International Scholars Journals

African Journal of AIDS and HIV Research ISSN 2736-1748 Vol. 10 (3), pp. 001-007, March, 2022. Available online at www.internationalscholarsjournals.org © International Scholars Journals

Full Length Research Paper

Nurses' level of knowledge on the human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), behavior and practices: A survey from Turkish Society

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Accepted 21 February, 2022

Acquired immune deficiency syndrome (AIDS) is a syndrome for which no current treatment or prophylactic vaccine exists. It is caused by a virus called the Human immunodeficiency virus (HIV). Protection against this disease can be provided through a good understanding of the transmission routes. This study was conducted to determine nurses' level of knowledge on the HIV/AIDS disease. This study was performed as a descriptive trial designed to determine nurses' level of knowledge on the HIV/AIDS disease in a hospital located at the center of Erzurum, a city with a population of 985,389 in the east of Turkey. A total of 170 nurses participated in the study. A form on the socio-demographic characteristics and a survey form related to the transmission routes for HIV/AIDS, the sources of infection and the protective measures were used to collect the study data. Percentage distributions were used for data assessment. Based on the survey, results obtained from 170 nurses, of whom 45.3% were between 26 and 33 years of age (n:77), 170 nurses (100%) indicated that HIV/AIDS was transmitted through blood with high rates of transmission also through dentist, barber and hairdresser practices and circumcision tools; 97.6 and 99.4% of the nurses indicated that HIV can be found in the vaginal fluid and semen, respectively, while 91.2% of the nurses indicated that use of a condom/diaphragm was an effective measure for protection against HIV/AIDS. Post-graduate in-service training should be organized to fulfill the requirement for information that the nurses have.

Key words: Human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), nurse, level of knowledge, transmission routes.

INTRODUCTİON

The fact that AIDS progressively represents a significant hazard worldwide and the predictions that the mean lifespan will be lowered to below 30 years in under-developed countries, and primarily in Africa, render this disease a global cause. Based on the Global AIDS Report 2011 data, there are currently 34 million people suffering from AIDS worldwide. These include 30.1 million adults, 16.8 million women and 3.4 million children below 15 years of age (World AIDS Day Report, 2011). While a high level of consciousness and the development of therapeutic and prophylactic methods have resulted in a reduction in AIDS cases in certain regions, in other regions, the number of people suffering from AIDS has increased. Particularly, low- and middle-income countries are severely affect by AIDS. Accordingly, the number of individuals suffering from the HIV virus has increased by 250% since 2001 in Eastern Europe and Middle Asia Russia and the Ukraine account for around 90% of the prevalence in that area. South Africa is reported to have the largest population living with HIV (5.6 millions) (South African National HIV Prevalence, 2008).

Globally, 40 million people are currently known to be HIV positive with 95% living in developing countries. This disease, affecting 40 million people since its emergence in 1981 has resulted in the death of 29.6 million people. AIDS is particularly threatening for women and children

(Babayiğit and Bakır, 2004). Turkey may also be included in the category of countries under risk due to its geographic location and migration. Approximately 14 million international visitors come to our country within a year (http://www.unicef.org/turkey/dn/ah14.html). In addition, considering its population approaching 75 million, with this active structure associated with both natural and unnatural factors, and the young population, we can clearly see the importance of the HIV/AIDS issue for our country (http://sbu.saglik.gov.tr/tusp/turkce/yayinlar/pdf_dokumanlar/27_CYBE-HIV_DurumAnalizi.pdf 2007; Gökengin et al., 2003; http://europeandcis.undp.org/rhdr.aids2008/report/hiv_turkish_tr.pdf, 2008).

While the number of cases with HIV/AIDS infection reached 1,712 between 1985 and 2003 in Turkey (http://www.unicef.org/turkey/dn/ah14.html), this figure was reported to be 2,544 based on the 2006 records (623 AIDS patients, 1921 HIV carriers) (http://aids.about.com/od/dataandstatistics/qt/healthstats.htm. url: 15/02/2012). The reports indicate the current number of AIDS patients as 4,860 in our country and revealed a 1% AIDS prevalence among infants, with 3,436 males and 390 females having received HIV/AIDS treatment (Tümer, 2006). The disease is observed to have attained a chronic course nationwide. In Turkey, the reports reveal that women start treatment at the final stage of the disease and often do not seek medical help or attend regular follow-up visits due to various reasons such as common taboos and social oppression (Bedük et al., 2011).

The Human immunodeficiency virus (HIV) is a type of virus that slowly destroys the immune system in the human body. This virus attacks the immune system of the human body, thereby making the body fight against diseases and infections. Opportunist infections and the complications secondary to these infections may be fatal (Midilli, 2007). The most common route of transmission among healthcare workers is the pinprick (Özacar and Zeytinoğlu, 1996; Korkmaz, 2008). Regarding the most common route of transmission to healthcare workers, that is pinprick, in daily practice, 18, 70 and 12% of transmission cases occur during, before and after use, and during the disposal of the material, respectively (Clarke et al., 2002). Additionally, injuries from sharps contaminated by blood or the spreading of the infected blood or other body fluids to the mucosa represent the other routes of transmission (Ridzon, 1997).

The population bearing the highest risk for exposure to these conditions includes nurses and laboratory staff. Where and how nurses will encounter an AIDS patient is not known. Based on the global report on healthcare workers with AIDS, there are currently 5,378 nurses who have been exposed to the virus in relation to their occupation (http://aids.about.com/od/dataandstatistics/qt/healthstats.htm). Considering these figures, HIV/AIDS appears to threaten healthcare workers even if HIV isolation methods are used. Apparently, AIDS still remains a challenging condition for healthcare workers (Tümer, 2010). Nurses are responsible for obtaining the material required for establishing diagnosis and treatment, such as blood and urine, as well as remaining in constant contact with the patient. Nurses are also in charge of the medical and care requirements of HIV-infected and AIDS patients. In addition, carrier patients, who are not aware of their disease, always represent a risk (Özabacı, 1990).

An example of an established HIV transmission in the healthcare field is the disease being transmitted to 5 patients by a dentist (Leblebicioğlu, 1996). While the risk of HIV transmission during surgery varies between 1/42,000 and 1/420,000, this rate is 100-fold higher for hepatitis B Virus (HBV). The risk of transmission is 1/60,000 in HIV negative blood transfusion (Ridzon et al., 1997; Altıok et al., 2009).

While there are various trials conducted on different groups and healthcare workers worldwide and in our country, there is still a primary need to determine the current situation, considering the different training processes the nurses undergo. Determining the level of knowledge is considered to potentially lead the way in planning and providing more effective care for AIDS patients and their relatives who are rarely encountered in terms of the conditions of our country. In addition, since the fear of transmission is directly proportional to negative attitudes, such determination may help change these attitudes (Ayrancı, 2005; Hayyawi et al., 2010; Ay et al., 2006; Hatipoğlu et al., 2005; Altay et al., 2006).

This trial was designed and performed to evaluate the nurses' level of knowledge on the AIDS disease and its transmission.

METHODOLOGY

Through the Ataturk University Erzurum Health College, an application was submitted and legal consent obtained via written request including the purpose and the tools of the study. The nurses were provided with a verbal explanation of the content and the purpose of the trial before the survey was conducted; the nurses who gave consent to participate in the survey were included in the study. The trial was conducted at the Ataturk University Süleyman Demirel Medical Center Aziziye Research and Practice Hospital. While the trial population was designed to involve all the nurses working in internal diseases and surgery clinics, the nurses who were on leave at the time of the survey and those who refused to participate in the trial were excluded. The trial involved a total of 170 nurses.

Setting and sample

Measures: HIV/AIDS information form

The HIV/AIDS information form is a form designed to determine the level of knowledge on HIV/AIDS. This form has sections classified by the investigator, including the routes of transmission, the tools and materials harboring the virus, the body fluids containing the

virus and the effective protective measures, based on the relevant literature data. The questions created did not involve right or wrong statements. The questions related to the routes of transmission and the body fluids containing the virus included the choices of “yes”, “no” “I don’t know” while the questions related to the protective measures included the choices “it is effective”, “it is not effective” and “I don’t know”.

Data analysis

For data assessment, appropriate statistical methods were used as required by the individual survey questions, and package software such as SPSS11.0, Statistical 5.0 and Microsoft Excel 2000 numeric processors were used for analysis.

Ethical principles

All the permissions were legally obtained prior to initiation of the trial. In addition, the nurses working in the surgical clinics were provided with an explanation on the objective and the method of the trial. Any questions raised by the nurses during the administration of the survey were answered. The trial was completed with the nurses who participated on a voluntary basis.

Findings

The distribution of the nurses included in the trial by certain characteristics revealed the following: 32.4% of the nurses were between 18 and 25 years of age; 45.3% were between 26 and 33 years of age, 22.4% were ≥ 33 years old; 42.4% were medical high school graduates while 38.4% had bachelor’s degrees. Regarding duration of occupation, 47.6, 23.4, and 15.9% of the nurses had been nursing for 0 to 5 years, 6 to 10 years and ≥ 16 years, respectively. A total of 57.6% of the nurses were married (Table 1).

For ensuring protection against blood-borne infections, it is of great importance to be aware of the conditions relating to transmission. As can be seen in Table 2, reviewing the nurses’ opinions on the routes of HIV/AIDS transmission, all the nurses indicated that the virus was transmitted through blood, 84.7% indicated that it could be transmitted through tissue and organ transplant while 9.4% thought such transmission did not occur; 83.5% indicated that transmission occurred via unprotected sexual intercourse/anal intercourse while 93% pointed out the shared use of injectors and maternal transmission during pregnancy, and 62.4% indicated that transmission occurred through postnatal lactation of the infant by a mother with AIDS.

The nurses working at the clinic will carry out community health education as well as provide services as healthcare staff. The review of nurses’ level of information on the HIV/AIDS transmission through medical and non-medical tools used in healthcare service revealed the following (Table 3): 34.7% (n:59), 19.4% (n:33), 30% (n:51) and 3.5% (n:6) of the nurses indicated that the disease could be transmitted through the shared use of the tools such as towels, glasses, forks, spoons etc., through kissing, the shared use of toilet seats and social contact, including hugging, touching and shaking hands, respectively. A total of 91.2% of the nurses indicated that transmission could occur through dentist tools (n:155); 88.2% indicated (n:150) transmission could occur through barber tools; 87.6% mentioned transmission through manicure and pedicure tools; 90.6% (n:150) mentioned transmission through minor surgical procedures such as circumcision; with 35.9% (n:61) indicating that HIV transmission occurred through mosquito and insect bites.

One of the indicators of quality for the healthcare services is the application of universal isolation methods. In particular, it is inevitable for the nurse to come in contact with the patient while fulfilling care duties. Table 4 presents the nurses’ responses as to which body fluids contain the HIV virus. While semen ranks first at a rate of 99.4%, vaginal secretion ranks second at a ratio of 97.6%. It was revealed that 70.6, 56.5, 44.1, 43.5, 37.1 and 24.1% of the nurses indicated that HIV could be transmitted through breast milk, cerebrospinal fluid (CSF), sputum, urine and tears, respectively.

Table 5 presents the nurses’ opinions on contraceptive methods which are also used for protection against sexual HIV/AIDS transmission: the use of a condom ranked first as the most effective method at a rate of 91.2%. The use of foam/sponge was found to be effective by 24.7% of the nurses while 19.4, 15.3, 13.5, 12.4, and 7.1% of the nurses mentioned the use of intrauterine device, spermicides, contraceptives, tubal ligation and withdrawal, respectively as the most effective methods of contraception. While 92.4% of the nurses indicated that the calendar method was the least effective method, withdrawal, contraceptive methods and tubal ligation were indicated to be the least effective method for providing protection against HIV/AIDS by 87.6, 85.2 and 80.6% of the nurses, respectively.

DISCUSSION

Nurses are included in the high-risk group with respect to HIV. Universal isolation methods and protective measures may be used to avoid transmission. Most of the nurses are aware of the risk they bear while practicing their profession (Hassan and Wahsheh, 2011; Avcikurt et al., 2011). Poor understanding of the disease, prejudice, unreasonable fear, migration and poor economy are markedly involved in the HIV/AIDS epidemic (Ayrancı, 2005; Badahdah, 2010; Kalichman and Simbayi, 2003). A good level of knowledge on the transmission routes and considering any patient waste as a potential risk would significantly prevent the blood-borne transmission of HIV/AIDS to nurses and the associated risks (Lindan et al., 1991).

This trial evaluated nurses’ level of knowledge on HIV/AIDS in a university hospital in Erzurum. A very significant feature of AIDS is that the risk of transmission is highly reduced in cases where individuals are aware of the transmission routes. Approximately 40% of the nurses in this trial believed that the disease could be transmitted through a mosquito-insect bite and another 40% believed that the disease could be transmitted through urine. Even if the nurses have a basic knowledge of the disease based on the training they receive, they may still be influenced by some common prejudices and hesitations. This finding is similar to those obtained in the literature trials (Ayrancı, 2005; Brown et al., 2008).

In this trial, the rate of right answer to the questions related to HIV/AIDS is observed to be above 50% among the participating nurses. Studies investigating whether there is a difference between the nurses’ level of knowledge on HIV/AIDS report a high level of knowledge but reveal no significant difference (Hatipoğlu et al., 2005; Norman et al., 2009). The fact that the trial finding is in line with the literature data with a significant difference still existing may be attributed to the different levels of information the nurses received due to the different syllabuses of nursing programs.

Based on the survey results, approximately half of the

Table 1. Demographic characteristics of the nurses.

Identifying characteristics (N:170)	Groups			
	18-25 years of age	26-33 years of age	≥ 33 years of age	
Age	32.4 (n:55)	45.3 (n:77)	22.4 (n:38)	
Educational status	Medical high school	Associate degree	Bachelor's degree	
	42.4(n:72)	19.4(n:33)	38.4(n:65)	
Duration of work	0-5 years	6-10 years	11-15 years	≥ 16 years
	47.6 (n:81)	23.5 (n:40)	12.9 (n:22)	15.9 (n:27)
Marital status	Married N%	Single N%		
	57.6 (n:98)	42.4 (n:72)		

Table 2. Nurses' opinions on the routes of HIV/AIDS transmission.

HIV transmission routes	Yes		No		I don't know	
	n	%	n	%	N	%
Through blood and blood products (*p = 0.000)	170	100	0	0	0	0
Through tissue/organ transplant	144	84.7	16	9.4	10	5.9
Through unprotected sexual intercourse/anal intercourse	142	83.5	13	7.6	15	8.8
Shared use of injectors	159	93.5	0	0	11	6.5
Maternal transmission during pregnancy	159	93.5	8	4.7	3	1.8
Transmission through lactation	106	62.4	52	30.6	12	7.1

Table 3. Nurses' opinions on the tools causing HIV/AIDS transmission

Parameter	Yes		No		I don't know	
	N	%	n	%	N	%
Shared use of tools such as towels, glasses, forks, spoons etc.	59	34.7	98	57.6	13	7.6
Normal (simple) kissing	33	19.4	136	8.6	1	.6
hugging, touching and shaking hands	6	3.5	160	94.1	4	2.4
Dentist tools	155	91.2	7	4.1	8	4.7
Hairdresser tools	150	88.2	8	4.7	12	7.1
Manicure, pedicure tools	149	87.6	13	7.6	8	4.7
minor surgical procedures such as circumcision	154	90.6	13	7.6	3	1.8
Shared use of toilets/toilet seats	51	30.0	113	66.5	6	3.5
Mosquito and insect bites.	61	35.9	96	56.5	13	7.6

nurses could not give the right answer or stated that they did not know the answer to the questions evaluating HIV/AIDS transmission routes; this ratio was even higher for some questions. These findings reveal that while the nurses gave the right answers on the HIV/AIDS information form (HAIF), they still had missing or inaccurate information on the transmission of the disease. This finding is consistent with the literature reports indicating that healthcare workers have gaps in their knowledge on HIV/AIDS transmission (Hassan and Wahsheh, 2011).

In a trial conducted in Jordan, 81.4% of the nurses indicated that they found the sources of information on AIDS inadequate and 96.5% indicated that they were willing to work on this in cooperation with the relevant support groups. The same group of nurses also stated that they had an intense fear of the AIDS disease (96.2%). In the above mentioned study, the overall attitude in all 922 nurses participating was found to be negative at a rate of 84.3% with the attitudes being classified under five sub-groups as the fear of transmission, social stigma, a fatal disease outcome, direct care, and training requirement (Hassan and Wahsheh, 2011; Suominen et al., 2008).

In addition, in a study by Budakoğlu et al. (2006), 25.7%

Table 4. Nurses' opinions on the Body Fluids containing the HIV virus.

Body fluids containing HIV, leading to AIDS transmission	Yes		No		I don't know	
	n	%	N	%	n	%
Semen	169	99.4	1	.6	0	0
Vaginal secretion	166	97.6	4	2.4	0	0
Breast milk	120	70.6	35	20.6	15	8.8
CSF (Cerebrospinal fluid)	96	56.5	41	24.1	33	19.4
Sputum	75	44.1	73	42.9	22	12.9
Bronchial fluid, sputum	74	43.5	63	37.1	33	19.4
Urine	63	37.1	73	42.9	34	20.0
Tears	42	24.1	92	54.1	36	21.2

Table 5. Nurses' opinions on the contraceptive methods used for protection against HIV/AIDS.

Contraceptive methods used for protection against HIV/AIDS	Effective		Ineffective		I don't know	
	n	%	N	%	N	%
Condom/ diaphragm	155	91.2	15	8.8	0	0
Foam/sponge	42	24.7	113	66.5	15	8.8
Intrauterine device (coil)	33	19.4	137	80.6	0	0
Spermicides	26	15.3	134	78.8	10	5.9
Contraceptives	23	13.5	145	85.2	2	1.2
Tubal ligation	21	12.4	137	80.6	12	7.1
Withdrawal	12	7.1	149	87.6	9	5.3
Calendar method	7	4.1	157	92.4	6	3.5

of the nurses indicated that the disease could be transmitted through shared use of bathrooms and toilets, 41.9% indicated that HIV could be transmitted through mosquito bites while 25.4% stated that "they didn't know". A trial by Amosu et al. (2011) conducted in Nigeria, revealed that 84% of the healthcare workers described HIV/AIDS as an occupational risk, 97% indicated that the HIV virus was transmitted through blood and blood products, semen and vaginal secretion during unprotected sexual intercourse, tattoos, injury from sharps and maternal transmission during pregnancy or lactation, while 3% indicated no such transmission. A trial performed in our study on identified AIDS patients reported that the cases detected randomly during blood sampling (38.8%) were mostly at an advanced stage of the disease at the time of diagnosis (Kaya et al., 2011).

In the trial by Amosu et al. (2011), 84% of the participants reported that they believed the disease was transmitted through mosquito/insect bites from the same vessel. Additionally, 85% indicated that the virus was transmitted through hugging, social contact, coughing-sneezing, urine and feces. Also, 70% of the healthcare workers participating in the trial indicated they did not intend to participate in the labor of a pregnant woman with HIV/AIDS. A total of 89% of the responders in the same trial believed that homosexual individuals and those with multiple partners became infected with AIDS/HIV, while 73% indicated that such high-risk individuals could transmit the disease to others during any medical procedure. In another study conducted on civil servants, 37.9 and 36.8% of the participants indicated that shared use of personal items and kissing was less risky compared to the other routes of transmission, respectively (Tawfik and Kinoti, 2003). Almost all of the responders identified the virus as the risk factor for AIDS (98%), while 84% identified it as an occupational risk factor. A total of 89% of the participants in the same trial indicated that prostitution, homosexuality and the presence of multiple sexual partners were factors for high risk, while 73% indicated that a high risk for HIV/AIDS transmission existed among healthcare workers and their work environment (Tawfik and Kinoti, 2003).

A good understanding of the transmission routes has an almost completely preventive role in protection against HIV/AIDS. Based on the trial results, the sum of the number of nurses giving wrong answers or stating that they did not know the answer to the question as to whether use of the same objects (such as plates, forks, glasses, brushes etc.) could cause HIV transmission is close to the total number of nurses responding accurately. Based on this finding, we can conclude that the nurses are in need of information on the HIV transmission routes. In addition, the results are consistent with the literature data showing that nurses need infor-

mation on the HIV/AIDS transmission routes and that they have inaccurate information on the subject (Budakoğlu, 2006; Amosu, 2011). A trial performed on females revealed that women thought the AIDS virus did not represent a risk for them since they were heterosexual (Hobfoll et al., 1993).

In another trial performed in 2,285 young and more educated women, 4.6% indicated that they used a condom regularly, while 19.8% indicated use when required and 57.5% indicated they never used condoms since the males did not like it (Kapiga et al., 1995). A trial, which evaluated the opinions of nursing students on HIV/AIDS, revealed that these students thought HIV could be transmitted through social kissing, sharing the same plate, fork, spoons, glasses or brushes, the toilet or bathtub, coughing-sneezing or mosquito bites (Ay et al., 2006; Hatipoğlu et al., 2005). Having a good understanding of HIV/AIDS and the practice of preventive measures have a parallel correlation. The most significant preventive measure for protection against the sexual transmission of HIV is the use of a condom. In this study, 91.2% of the nurses indicated that using a condom prevented the transmission of the HIV virus. This result suggests that the written and visual media warnings on condom use are effective in preventing sexually transmitted diseases (Ateş et al., 2005; Kapiga, 1995). A trial conducted on tour guides in Turkey reported the presence of inaccurate beliefs on the transmission of the HIV virus (Avcikurt et al., 2011). The results of our trial are also in line with this data.

We observed that some of the information the nurses in our trial have on HIV/AIDS sources are inadequate. While semen and vaginal secretion rank first at an approximate rate of 100%, 70.6, 56.5, 44.1, 43.5, 37.1 and 24.1% of the nurses indicated that HIV could be transmitted through breast milk, cerebrospinal fluid (CSF), sputum, urine and tears, respectively. While HIV is isolated from the blood, semen, vaginal secretion, sputum, tears, urine, breast milk, cerebrospinal fluid and amniotic fluid, it can only induce infection in the blood and blood products, semen, vaginal discharge, donor organ tissue and breast milk. For example, HIV is rapidly inactivated in the sputum material and in fact, no transmission was reported, even after long-term direct skin contact. This finding suggests that nurses consider HIV/AIDS an infectious disease that can be transmitted by every means and that their information on the transmission routes is affected by certain social prejudices. This trial finding is consistent with those from other similar studies (Adefuye et al., 2011).

The nurses in our trial were included in the group of young adult individuals. In our country, reports reveal that individuals with HIV/AIDS are mostly between 20 and 49 years of age and in the period of young adulthood. In addition to the medical training they receive, some of the nurses' opinions on the disease also appear to be influenced by visual media (Hatipoğlu, 2005; Adefuye et al., 2009). Trials demonstrate that a parallel association exists between a good understanding of the HIV/AIDS disease and the application of preventive measures. In addition, the deficient information and capabilities of nurses who have an educative and guiding role in HIV/AIDS, result in lack of confidence and thus unfavorable attitudes of nurses towards patients and other individuals (Li et al., 2011).

CONCLUSION AND RECOMMENDATIONS

Since nurses represent a large portion of the healthcare workers and are in direct contact with the patient during care duty, it may be possible to reach larger populations through the training of nurses. In our trial, we detected the need for information in nurses on certain aspects of the HIV/AIDS disease although the level of knowledge was good. We believe that despite the presence of information on HIV/AIDS included in the nursing training syllabus, continuous training through all channels would be beneficial in increasing the current level of information, eliminating inaccurate attitudes and behaviors, and enhancing the level of consciousness. Considering that the presence of the hepatitis B virus and tuberculosis bacilli in the blood would represent a basis for AIDS development, the administration of HIV tests at regular intervals to carriers may be added to general health screenings.

The achievement of an adequate level of information on the transmission routes and protective measures for HIV would avoid the prejudices related to the disease and also help nurses change their negative attitudes towards AIDS patients. A good understanding of the methods for disposing of blood, blood products and virus-infected materials would help eliminate nurses' stigmatizing behaviors.

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