* test. For the differences between the three countries, *Student's* t-test and *Kruskall–Wallis* test were used. In all tests, *p*-values < 0.05 were interpreted as statistically significant (Article I, II).

The data were analyzed with a statistician by means of SPSS for Windows 14.0 (SPSS Inc., Chicago, IL, USA).

## **Phase 2**

The examination of the articles was based on *content analysis*. Content analysis is a method for making replicable and valid inferences from the data to their context with the purpose of providing knowledge, new insights, representation of facts, and a practical guide to action (Krippendorff, 1980). Its purpose in phase 2 was to build up categories (Kynge & Vanhanen, 1999). The categories were derived from the data by inductive content analysis: the key feature of the content analysis was that many words of the text were classified into much smaller content categories (Weber, 1990). The process included open coding, creating categories, and abstraction (Elo & Kynge, 2007).

Subcategories with similar content formed the connecting main categories in accordance with the questions (Miles & Huberman, 1994). The structure of the study (the country of origin, the aim, the sample, and the design), the type of intervention, and the impact of the intervention (on the nurses' knowledge, attitudes, and willingness to care for HIV-positive patients or AIDS patients) were looked for.

### Phase 3

The association between the nurses' dichotomous background variables and their average scale scores was tested by means of the *Student's t*-test for the normally distributed scores and a non-parametric *Mann–Whitney U*-test for the non-normally distributed scores. For the differences between the three groups and the normally distributed scores, a one-way analysis of variance (ANOVA) with *Bonferroni* corrections, and for the non-normally distributed scores, the *Kruskal-Wallis* test and post-hoc analyses were used. The variance equality hypothesis was checked by means of the *Levene* test or the *Kruskal Wallis* test, whenever appropriate. The differences in categorical variables proportions were compared by cross-tabulation and the  $\chi^2$  test, or the *Fisher's* exact test, or the *z*-test. The association between the numerical background variables and the scale scores was tested with the *Spearman* correlation ratio *R*. Significance was achieved at a *p* value of less than 0.05.

For the purpose of tabulating the HIV knowledge data, all the correct answers were recorded as equal to 1, and all the wrong or 'unsure' answers were equal to 2. The data from the 33 AIDS knowledge items were analyzed by adding up all the scores, resulting in an individual score between 0 and 33.

The general attitudes towards HIV and homophobia were examined by means of descriptive analysis (presented in numbers of valid cases, means, standard deviation, and ranges) and compared among the three groups (EG1, EG2, and CG) by cross-tabulation and the *chi-square test*. The average score for the scales was calculated by adding up each participant's response to each item on the scale from 1 (strongly agree) to 5 (strongly disagree) and by dividing the sum by the number of items. The items concerning attitude were negatively worded; therefore, the higher the participants' total score, the more positive their attitude was.

In order to evaluate the significance of the association between the categorical variables, the *chi-square test* was used. *Pearson's* product-moment correlation coefficients were used to examine the correlations between the numeric normally distributed background variables (e.g. age, work experience, etc.), and average scale score. *Cronbach's alpha* was used to evaluate the internal consistency of the scales. *P*-values less than 0.05 were interpreted as statistically significant and reported in the text only (Articles IV and V).

The nurses' demographic variables and items about their perceptions related to their willingness to care for patients with HIV and AIDS were examined by means of *multivariate analysis*. Comparisons of individual items between the groups were conducted by means of *cross-tabulation* and *chi-squared* tests. To obtain average scores for the scales, the willingness scores for each nurse were summed up, and the result divided by the number of items (i.e. 13). The higher the average score, the less willing an individual nurse was to perform nursing activities for a hypothetical patient. Average willingness scores among the subgroups of the nurses from each group were then compared. The nurses' sex, marital status, the number of children, knowing a family friend or having a relative with HIV or AIDS, having been asked to care for a patient with HIV or AIDS, having refused to care for a patient with HIV or AIDS, having cared for a patient with HIV or AIDS, and willingness to care for a patient with HIV or AIDS were used as background variables. Associations



between the nurses' background variables and their average score on the willingness scale were tested by means of a non-parametric *Mann–Whitney U*-test or the *Kruskall–Wallis* test (with post hoc tests). *Pearsons'* product moment correlation coefficients were used to examine correlations between the willingness scale and numerical background variables. In addition, *Spearman's* correlation coefficients were calculated to examine the relationships among continuous variables, including the 13 items (for all the participants and by the group).

Statistical analysis was performed by means of SPSS 12.0 software package.

## 5.6 Ethical consideration

### Phase 1

In Estonia and Lithuania, the study proposal was evaluated by the Ethical Committees, and the permission to conduct the study was obtained from Administrative Medical Directors. In Finland, the study approval was granted by the nursing directors in compliance with the Finnish research standards (Articles I and II.)

All the ethical standards of the research were observed: anonymity, voluntary participation, and the right to refuse to participate were guaranteed to respondents (World Medical Association Declaration of Helsinki, 2004; Parahoo, 2006).

### Phase 2

The phase was devoted to the literature review, therefore, no special ethical issues were concerned.

### Phase 3

With reference to the Lithuanian law, the relevant permissions for the study were obtained from the authorities of the three institutions: the authorities of the institutions and the Ethical Committees of the three hospitals and of one University. The permissions to use the knowledge and attitude (Held, 1993) and NWQ (Dubbert, 1994) questionnaires for the study were also received from the copyright owners. Ethical principles are based on the respect of the researcher for all potential participants; therefore, the researcher is required to obtain informed consent, to protect participants with impaired decision-making capacity, and to maintain confidentiality (Hulley et al., 2001).

The ethical considerations related to data collection were focused on informed consent and the protection from any harm (World Medical Association Declaration of Helsinki, 2004) and Ethical Principles for Medical Research Involving Human Subjects: confidentiality (related to questionnaires), privacy, informed consent, and voluntariness. Informed consent was obtained in a written form (Appendix 3). All the participants were mailed a formal letter explaining the scope and the purpose of

the study. In each EG1, EG2, and CG, the participants were asked to return the consent form in a sealed envelope via mail. All the nurses received a code number which was used to relate to the questionnaires during the data analysis. The names of the nurses were not used, and the data were handled merely by the researcher and the statistician. The report of the study guaranteed confidentiality and anonymity, thus, the nurses could not be identified (Burns & Grove, 2005).

The study purpose, methods, the use of results, and the possibility to refuse or withdraw from the study in any phase were emphasized before the written consent of the subjects. Meir (2002) marked that, if research subjects objected to the personal nature of some of the questions after giving the consent to participate, they had the right of privacy and could refuse to answer any of the questions. The study participants had the right to absolute confidentiality of any information that they shared with the investigators and the right of anonymity by having their names disassociated from their individual data.

During the data collection phase and intervention, the respondents' rights to privacy were protected. All the respondents were informed about the aims of the study and were assured that all the information obtained would be handled confidentially and that only the researcher would have access to the raw data. In the test, identified questionnaires were used, but only through a personal identification code and without any name.

# 6. Results

## 6.1 Characteristics of the participants

### Phase 1

The participants in the international cross-sectional survey were nurses from Finnish, Estonian, and Lithuanian hospitals who worked in the same wards: surgical, medical, and the gynaecological clinic in each country: Finland (n=427), Estonia (n=221), and Lithuania (n=185). The response rate was 75% (n=322) in Finland, 86% (n=119) in Estonia, and 86% (n=160) in Lithuania (Articles I and II).

In Finland and Lithuania, the largest groups of nurses in terms of age were those under the age of 34, while in Estonia, the largest groups were between 35 and 44. Most of the nurses in all the three countries were women, who were married or cohabitating (in Finland 63%, in Estonia 67%, and in Lithuania 72%) and had children (in Finland 53%, in Estonia 80%, and in Lithuania 79%). The work experience varied in the countries as follows: Finland 0–42 years, Estonia 1–47 years, and Lithuania 1–50 years.

29% of the Finnish nurses reported knowing a family member or a friend with HIV or AIDS, as compared with 26% of the Estonian and 14% of the Lithuanian nurses ( $p=0.001$ ). However, only 1% of the nurses in Finland and Lithuania, and 2% in Estonia had refused to care for PLWHA (Articles I and II).

### Phase 3

The participants in the education intervention study were nurses who worked in surgical, medical, and gynaecological wards and primary health care centres attached to the three Lithuanian hospitals (Articles IV and V).

The nurses' age ranged from 23 to 67, their mean age being 43.1 years ( $SD=8.8$ ) with the statistically significant difference ( $p=0.016$ ), the nurses in EG1 being the youngest. All the nurses were females (n=206, 100%). Most nurses were married (74.7%), 11.2% were single, and 14.1% widowed or divorced; 85.4% had children. The average work experience was 21.8 years ( $SD=9.4$ ), ranging from 0.5 to 46.0 years. The length of the nurses' working experience in different groups varied as follows: EG1 0.5–38 years (mean 19.7,  $SD$  8.8); EG2 0.8–46 years (mean 23.5,  $SD$  10.00) and CG 2.0–40 years (mean 22.2,  $SD$  9.11). The difference between the groups was statistically significant  $p=0.051$  before intervention (Table 4) (Articles IV and V).

Table 4. Differences in the background factors at baseline and follow-up

	Baseline (n=206)	Follow-up (n=185)	p-value	
			Baseline (n=206)	Follow-up (n=185)
Language, N (%):			p=0.072	p=0.155
Lithuanian	195(94.7)	175(94.6)		
Russian	11(5.3)	10(5.4)		
Marital status, N (%):			p=0.085	p=0.046
Single	23(11.2)	20(10.8)		
Married	154(74.8)	141(76.2)		
Widowed or divorced	29(14.1)	24(13.0)		
Have children N (%)			p=0.046	p=0.038
Yes	176(85.4)	158(85.4)		
No	30(14.6)	27(14.6)		
Education, N (%):			p=0.001	p=0.004
Medical school	1437(69.8)	118(67.4)		
College	28(13.7)	26(14.9)		
University	34(16.6)	31(17.7)		
Work area, N (%):			p=1.000	p=0.979
Surgical	55(26.7)	49(26.5)		
Medical	51(24.8)	44(23.8)		
Gynaecological	49(23.8)	44(23.8)		
Primary health care centre	51(24.8)	48(25.9)		
Work experience, mean (SD):				
Total in health care <sup>a</sup>	21.82 (9.4)	14.07(9.9)	p=0.051	p=0.233
In the present department <sup>b</sup>	14.23 (10.2)	13.96(9.9)	p=0.342	p=0.247

Note: a. ANOVA; b. Kruskal–Wallis test; p<05.

Only a small number of the participants at baseline, i.e. n=20 in EG1, n=18 in EG2, and n=19 in CG, had either a family member or knew some other person with HIV or/and AIDS. Few nurses, i.e. two nurses from EG1 and one nurse from EG2, had refused (when asked) to care for PLWHA (Table 5) (Articles IV and V).

Table 5. The background factors related to caring for PLHIV at baseline and follow-up

	EG1		EG2		CG		p-value	
	Baseline (n=69)	Follow-up (n=63)	Baseline (n=70)	Follow-up (n=63)	Baseline (n=67)	Follow-up (n=59)	Baseline (n=206)	Follow-up (n=185)
Having a family member or knowing any other person with HIV or AIDS.							p=0.901	p=0.109
Yes	20(29.0)	31(49.2)	18(25.7)	26(41.3)	19(28.4)	18(30.5)		
No	49(71.0)	32(50.8)	52(74.3)	37(58.7)	48(71.6)	41(69.5)		
Being asked to care for patients with HIV or AIDS.							p=0.199	p=0.813
Yes	11(15.9)	14(22.2)	10(14.3)	12(17.1)	17(25.4)	14(23.7)		
No	58(84.1)	49(77.8)	60(85.7)	51(80.9)	50(74.6)	45(76.3)		
Having refused to care for patients with HIV or AIDS.							p=0.137	p=0.378
Yes	2(2.9)	1(1.6)	1(1.4)	-	-	-		
No	67(97.1)	62(98.4)	69(98.6)	63(100)	67(100)	59(100)		
Having cared for patients with HIV.							p=0.862	p=0.414
Yes	23(33.3)	30(47.6)	22(31.4)	23(36.5)	24(35.8)	23(39.0)		
No	46(66.7)	33(52.4)	48(68.6)	40(63.5)	43(64.2)	36(61.0)		
Willing to care for patients with HIV and/or AIDS.							p=0.326	p<0.001
Yes	16(23.2)	20(31.7)	12(17.1)	7(11.1)	9(13.4)	4(6.8)		
No	53(76.8)	43(68.3)	58(82.9)	56(88.9)	58(85.6)	55(93.2)		

Note: The mean difference is significant at the 0.05 level (Mann-Whitney Test)

EG1: intervention group (2-day workshop and written material); EG2: intervention group (written material); CG: control group

## 6.2 Knowledge, attitudes, and willingness to care

### Nurses' knowledge level

The mean of correct answers for the 33 items on the knowledge scale across the whole data was 22.5. There were significant differences ( $p<0.001$ ) in the knowledge scores between the three countries. The best level of knowledge was established among the Finnish nurses (see Article I).

In Finland, several factors were found to be associated with the nurses' HIV and AIDS-related knowledge level. First, the nurses who knew someone with HIV or/and AIDS scored higher knowledge level than those who did not know anyone. Second, those who had been asked to provide care for PLWHA previously and those who had actually done so also scored higher on the knowledge scale than those who had not. Among the Estonian nurses, a few factors were found to influence their knowledge score. Nurses who had been asked to provide care for PLWHA and those

who had actually done so scored significantly higher on knowledge than the others. In the Lithuanian data, only one factor to influence the knowledge score was found. The nurses' age correlated negatively with their knowledge score. No other factor, including other scores, was found to influence the knowledge scores of the nurses (see Article I).

### **Nurses' attitudes**

The mean score on the general attitude scale (min 1 – max 5, when score 5 indicated the most positive attitude) across the whole data was 3.34 (SD=0.98). In Lithuania, the mean score was 2.6 (SD=0.7, min 1.3-max 4.9). The most positive attitude was recognized among the nurses in Finland (mean score 4.1, SD 0.6) and the least positive attitude, among those in Lithuania (mean score 2.6, SD 0.7) and Estonia (mean score 2.7, SD 0.7). There were significant differences ( $p \leq 0.001$ ) between the countries in mean general attitude scores (see Article I).

In the Finnish data, the previous experience with a HIV and/or AIDS patient was associated with the nurses' attitude scores. The nurses who knew a family member or a friend with HIV and/or AIDS scored significantly higher attitude levels than those who did not. The nurses who had been asked to provide care for PLWHA and those who had done so scored higher on attitude than others. The nurses who were willing to provide care for PLWHA scored significantly higher on attitude. In Estonia, only one factor was found to significantly influence the nurses' attitude scores towards HIV and/or AIDS: the nurses who were willing to care for PLWHA had significantly higher attitude scores than the nurses who were not. Among the Lithuanian nurses, two variables were associated with their attitude scores. First, the nurses who stated their willingness to provide care for PLWHA scored significantly higher on attitude. Second, the length of the nurses' education correlated positively with attitude (see Article I).

The nurses' homophobia scores were also explored. The mean score (min 1–max 5; when score 5 indicated the most positive attitude towards a homosexual patient) on the homophobia scale was 3.84 (SD=1.2). The most positive attitude towards a homosexual patient was recognized among the nurses in Finland (mean score 4.6, SD 0.6) and the least positive attitude towards a homosexual patient among those from Lithuania (mean score 3.0, SD 1.1) and Estonia (mean score 3.3, SD 1.1). Statistically significant differences were found between the three countries (see Article I).

In the Finnish data, two factors were found to be significantly associated with the levels of homophobia. First, the nurses who had been asked to provide care for PLWHA had a more positive attitude than those who had not. Moreover, the nurses' willingness to provide care for PLWHA significantly influenced their homophobia score: those who were willing to care for PLWHA scored higher than those who were not. Among the Estonian nurses, three statistically significant associations with homophobia score were found. First, the nurses who stated their willingness to provide care for PLWHA scored higher levels than those who stated that they were not. The nurses' age was found to correlate negatively with the homophobia score, as did the nurses' years of work experience. In the Lithuanian data, the nurses' age correlated negatively with the homophobia score, as did the length of work

experience (in years). The nurses' length of education, in turn, correlated positively with the homophobia scores (see Article I).

### **Nurses' willingness to care for a patient with HIV or/and AIDS**

The nurses' willingness to care for PLWHA was described and compared by looking at each of the 13 specific nursing activities. Except for two items (willingness to give a bed bath and to clean up faeces or vomit: 9–23% disagreed or strongly disagreed), the nurses from all the three countries were willing to perform nursing activities for PLWHA (see Article II).

In general, the nurses from all the three countries were willing to care for PLWHA (Nursing Willingness Questionnaire scores: 1.31–1.45). The most willing were the Lithuanian nurses, and the least willing were those from Estonia, while the nurses in Finland were in the middle between the two; the differences between the mean values were statistically significant. A post hoc Mann–Whitney test showed a statistically significant difference in the willingness to care for PLWHA between the nurses in Estonia and Finland ( $p < 0.001$ ) and between the nurses in Estonia and Lithuania ( $p < 0.011$ ).

## **6.3 The impact of an education intervention on nurses' knowledge level, attitudes towards, and willingness to care for PLWHA**

### **6.3.1 The impact on nurses' HIV and AIDS related knowledge**

The goal was to describe the impact of the education intervention on nurses' knowledge level. We put forward a hypothesis that an education intervention contributes to the nurses' knowledge level related to HIV and AIDS.

In the first group (EG1), a statistically significant improvement in the HIV and AIDS-related knowledge was established during the exam by means of a paired t-test ( $p < 0.001$ ). Before the education intervention programme, the mean knowledge score was 19.4, and after the intervention, the mean knowledge score was 25.3. After the training, the EG1 nurses' knowledge test included by 60% more correct answers.

In the second intervention group (EG2), no statistically significant improvements in the knowledge level were found due to the intervention. Before the intervention programme, the EG2 nurses, whose training program included only written materials for self-education, mean knowledge score was 20.6, while after the intervention, the mean knowledge score was 21.9. On the other hand, the said change in the HIV and AIDS-related knowledge scores was not statistically significant. Thus, after the training, the EG2 nursing knowledge test provided by 9%

more correct answers (see Article IV).

On the contrary, in the control group, no statistically significant changes were found in the nurses' knowledge level. The CG nurses' mean knowledge score was 18.7 at baseline and 17.9 afterwards; there were only by 3% more correct answers than at baseline.

Thus, after the intervention, statistically significant differences were found when comparing the nurses' knowledge level between the groups: the EG1 nurses' knowledge level was higher than that in EG2 ( $p < 0.001$ ) and higher than in CG ( $p < 0.001$ ), while the EG2 nurses' knowledge level was higher than in CG ( $p < 0.001$ ). Consequently, the hypothesis of the study with regard to the knowledge level was supported: the educational intervention contributed to the nurses' knowledge level related to HIV and AIDS (see Article IV).

### 6.3.2 The impact on nurses' HIV and AIDS related attitudes

The goal of the study was to describe the impact of the education intervention on the nurses' HIV and AIDS-related attitudes. The hypothesis of the study was that the education intervention contributed to the nurses' HIV and AIDS-related attitudes.

In the intervention group (EG1), the mean attitude of the nurses who took part in the workshop and received the written materials before the intervention was 2.80, and after the intervention, the mean attitude was 2.95. However, the said positive change in the nurses' attitudes was not statistically significant. In the second group (EG2), the mean attitude of the nurses whose education included only written materials for self-education, was 3.00 before the intervention, and after the intervention, the mean attitude test score was 2.88. However, the said alteration in the attitude test was not statistically significant. In the control group, the nurses' mean attitude before the intervention was 2.81, and after the intervention, it was 2.74. The attitude changes were minor and not statistically significant. Our hypothesis was not supported (see Article IV).

### 6.3.3 The impact on nurses' HIV and AIDS related willingness to care

Having received the answer to the question whether the nurses were willing to care for HIV-positive patients, we assumed that an education intervention would increase their willingness.

Our educational intervention with the workshops and written material distribution to the nurses (EG1) had only a minor impact on the nurses' willingness to care for PLWA. Before the intervention, the mean score was 1.41, and after the intervention, the mean score was 1.37 (the smaller the value, the more willing the nurses were to care). However, the difference between the mean values was not statistically significant (see Article V).



In the second intervention group (EG2), whose education included only written materials for self-education, the mean score on willingness to care before and after the intervention was 1.27. The changes in the nurses' willingness to care for PLWA were not found to be statistically significant after the intervention (see Article V). The control group (CG) nurses' mean score before and after the intervention was 1.52, i.e., the nurses in that group were the least willing to care for PLWA.

The proportion of the hypothesis related to the willingness to care for PLWA was not supported: the education intervention did not contribute to the nurses' willingness to care of HIV-positive or those with AIDS.

## 7. Discussion

The overall goal of the present study was to identify the areas which needed to be improved in order to develop quality nurse education related to HIV infection and HIV-positive people. The study involved the changes in the nurses' knowledge, attitudes, and willingness to care for HIV-positive patients. The knowledge can be used to improve nurse education through which better preventive work for people and care for HIV-positive patients could be offered. The study offers implications for different fields, including nursing practice, education, and nursing science.

In the chapter, first, the validity and reliability of the study are discussed. Second, the main findings are discussed against the background of relevant factors in compliance with the goal of the study. Third, implications for the development of nurse education related to HIV are considered, and fourth, suggestions for the future research are presented.

### 7.1 Validity and reliability of the study

The adequacy of the study process is judged by the validity and reliability of the results. Validity is the measure of truthfulness and accuracy of the study in relation to the concept under research, while reliability refers to the quality of the measurement estimating consistency, stability, and repeatability of the measure obtained (Brink, 1988; Hatcher et al., 2005; Burns & Grove 2006, 2009). The validity of the present study is considered in terms of internal validity, external validity, and objectivity. Internal validity refers to whether the results of the study investigating causal relationships are a true reflection of the reality and not attributed to extraneous variables (Hatcher et al., 2005; Gravetter et al., 2008; Burns & Grove, 2009). External validity is related to referring to the truth of conclusions (Hatcher et al., 2005; Burns & Grove, 2009). Validity of the results refers to objectivity. It is essential that the results and conclusions of the study are based on data (Burns & Grove, 2009).

#### **Phase 1**

In all the three countries, the study was carried out in only three departments/wards of one hospital. In each country, the hospitals were located in a geographical area where the prevalence of HIV and AIDS was significantly high (Lithuanian AIDS Center, 2007; National Public Health Institute, 2007; Estonian Ministry of Social Affairs, 2010). The wards included in the study were considered to be at high risk to HIV exposure because of the daily nursing procedures (e.g. intravenous infusions) currently performed in them. That could affect the external validity of the results

because health care institutions varied widely in their organizational structure, experience, and resources (Albada et al., 2007). The response rate (82%) was satisfactory for the survey research among the nurses (Groves et al., 2004), and the study participants represented more than 50% of all the nurses discharged during the data collection, which increased the validity of the study. The response rate was 75% (n=322) in Finland, 86% (n=191) in Estonia, and 91% (n=168) in Lithuania. Moreover, data collection was carried out in working time. The timing of the data collection may have affected the evaluation of the participants. Despite those limitations, the results of the study were in line with earlier studies (cf. Suominen et al., 2000; Peate et al., 2002), and were therefore useful for generalization.

## **Phase 2**

The analysis started by searching the statements corresponding to the questions (Burns & Grove, 2005). Content analysis can help evaluators learn more about the issues and programmes they examine because it is systematic. It has structured forms that allow evaluators to extract relevant information more consistently than if they were reading the same documents only casually. The five major factors in considering whether to use content analysis are the objectives of the assignment, the data that are either available or to be collected, the kind of data required, the kind of analysis required, and the resources needed (Delfico & Crowley, 1996).

Mayring (2000) notes that content analysis (used in the current phase) is a valid method leading to specific conclusions from the analyzed text. Qualitative content analysis consists of four steps (Burnard, 1991; Mayring, 2000): 1) multiple text reading, 2) manifestation categories of exclusion on the basis of *key* words, 3) category content division into subcategories, 4) categories and subcategories of interpretation and justification of a text extracted from the evidence.

There could have been some limitations in searching for the literature. However, several databases were used in the MEDLINE and PubMed, Science Direct, Cochrane Library, Ebsco Host, and ERIC. The following search terms: *human immunodeficiency virus and acquired immunodeficiency syndrome, nurse, intervention, teaching, education, knowledge, attitude, and willingness to care* could have limited the findings. One researcher was searching and selecting the literature and taking care of the main analysis process, confirmed by other scholars (Burns & Grove, 2005).

## **Phase 3**

Internal validity is approximate to the extent to which the observed outcomes can be attributed to the intervention under investigation (Burns & Grove, 2006). Threats to the internal validity of the present study were considered in terms of the selection bias (Altman et al., 2001). Selection bias refers to the comparability of the groups. To avoid selection bias, the eligibility criteria for participants were clearly defined. The quality of the randomization process was assured regarding generation and concealment of allocation sequence and assignment process (Altman et al., 2001). To avoid that, the realization of the intended interventions was ensured through detailed protocols for systematic nurses' education interventions. Furthermore, nurses and researchers could not be blinded to intervention allocation after the

assignment. Therefore, an information flow between the nurses' education groups may have occurred. However, the statistician responsible for the data analysis was blinded to the group assignment, which strengthened the validity of the study.

External validity is related to generalization of referring to the truth of conclusions. The hospitals ( $n=3$ ) were randomly selected from the nine largest hospitals in Lithuania. From about 300 nurses in each hospital, 80 (total  $n=240$ ) nurses (27.5%) were randomized into each of the three groups. The participants were selected by a cluster random sampling method from four wards in each hospital: surgical, medical, or gynaecological wards and the primary health care centres attached to the hospitals. A cluster sample was taken by identifying the different departments in hospitals as clusters. A sample of those departments (clusters) was chosen at random, and all the nurses in the selected departments were included in the sample. Sample size was adequate to  $\alpha=0.05$ , ( $\beta=0.20$  (80% power) and  $\Delta/\sigma=0.6$  ( $\Delta=0.43$ ,  $\sigma=0.7$  – from previous analyses (Nelson, 1985). The number of the nurses who refused to participate in the study was low (15% in the baseline sample and 10% in the follow-up sample), which increased the validity of the study. However, the study participants represented nurses fairly well. To avoid settings and locations affecting external validity, the study was carried out in three hospitals and in four wards.

The study was to assess the reliability and validity of an education programme for the revision of nurses' knowledge, attitudes, and willingness to care for HIV-positive people. The RCT method, including nurses ( $n=206$  in December), was applied to recruit appropriate samples from three Lithuanian hospitals and health care centers attached to the same hospitals. The revised questionnaires about the nurses' knowledge, attitudes, and willingness to care for HIV-positive people were used in the study. The final sample consisted of 185 (in March) subjects.

In addition, the reliability of the Likert-scale format questions was measured by Cronbach's alpha coefficient, which is the best known test for internal consistency in nursing studies. In other words, it is used to establish whether the items within a scale reflect or measure the same concept (LoBiondo-Wood & Haber 1994). Cronbach's alpha scores ranged between 0.69 and 0.93 (Table 6).

Three factors were detected in the results. The first factor was named an attitude, and the attitude scale had two subscales: a general attitude scale (26 items) and a homophobia scale (9 items). The willingness to care was the second factor which included 13 items.

Table 6. Baseline and follow-up intervention: Cronbach's alfa coefficient in groups EG1, EG2 and CG

Instrument	Number of items	EG1		EG2		CG	
		baseline	follow-up	baseline	follow-up	baseline	follow-up
The State University of New York at Buffalo School of Nursing AIDS Study Questionnaire (Held, 1993):							
Attitudes :	35	0.92	0.89	0.93	0.92	0.91	0.89
general attitudes	26	0.88	0.87	0.90	0.89	0.85	0.81
homophobic attitudes	9	0.93	0.88	0.91	0.88	0.92	0.92
The Nursing Willingness Questionnaire (Dubbert et al., 1994):							
Willingness to take care questionnaire	13	0.86	0.78	0.84	0.74	0.81	0.87

As demonstrated by Table 6, the instruments used in the Lithuanian language and measuring the nurses' knowledge, attitudes, and willingness to care for HIV-positive people can be considered to be reliable and valid scales when used in the context of education intervention.

## 7.2 Comparison of the research findings with earlier studies

### 7.2.1 Knowledge, attitudes, and willingness to care

The present study in Finland, Estonia, and Lithuania showed that nurses had a rather average knowledge of HIV and AIDS. The mean for all the three countries was 68% of correct answers (in Lithuania, 56%), which is in the same range of between 55% and 75% found in Välimäki et al. (2000), Oyeyemi et al. (2006-1) and Askarian et al. (2006) studies. The factors influencing the nurses' level of knowledge showed quite clearly that previous experience in providing care for PLHIV or knowing someone with the infection had a positive influence on the level of the knowledge. The result was similar to that of Walusimbi and Okonsky (2004). Phase 1 revealed that years of working experience were negatively related to the level of knowledge. Watkins and Gray (2006) also found that older nurses had the lowest level of knowledge which may imply that older nurses were not well prepared during their pre-service education, therefore, continuous training was necessary to keep up with the knowledge and best practices on HIV among nurses.

The attitudes towards PLHIV were found in line with those established in the studies by Mbanya et al. (2001), Anderson et al. (2003), and Chen and Holzemer (2004) where mean attitude scores ranged between 51% and 78% (in Lithuania, the mean attitude score was 2.6). The nurses' years of work correlated negatively with their attitude towards PLHIV. The result was similar to that in Pita-Fernández et al. (2004) and Watkins and Gray (2006) studies. Having no children proved to affect attitude levels, as the nurses who had children showed a more negative attitude. The result was similar to the findings of Oyeyemi et al. (2006-2). The nurses' education was found to have an effect on their attitudes. The finding was similar to that of, e.g., Röndahl et al. (2003) and Pita-Fernández et al. (2004). A strong correlation was identified between the nurses' level of knowledge and their attitudes towards PLHIV. The finding was supported by Azaiza and Ben-Ari (2002) and Walusimbi and Okonsky (2004) and was contrary to the findings of Chen and Holzemer (2004).

Significant differences in the levels of knowledge about HIV and AIDS and the attitudes towards PLHIV in three neighboring EU countries were identified. The Lithuanian nurses seemed to have had limited exposure to caring for PLHIV, which might influence their work if they moved to other EU countries to practice nursing care.

In terms of willingness to care, the nurses from all the three countries were willing to perform nursing activities for a fictional patient with HIV or AIDS. That witnessed the nurses' understanding of their responsibility to safeguard and promote the well-being of patients which could be assured on the mental level (Maze, 2000; Code of Professional Conduct, 2001; International Council of Nurses, 2007). The finding was supported by e.g. McCann and Sharkey (1998). The nurses' willingness to provide care for HIV and AIDS patients varied among the three countries. Although nurses in general may share the same value base and goals in their daily work, nursing education, ethical responsibilities, and cultural values in nursing (Pang et al., 2003) may vary among countries. Thus, e.g. depending on their country of residence, nurses will have different values related to caring for patients with HIV or/and AIDS (van de Mortel, 2003). In phase 1, based on the mean value of 13 specific nursing activities, the Lithuanian nurses were most willing to provide care for these patients. The nurses from Lithuania were willing to provide more intimate nursing interventions when it was necessary to deal with infectious fluids.

## 7.2.2 Education programs

The purpose of the literature review was to identify and describe the current literature on supplementary nursing education programs, to improve nurses' knowledge, attitudes, and willingness to care, and additionally to explore the impact of these programs.

We identified articles that reported on intervention programs aiming to improve nurses' knowledge and attitudes and their willingness to care for patients with HIV and/or AIDS. Almost all of them reported one or more statistically significant effects. Most intervention programs for nurses originated in the United States (e.g. Slaten et al., 2000; Bluespruce et al., 2001). Eight of the intervention studies (e.g.

Ezedinachi et al., 2002; Williams et al., 2006) included lectures among the methods of educational intervention. The nurse sample sizes (n) ranged from 12 to 552. Many of the studies (e.g. Bluespruce et al., 2001; Ezedinachi et al., 2002) involved one experimental/intervention group and one control group. The intervention programs varied in terms of their methodological rigor.

It was the first of its kind of review in the present context area, because the earlier reviews focused on, e.g., an increased role of the nurse in substance use, or in nurses' confidence in caring for patients with HIV, as well as in HIV prevention. (e.g. Pratt et al., 2001; Nkowane & Saxena, 2004; Underhill et al., 2007).

Although rather abundant discussion related to nurses' supplementary education could be found in the scientific literature, it was noted that a need for well-designed studies to identify the outcomes of nursing education still existed. Future studies were needed not only to investigate the impact of the short-term education, but also of longer term effects.

### 7.2.3 The impact of the education intervention on nurses' knowledge, attitudes, and willingness to care

#### **Knowledge**

The education intervention resulted in significant improvements in the nurses' HIV and AIDS-related knowledge in all areas, including HIV and AIDS epidemiology and history, prevention, transmission, HIV treatment counseling HIV-positive patients, and ethical considerations. The short course was successful in increasing the nurses' knowledge in all aspects, however, the changes in the attitudes were minor. The success of short courses in improving the knowledge of nurses was also recognized by other researchers (e.g. Stewart et al., 1999; Charuluxananan et al., 2000; Buskin et al., 2002; Williams et al., 2006; Pisal et al., 2007). The distribution of written material alone did not have any positive impact on the increase in the nurses' knowledge level and their positive attitude towards people with HIV. The latter finding supported the earlier results (e.g. Mohsen, 1998; Uwakwe, 2000). However, Farmer et al. (2008) in their intervention review suggested that printed educational materials, when used alone, may have a beneficial effect on the process outcomes and improve knowledge, awareness, attitudes, skills, and professional practice. That is why we need to combine several educational methods in order to have a positive impact on nurses' knowledge and attitudes. The use of written materials alone in continuing education may be cheaper, but will not be cost effective, as their impact on nurses' knowledge level is negligible.

#### **Attitudes**

Nurses' attitudes towards HIV and AIDS are strongly related to their beliefs. Those determine the degree to which they will fulfill nursing duties in a non-judgmental manner. The findings of the present study have a number of implications for nursing management, education, practice, and research. The nursing profession has a social responsibility to provide quality health care equally to all patients, including HIV-

positive people. Unlike some previous research (Wang et al., 2003), the study indicated that knowledge did not seem to effect the willingness to provide care. The study revealed that, in general, the nurses from all the three groups representing three different countries were willing to perform required nursing activities for a fictional PLWHA. Worthington et al. (2008) stated that, as health professionals, they become part of the social space of people living with the infections. They become part of the patient's social surroundings as empathic figures, people that know "how it feels".

### **Willingness to care**

The educational intervention (the workshop and written materials) had a positive impact on one investigated area in the nurses' willingness: they were willing to carry out daily nursing activities, such as to clean up faeces or vomit (only with gloves on), as well as to feed dinner. Similar results were described in the studies of such authors as McCann and Sharkey (1998), Wu et al. (2002), and Williams et al. (2006).

Furthermore, distribution of written materials alone did not have a positive impact on the increase in nurses' willingness to care for HIV-positive. Uwakwe (2000) indicated that the mere production of AIDS information materials and dissemination with minimal personalized contact does not always yield optimum results in health behavior modification, and the written materials, no matter how well designed, may not always be read by the target group.

## **7.3 Summary and conclusion**

HIV is a critical issue in the daily lives of many millions of people across the world. Efforts are now focused at reducing the long-term impact of AIDS and adjusting the health, social, and other systems to accommodate the needs of the growing ranks of people living with HIV and populations at risk in a way that strengthens health systems (UNDP, 2008). Ensuring the appropriate preparation of health care workers is integral to the strengthening of health care systems. In order to be effective, the health training infrastructure needs to have a clear understanding of the issues, challenges, and opportunities that face contemporary health care workers and to develop appropriate strategies to address those (Kachur & Krajić, 2005). HIV is a socially stigmatized disease, and it is the responsibility of health care workers in general and nurses in particular to address the issue for the well-being of patients affected by HIV and their family members. HIV is a chronic disease, and to deal with it, nurses must have a high knowledge level and should be able to adequately address patients' problems and needs.

The international cross-sectional survey established that some differences in the knowledge, attitudes, and the willingness to care between Finland, Estonia, and Lithuania existed, and also revealed that the nurses had a rather average knowledge about HIV and AIDS. The variation in the level of knowledge between the three countries was considerable: whereas the Finnish nurses scored on average 75%, the



Estonian nurses 64%, and the Lithuanian nurses 56% right answers in the knowledge test. The differences between the countries were found to be statistically significant. Significant differences were found in the attitudes towards PLWHA in the three countries. The Finnish nurses had the most positive attitudes towards those patients, achieving 82% of the maximum score, whereas the Estonian nurses scored 54%, and the Lithuanian nurses 52%. The difference between Finland and the other countries was found to be statistically significant. The nurses from all the three countries were willing to care for PLWHA. The most willing nurses were from Lithuania, and the least willing were those from Estonia. In previous literature, many times higher knowledge level has turned out to correlate with more positive attitudes. Furthermore, with more positive attitudes, nurses may be also more willing to care. In the present study, the correlations were not that clear, and it remains to consider whether the quality of nursing work, nurses' roles, environmental factors etc. in each country may also correlate. A decision was made to have a teaching intervention in one country of those three where the knowledge and the attitude degree were on the lowest level.

Based on earlier studies, it is not easy to conclude which kind of education interventions have beneficial impacts on nurses' HIV and AIDS-related knowledge, attitudes, and willingness to care for HIV-positive people. With reference to the literature review, we may consider combining different teaching methods in nurses' supplementary education. In the present global epidemic and economic situation, we need to know more about the kinds of impact different education programs may have.

Our RCT study, based on the thinking presented by Bloom and his colleagues (1956), demonstrated the improvement in the nurses' knowledge level, however, only minor changes in attitudes were found. Participation in the education program, including workshops and written materials, improved the scores on knowledge to an extent that was statistically significant. The distribution of written materials alone did not have a positive impact on the nurses' knowledge level and their positive attitude towards people with HIV. That is why there is a need to combine several educational methods in order to have a positive impact on nurses' knowledge and attitude. Our study also revealed that, in general, the nurses from all the three groups, i.e. two experimental and one control group, were willing to perform the required nursing activities for a fictional PLWHA. Although the first teaching intervention showed a positive impact on the nurses' knowledge level, only minor changes could be observed in the willingness to care. After the 2-day educational intervention, the nurses were more willing to carry out daily nursing activities, such as to clean up faeces or vomit (only with gloves on) and to feed dinner. After the intervention where only written materials were distributed, there was no positive impact on increasing the nurses' willingness to care for HIV-positive.

Based on the impact of a short educational course on the nurses' knowledge, attitudes, and willingness to care for HIV-positive people, such programs are likely to make a significant impact on improving the lives of PLWHA in Lithuania. The educational intervention not only provided knowledge about HIV infection and disease, but also addressed ethical and psychological issues related to HIV.

Participation in HIV nursing workshops such as the one offered during the study is thus likely to represent only the first step for Lithuanian nurses. There is a great potential to expand education programs. To perform their jobs effectively, health professionals must have access to adequate information related to HIV. It is likely that in low resource countries insufficient knowledge about HIV and AIDS will continue to contribute to discriminatory behaviors towards PLWHA.

## 7.4 Implications for education, practice, and research

Based on the results of the study, the following implications can be seen for nursing education, practice development, and future research.

Implications for education:

1. The research reflected in the present summary indicates a growing need for the educational sector to develop explicit and unambiguous policies in different countries related to nurses' HIV disease education.
2. Better co-operation between different European countries is needed in the curriculum development in order to have more equal and culturally sensitive education in European countries.
3. Surveys could help to find out where and what kind of education is needed as a part of occupational and supplementary education.
4. More evidence-based training programmes are needed.
5. Mandatory HIV education for all nursing staff should be provided, including training targeting the knowledge about HIV, attitudes, and willingness to care for HIV-positive people.
6. Nurse education programme criteria should be developed on the basis of the research findings. The sharing of teaching and learning materials that already exist in different regions of different countries is important, and more organized structures for education should be offered.

Implications for practice:

1. Countries should be encouraged to learn from one another and be proactive in seeking, sharing, or providing existing materials, as well as learning about practices in different countries.
2. To perform their practice effectively, health professionals are not only to have access to the latest developments in their field, but also the opportunities to constantly upgrade the existing knowledge. It is likely that in low-resource contexts, insufficient knowledge about HIV and AIDS will continue to contribute to discriminatory behaviors towards people with HIV and AIDS.
3. Short training courses (e.g. for 2 days) for nurses to improve their knowledge level related to HIV are not very expensive and seemed to have made an impact; therefore, they could be recommended to be used in continuing education.
4. It is important to open the door for discussions about sensitive topics in the nursing practice more widely.

#### Implications for research:

1. Future research on nurse education to support their knowledge, attitudes, and willingness to care for HIV-positive people is still greatly needed in different European countries. In the face of globalization and nurse mobility, it is important to understand the cultural and educational environment in order to improve care for PLWHA. It is also important to take into account the previous experience of nursing practice for patients with HIV in different countries.
2. It is difficult to compare previous studies due to a large number of different approaches used. It is important to use valid and reliable instruments and the same designs to get comprehensive understanding and to create more evidence based knowledge on how to educate nurses more effectively.
3. Future studies should be used more widely and more frequently as a design to investigate the sustainability of the impact of different education programmes in the long run.
4. Future studies should examine not only the short-term effectiveness of intervention programmes in terms of changing attitudes and increasing willingness to care, but also their impact in the longer term.
5. More international, global, and multidisciplinary perspectives should be included in future instrument development and future studies.
6. The presently developed education programme should also be widely tested in future.
7. Future studies should address the question of the practical quality of nursing care delivered, and not only from the provider perspective, but also from the client perspective.
8. The attitude of the nursing professionals towards the patients from the patients' perspective could be studied as well.

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## 9. Acknowledgements

I would like to extend thanks to everybody who took part in the present research, as well as everybody who guided, supported, and motivated me during the process.

I wish to express my sincerest and warmest gratitude to Professor Tarja Suominen, PhD, my principal supervisor who has guided me through my studies, as well as to my two other supervisors, Professor Maritta Välimäki, PhD, and Professor Arturas Razbadauskas, PhD, for their belief in me and their guidance and support during the research process. It has been a privilege to work with them.

I would like to thank the follow-up group, Adjunct Professors Saulius Caplinskas, PhD, and Jari Kylmä, PhD, for their support throughout this work and especially the Lithuanian AIDS Centre for their participation in the educational intervention.

My thanks go to the official reviewers, Adjunct Professors Kirsi Johansson, PhD, and Mika Salminen, PhD, for their thorough review and constructive comments which contributed to the improvement of the thesis.

My sincere thanks to Adjunct Professor Arvydas Martinkenas, ID, for his help, support, and advice in statistical analysis. I would also like to thank Dalia Kavaliauskiene, PhD, Laimute Servaite, PhD, and Paula Nieminen, MA for the revision of the English language.

I am grateful to all my colleagues and friends at the Departments of Nursing Science at Klaipeda University, as well as at Tampere University, especially Professor Kirkutis, PhD, from Klaipeda University who started the co-operation with Finnish nursing scholars, and Professor Arturas Razbadauskas who motivated me to start post-graduate studies. A positive work environment and the encouragement offered by my colleagues were a great source of strength for me during this lengthy process.

My very special thanks are extended to the organizations in Finland, Estonia, and Lithuania where the research was carried out and to all the nurses in the surgical, medical, and gynaecological wards and the primary health care centres attached to the hospitals. Their commitment enabled the accomplishment of this dissertation.

In particular, I want to thank my husband Algirdas and my sons Vilius and Julius. I would never have come that far without either of them. Thank you, Algirdas, for your unflinching support, for the inspiring conversations during the time, and, of course, for the sponsorship of my study process. Thank you, Vilius and Julius, for understanding and encouraging me in my studies. Thank you for your great empathy – I am glad to have you by my side.

I am grateful to my parents, Elzbieta-Tereze and Vaclovas Duzinai, who have supported me from the very beginning of my academic studies. My dear father passed away this spring; he would be proud of me today. My warm thanks to my sister Sigute Nastareikiene for her refreshing telephone calls and our discussions that were encouraging and supported me during this process in many ways, and also

to her spirited family, Valius, Egle, and Paulius for the interest and enthusiasm they showed for this endeavour.

This study was funded by the Finnish Nursing Education Foundation and Klaipeda University, which are gratefully acknowledged.

# 10. Appendices

## Appendices

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Appendix 1 page 1/2

ID\_\_\_\_\_

### DEAR NURSE:

I am Vida Mockiene, and I am writing a doctoral dissertation on the topic *The impact of an education intervention on nurses' knowledge of and attitudes towards HIV and AIDS and willingness to take care of HIV- positive people in Lithuania.*

I would like to ask you to fill in this questionnaire because it is important to understand the views of health care professionals and their educational needs related to HIV/AIDS.

This questionnaire has been approved by the Hospital's Ethical Committee and the Ethical Committee of Klaipeda University.

This questionnaire is anonymous (do not write name and surname)

Mark  the item that suits you best or write the required information

### DEMOGRAPHIC DATA ABOUT NURSES

1. Your age: \_\_\_\_\_(years)

2. Sex:

1. Male
2. Female

3. Mother-tongue:

1. Lithuanian
2. Russian
3. Other (write) \_\_\_\_\_

4. Marital status currently:

1. Single
2. Married
3. Widowed or divorced

5. Do you have children?

1. Yes
2. No

6. Your medical education:

1. Medical School
2. Medical College
3. University

7. Your work experience in health care:  
\_\_\_\_\_ years, if less \_\_\_\_\_ months

8. Current workplace:

1. University hospital
2. District hospital
3. City hospital
4. Other (write) \_\_\_\_\_

9. Work area:

1. Surgery
2. Medical therapy
3. Gynaecology
4. Primary health care center
5. Other (write) \_\_\_\_\_

10. Your work experience in the present ward  
\_\_\_\_\_ years, if less \_\_\_\_\_ months



## Appendices

Appendix 2

ID \_\_\_\_\_

### DEAR NURSE,

Thank you for filling in the questionnaire related to my doctoral dissertation in December 2008. I am Vida Mockiene, and the topic of my doctoral dissertation is *The impact of an education intervention on nurses' knowledge of and attitudes towards HIV and AIDS and willingness to take care of HIV-positive people in Lithuania.*

**Now it is time to fill in the questionnaire again** because it will help to understand how to increase knowledge and improve attitudes and willingness to provide nursing care for patients with HIV or/and AIDS in Lithuania. Please mail the questionnaire back to me before 27 March 2009.

This questionnaire has been approved by the Hospital's Ethical Committee and the Ethical Committee of Klaipeda University.

The questionnaire is anonymous (name and surname don't write).

Mark  the item that suits you best or write the required information

### DEMOGRAPHIC DATA ABOUT NURSES

1. Current workplace:

1. University hospital
2. District hospital
3. City hospital
4. Other (write) \_\_\_\_\_

2. Work area:

1. Surgery;
2. Medical therapy
3. Gynaecology
4. Primary health care center
5. Other (write) \_\_\_\_\_

3. Your work experience in the present ward

\_\_\_\_\_ years, if less \_\_\_\_\_ months

**THE IMPACT OF AN EDUCATION INTERVENTION ON NURSES' KNOWLEDGE OF AND ATTITUDES TOWARDS HIV AND AIDS AND WILLINGNESS TO TAKE CARE OF HIV-POSITIVE PEOPLE IN LITHUANIA**

University of Kuopio (Finland)  
Faculty of Social Sciences

**CONSENT FORM**

(FOR NURSE)

I \_\_\_\_\_ agree  
(name, surname)

to participate in scientific research: *The impact of an education intervention on nurses' knowledge of and attitudes towards HIV and AIDS and willingness to take care of HIV-positive people in Lithuania* (major researcher: Vida Mockienė).

I confirm I have been provided all the necessary information about the research. My participation in this research is voluntary.

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Name, surname)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Signature)

### **THE IMPACT OF AN EDUCATION INTERVENTION ON NURSES' KNOWLEDGE OF AND ATTITUDES TOWARDS HIV AND AIDS AND WILLINGNESS TO TAKE CARE OF HIV-POSITIVE PEOPLE IN LITHUANIA**

University of Kuopio (Finland),  
Faculty of Social Sciences

\_\_\_\_\_  
(Date)

DEAR NURSE,

We would like to invite you to participate in a scientific research to improve quality of nursing care in Lithuania. The purpose of the research is to describe the impact of an education intervention on nurses' knowledge level of HIV and AIDS, attitudes towards, and willingness to care HIV-positive people

Education intervention process will be implemented in your hospital, which has randomly been selected from 9 biggest hospitals in Lithuania. We selected 80 nurses who work in the wards: surgical, medical, gynaecological and primary health care centers attached to those hospitals to perform the training course. You were selected randomly to the group which will participate in education program.

Your participation in the research is voluntary, and this is very important to us. Your personality will not be disclosed in the process of the questionnaire analyses. The data about the current state is necessary for further research, the purpose of which is quality nursery care in Lithuania.

The education intervention will cover 2-days: workshops (on 11-12th December) and studying written materials. The lectures will focus on the epidemiology and history of HIV and AIDS, prevention, transmission, HIV treatment and counseling HIV-positive patients, ethical considerations and group discussions. The written materials will consist of copies of all the lectures and journal articles related to lecture topics (20 pages). You will get it after the first day lectures.

At the beginning of the first day of the educational intervention, you will be provided with a questionnaire which we kindly ask to fill in (it will take 20-30 min.) and return it in a sealed envelope to the researcher. 3 months later (on 9-15th of March 2009) we would like you to fill in the same questionnaire for the second time. The questionnaire will be sent by mail wherein there will be an envelope with a stamp and a return address which should be returned to the researcher after the questionnaire has been filled. Your answers will be used only for research purposes, and strict confidentiality will be followed.

If you decide to participate in the education intervention, you should sign the consent form (sent by mail wherein there will be an envelope with a stamp and a return address to be returned to the researcher) and should mail it back in one week. After you have participated in the 2-day lecture course, have filled in the questionnaires (after the first day lectures and after 3 months in March) and returned it to the researcher, you will be provided with an 18 hour certificate as a participation incentive.

You are free to leave the study at any time, and are not required to give any explanation.

The results about the research will be published in international journals. The respondent's personality will not be disclosed.

The research will be implemented by:

Vida Mockienė – PhD-Student (Finland, University of Kuopio), email: xxx, telephone number: xxx

Supervisors:

Professor Tarja Suominen (Finland, University of Kuopio), email: tarja.suominen@uku.fi

Professor Maritta Välimäki (Finland, University of Turku)

Professor Artūras Razbadauskas (Lithuania, University of Klaipėda)

We appreciate any kinds of questions that might occur in the process of the research and are ready to answer or explain them. Thank you for collaboration.

Yours faithfully,  
Vida Mockienė

## Appendices

Appendix 4 page 2/3

### **THE IMPACT OF AN EDUCATION INTERVENTION ON NURSES' KNOWLEDGE OF AND ATTITUDES TOWARDS HIV AND AIDS AND WILLINGNESS TO TAKE CARE OF HIV-POSITIVE PEOPLE IN LITHUANIA**

University of Kuopio (Finland)  
Faculty of Social Sciences

\_\_\_\_\_  
(Date)

DEAR NURSE,

We would like to invite you to participate in a scientific research to improve quality of nursing care in Lithuania. The purpose of the research is to describe the impact of an education intervention on nurses' knowledge level of HIV and AIDS, attitudes towards and willingness to care HIV-positive people

The research will be implemented in your hospital, which has randomly been selected from 9 biggest hospitals in Lithuania. We selected 80 nurses who work in the wards: surgical, medical, gynaecological, and primary health care centres attached to those hospitals to perform the training course. You were selected randomly to the group which will be asked to get acknowledged with the written material.

Your participation in the research is voluntary, and this is very important to us. Your personality will not be disclosed in the process of questionnaire analyses. The data about the current state is necessary for further research, the purpose of which is quality nursery care in Lithuania

If you decide to participate in the research you should sign the consent form (sent by post wherein there will be an envelope with a stamp and a return address which should be returned to the researcher) and should mail it back in one week. After you have filled the questionnaire and returned it to the researcher, you will be sent the written material (20 pages) about HIV and AIDS by mail. The process of filling in the questionnaire will not take longer than 20-30 minutes.

3 months later (on 9-15th of March 2009) we would like you to fill in the same questionnaire for the second time. The questionnaire will be sent by mail wherein there will be an envelope with a stamp and a return address which should be returned to the researcher after the questionnaire has been filled. Having fulfilled all the procedures, you will be provided with a 6 hour certificate as a participation incentive

You are free to leave the study at any time, and are not required to give any explanation.

The results about the research will be published in international journals. The respondent's personality will not be disclosed.

The research will be implemented by:

Vida Mockienė – PhD-Student (Finland, University of Kuopio), email: xxx, telephone number: xxx

Supervisors:

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Vida Mockienė

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Appendix 4 page 3/3

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University of Kuopio (Finland)  
Faculty of Social Sciences

\_\_\_\_\_  
(Date)

DEAR NURSE,

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The research will be implemented in your hospital, which has randomly been selected from 9 biggest hospitals in Lithuania. We selected 80 nurses who work in the wards: surgical, medical, gynaecological, and primary health care centers attached to those hospitals to perform the training course. You were selected randomly to the group which will belong to the control research group.

Your participation in the research is voluntary, and this is very important to us. Your personality will not be disclosed in the process of questionnaire analyses. The data about current state is necessary for further research, the purpose of which is quality nursery care in Lithuania

If you decide to participate in the research you should sign the consent form (sent by post wherein there will be an envelope with a stamp and a return address which should be returned to the researcher) and should mail it back in one week After the researcher has got your signed consent form you will be sent a questionnaire. The process of filling in the questionnaire will not take longer than 20-30 minutes.

3 months later (on 9-15th of March 2009) we would like you to fill in the same questionnaire for the second time. The questionnaire will be sent by mail wherein there will be an envelope with a stamp and a return address which should be returned to the researcher after the questionnaire has been filled

You are free to leave the study at any time, and are not required to give any explanation.

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Yours faithfully,  
Vida Mockienė

## Appendices

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Appendix 5 page 1/2

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(Date)

DEAR NURSE,

We would like to thank you for your agreement to participate in the scientific research, to read the materials, and to fill the questionnaire. Your participation will help us to get a better understanding of how to increase knowledge and improve attitudes and willingness to provide nursing care for patients with HIV and AIDS in Lithuania.

We would like to remind you about the deadline of the questionnaire to be sent back (in one week's time) and to assure that the answers will be used only for research purposes and will be kept in strict confidentiality.

We appreciate any kinds of questions that might occur in the process of answering the questionnaire and are ready to answer or explain them. Thank you for your collaboration.

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Appendix 5 page 2/ 2

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## Appendices

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Appendix 6 page 1/3

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## Appendices

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Appendix 6 page 2/3

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## Appendices

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Appendix 6 page 3/3

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We would like to remind you about the deadline of the questionnaire to be sent back (in one week's time) and to assure that the answers will be used only for research purposes and will be kept in strict confidentiality.

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Professor Artūras Razbadauskas (Lithuania, University of Klaipėda)

## Appendices

### Appendix 7

#### Written material for intervention for EG1 and EG2 nurses

HIV and AIDS epidemiology and history	Lietuvos AIDS centro duomenys. 2008. ŽIV /AIDS atvejų skaičius registruotų 1998-2008 Lietuvoje.
HIV and AIDS statistics: in the World in the Lithuania	LR SAM 2004 m. gruodžio 1 d. įsakymas Nr.V-853 “Dėl poekspozicinės žmogaus imunodeficito viruso profilaktikos skyrimo aprašo patvirtinimo”. Žin., 2004, Nr. 179-6634.
Prevention	Laiškonis, A., Pukenytė, B. 2005. Vaccine for human immunodeficiency virus (HIV) - relevance of these days. <i>Medicina</i> , 41(2), 93-99.
Regulations of nurses' work with HIV patients in Labor Legislation of Lithuania	Uždavinienė, V., Čaplinskas, S., Griškevičius, A. 2005. Pirmine ŽIV infekcija. <i>Lietuvos bendrosios praktikos gydytojas</i> , 9(3), 227-230.
HIV infection and AIDS disease: Classification Symptoms Causes	Uždavinienė, V., Čaplinskas, S., Griškevičius, A. 2005. Pirmine ŽIV infekcija. <i>Lietuvos bendrosios praktikos gydytojas</i> , 9(3), 227-230. Laiškonis, A., Pukenytė, B. 2005. Vaccine for human immunodeficiency virus (HIV) - relevance of these days. <i>Medicina</i> , 41(2), 93-99.
HIV transmission: Sexual route Blood or blood product route Mother-to-child transmission	Rakickienė, J., Uždavinienė, V., Čaplinskas, S. 2001. Sveikatos Priežiūros Darbuotojų Užsikrėtimo Virusais Rizika Ir Profilaktika. <i>Risk and prevention of viral infections among health-care workers. Acta Medica Lituanica</i> , 1(6), 61-65.
Co-infection: HIV and other diseases: Co infection with HIV and HCV TB and HIV and AIDS	Riklikienė, O., Čaplinskas, S. 2003. Safety and health in nurses work environment: how to avoid HIV and hepatitis B and C infection, nurses' attitudes towards clients with HIV/AIDS. <i>Sveikatos mokslai</i> , 13(6), 2-10.
Treatment and care HIV test and counseling Risk contacts in work Post-exposition prophylaxis	Rakickienė, J., Uždavinienė, V., Čaplinskas, S. 2001. Sveikatos Priežiūros Darbuotojų Užsikrėtimo Virusais Rizika Ir Profilaktika. <i>Risk and prevention of viral infections among health-care workers. Acta Medica Lituanica</i> , 1(6), 61-65. Riklikienė, O., Čaplinskas, S. 2003. Safety and health in nurses work environment: how to avoid HIV and hepatitis B and C infection, nurses' attitudes towards clients with HIV/AIDS. <i>Sveikatos mokslai</i> , 13(6), 2-10.
HIV and AIDS, disclosure and confidentiality Stigma and discrimination in the health sector Anxiety and fear of contagion Moral quandaries Ethical dilemmas	Dapkevičienė, J., Čaplinskas, S. 2008. Psichologinė pagalba ŽIV infekuotiems žmonėms. <i>Intervencinės programos padalioji medžiaga</i> . Vilnius: Lietuvos AIDS Centras, 2 – 4. Riklikienė, O., Čaplinskas, S. 2003. Safety and health in nurses work environment: how to avoid HIV and hepatitis B and C infection, nurses' attitudes towards clients with HIV/AIDS. <i>Sveikatos mokslai</i> , 13(6), 2-10.