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Knowledge of Libyan Nurses and Nursing Students about HIV Transmission and Prevention (Tripoli-2012)

Afaf Osman[1], Laila Sabei[2@] and Aisha Ben-Rween[2]

[1]Department of Cardiology, Tripoli Medical Centre; [2]Department of Community and Family Medicine, Faculty of Medicine, University of Tripoli, Libya

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ABSTRACT

In the writings on AIDS, much attention has been paid to the health care workers' knowledge of and attitudes toward AIDS. Little is known about the knowledge and attitudes of health care workers of developing countries. The purpose of this study is to assess the knowledge of the nurses about HIV disease and to define the characteristics of registered or student Libyan nurses associated with low HIV knowledge level.

Cross-sectional design used to conduct an anonymous a self-administered questionnaire developed after reviewing previous published studies for collection the data. A convenience sample of 151 nurses from the two main university hospitals in Tripoli and 74 nursing students participate in the study (total 225), after a verbal consent they asked to complete the questionnaire, SPSS software version 16 and STATA version 12 used to analyze the collected data.

Overall nurses had low knowledge level about HIV and AIDS, 80% of them believe that handling belongs of an HIV infected person may transmit the disease, 84% thought that blood and semen are the only body fluids can transmit HIV, 40% believed that mosquito and bedbugs bite may transmit the virus, 82.7% assumed that the quantity of the exposed blood has no role in HIV transmission, 70.2% do not believe that HIV virus can be killed simply by household bleach, 60.9% expect the necessity of wearing gloves when in contact with HIV person sweat and saliva, wrong guess about stopping the bleeding after needle stick may reduce the risks of getting HIV was present in 59.6%, usage of drugs as post exposure prophylaxis is not known in 52.9%.

The study determined a low knowledge score and identified many misconceptions.

Expansion of nursing curricula to ensure that specific up to date information on HIV and AIDS is provided to nursing students and involvements of registered nurses in regular training courses about all aspects of HIV infection are needed.

Keywords - *HIV Knowledge; Libyan, Nursing students, HIV transmission.*

INTRODUCTION

Human Immunodeficiency Virus (HIV) is virus that slowly destroy the body's immune system.[1] Today, HIV and the AIDS are among the most complex health problems. Since HIV/AIDS were discovered in the early 1980s, massive efforts to control its spread were made. Although progress made toward prevention and treatment, HIV/AIDs still one of the major problems that threaten human life.[2] The HIV/AIDS prevalence is widely discussed and debated in scientific, medical and public health settings.[3] In 2003, AIDS killed more than three million people, and an estimated five million more became infected, bringing to some 40 million the number currently living with the virus, latest reports by the United Nations Program on AIDS (UNAIDS) indicate that more than 20 million have already died since the first clinical evidence of the disease was reported in 1981.[4]

HIV-related stigma and discrimination are major barriers to effective and sustainable prevention, care, treatment, and support efforts.[5] Studies of HIV/AIDS knowledge, attitudes and practices among healthcare workers in developing countries have shown gaps in knowledge and fear of contagion, coupled with unconfident attitudes in caring for patients with HIV/AIDS and inconsistent universal precautions adherence.[6] Nursing students need to have appropriate knowledge and attitudes about HIV and AIDS because they are the future health care professionals therefore, they will play a vital role in prevention of spread and care of people with AIDS.[7]

Many studies conducted in the early nineties showed that nursing students had a lowlevel of knowledge with respect to HIV and AIDS.[8,9] One study done in Turkey was found that the majority of nursing students had moderate level of HIV/AIDS knowledge.[10] Shortage of knowledge among nursing students found in other studies as well.[11,12] Bektas *et al.*[10] found that some nursing students were not aware that there was no protection with vaccination. In addition found that there are many misconceptions about how HIV is transmitted e.g. using the same toilet or bathroom *etc*.[10] This problem also stressed by previous researchers.[13,14]

This study was conducted to assess the knowledge of the Libyan nurses about HIV disease, and also to define the

@Author to whom correspondence should be addressed: Dr. Laila Sabei; Tel. +218 926565897; E-mail:Laila_T_H_S@yahoo.com

characteristics of registered and student Libyan nurses associated with low HIV knowledge level.

MATERIALS AND METHODS

This study conducted with cross sectional design, during the period from September to December 2012. The study population was the registered nurses working in the two main public hospitals in Tripoli: Tripoli Medical Centre (TMC), Tripoli Central Hospital (TCH) and students from Faculty of Nursing, University of Tripoli.

The sample size of this work calculated depending on the result of the previously conducted pilot study, 300 questionnaires distributed: 200 for registered nurses and 100 for nursing students.

Tool of data collection: A self-administered questionnaire for measuring knowledge relating to the prevention of HIV and AIDS transmission was drawn up after reviewing the relevant literature[15-20] the questionnaire divided into two sections; Section A determined the demographic data; Section B covered the aspect of knowledge about the prevention of HIV and AIDS transmission. The questionnaire was written in simple Arabic Language to make it easy to understand.

As the questionnaire developed on the basis of an extensive literature review, all questions were adapted from the statements of literature that study medical personnel's knowledge of HIV and AIDS.[15-20] Each question included in the questionnaire followed by a fixed response set with response choices of "Yes" or "No".

Method of data collection: Permission was requested and obtained from the chief director nurse of each hospital and also from the dean of the nursing college, the questionnaires distributed under the supervision of the manager nurse of each hospital and college of nursing, taking into account the duty shift for the registered nurses. The overall response rate was 75%.

Data analysis: Data analysis conducted by using of SPSS and STATA software after cleaning and coding of data. For personal demographic data descriptive statistics used as mean and SD for quantitative variables, percentage used to describe the other variables.

For the knowledge questions about the prevention of HIV and AIDS transmission there were two response choices of "Yes" and "No", The correct answers were given one mark and the wrong one and non answered questions were given zero mark. Then the total marks summated and by using the 75th quartile for the total score which was 18 as a cutoff point, the data of total score divided into two categories high score (>18) and low score (≤18), the same method of analysis used separately for the questions related to mode of transmission (12 questions), HIV facts (5 questions) and for the 8 questions about prevention strategies. A high score reflected a greater knowledge concerning the topic questions.

For inferential statistics we used Chi-square test to get the level of confidence of the association between level of knowledge (2 categories) and the other variables.

Quality control of the study: The questionnaire was developed on the basis of extensive literature review of different studies on medical personnel's knowledge about HIV and HIV infected persons. A pilot study was conducted to ensure that clear and understandable wording was used. The data had been rechecked after entry.

RESULTS

From the total target population of 946 Libyan nurses in TMC and 579 Libyan nurses in TCH and 168 Libyan nursing students, we collected 225 completed or partially completed questionnaires which represent a percentage of 13.3% from the total population of nurses in the original sampling frame.

Sample characteristics: A total of 225 respondents were included in the study; 44 (19.6%) were males and 177 (78.7%) were females, percentage of males was more among students than registered nurses. The mean age was 28.5±7.2 years and 56.9% of the respondents were aged less than 30 years and all nursing students aged less than 30 years (Table 1). Of the study group 64% were unmarried however about 10% of the participants did not give the answer about their marital state equally for both registered and student nurses, 28.9% with university education (all of the nursing students) and 16.9% were graduated with high degree diploma. 67.1% were registered nurses working in one of the two main public hospitals in Tripoli and 32.9% were still studying in different semesters in nursing faculty which belongs to the higher education system in Libya. Only 15.6% of the participants attend HIV teaching programs (more for registered nurses than students), the main source of their knowledge about HIV was official studying followed by magazine reading. 84.9% were willing to participate in a training course about HIV if they were invited in the future this is for the registered nurses more than students.

Knowledge about modes of transmission: Table 2 illustrates the data related to knowledge of the participants about the method of HIV transmission. A high proportion (96.9%) reported the possibilityof transmission of the virus by infected blood during blood transfusion, almost same percentage (95.6%) know that needle prick at work can transmit the virus, A majority of the study group know that sexual relationships were a method of transmission (97.3%), from the total sample (79.6%) know that infected mother can transmit the virus to her infant, while (17.3%) denied this possibility, (96.4%) recognize that sharing needles in addiction is able to transmit HIV virus, of the respondents (84.9%) thought correctly that when infected material become in contact with damaged (non-intact) skin the virus may be transmitted. On the other hand, (28.9%) of the sample believed incorrectly that HIV can be transmitted by sharing cups and plates, hugging and social relationships (30.7%), sharing a swimming pool (27.1%) and insect bites (40%).

Table 1: Sociodemographic characteristics of participants

Character	Nursing students (%)	Registered nurses (%)
Age		
<30 years.	72(97.3	56(37.1)
≥30 years.	0(0)	89(58.9)
No data	2(2.7)	6(4)
Sex		
Male	20(27)	24(15.9)
Female	54(73)	123(81.5)
No data	0(0)	4(2.6)
Marital state		
Single	63(85.1)	81(53.6)
Married	0(0)	57(37.8)
Widow	0(0)	1(0.7)
No data	11(14.9)	12(7.9)
Education level		
University	63(85.1)	2(1.3)
High degree diploma	0(0)	38(25.2)
Low degree diploma	0(0)	90(59.6)
No data	11(14.9)	21(13.9)
Working place		
Student	74(100)	0(0)
TCH	0(0)	73(48.3)
TMC	0(0)	78(51.7)
Previous attendance to HIV teaching program		
Yes	11(14.9)	24(15.4)
No	56(75.7)	108(71.5)
No data	7(9.5)	19(12.6)
Source of information (more than one)		
Official studying	55(74.3)	58(38.4)
Magazine	12(16.3)	54(35.8)
Friends and colleges	5(6.7)	31(20.5)
No data	2(2.7)	40(26.5)
Willing to participate in a training course about HIV		
Yes	63(85.1)	128(84.8)
No	10(13.5)	2(1.3)
No data	1(1.4)	21(13.9)

Table 2: Answers of questions about HIV transmission

Question	Accurate answer	Correct No. (%)	Incorrect No. (%)	No answer No. (%)
1. Blood and semen are the only bodily fluids to transmit HIV.	No	33(14.7)	189(84)	3(1.3)
2. Handling belongs of an HIV- positive person.	No	41(18.2)	180(80)	4(1.8)
3. Bite of mosquitoes or bedbugs.	No	124(55.1)	90(40)	11(4.9)
4. Hugging or being close to an HIV infected person.	No	151(67.1)	69(30.7)	5(2.2)
5. Sharing cups and plates with an HIV infected person.	No	154(68.4)	65(28.9)	6(2.7)
6. Swimming in the same pool with an HIV infected person.	No	156(69.3)	61(27.1)	8(3.6)
7. HIV infected mother can to her baby through breast milk.	Yes	179(79.6)	39(17.3)	7(3.1)
8. Non-intact skin exposure to infected materials.	Yes	191(84.9)	24(10.7)	10(4.4)
9. Sharing needles when using drug.	Yes	217(96.4)	8(3.6)	0
10. Needle-stick injuries in the clinical settings	Yes	215(95.6)	6(2.7)	4(1.8)
11. HIV infected blood transfusions.	Yes	218(96.9)	4(1.8)	3(1.3)
12. Unprotected sex with an HIV infected person.	Yes	219(97.3)	4(1.8)	2(0.9)

Knowledge about HIV facts

Only 19% of participants don not believe that HIV person can looks healthy, 82.7% do not know that the amount of the transmitted blood has a major role in acquiring the infection, wrong thinking about difficulty in killing the virus outside the body is present in 45.8% and 70.2% do not accept that a simple disinfectant such as household bleach can inactivate the virus, 8.4% incorrectly imagine that drinking alcohol can kill the virus in the body.

Knowledge about prevention strategies

90.2% of the participants know that they could protect themselves against HIV infection by wearing gloves when handling blood specimens however wrongly 60.9% think that they must wear gloves when dealing with the sweat and saliva of HIV person to prevent HIV transmission, 81.3% of them know that by using the preventive measures against HBV they will be protected from HIV infection, 96% know that screening of blood before transfusion for HIV will prevent virus transmission to the recipient, bending the used needle is known to be a risky procedure for getting HIV in 88% of the participants. Regarding their knowledge about the actions which must be taken after sharp injury; more than half (59.6%) think incorrectly that stop bleeding from the injured site will help in decreasing virus transmission and 40.9% correctly know that flushing the sit with water will decrease the chance of getting the infection, only 42.2% know that some drugs can be used as one of post exposure prophylactic measures.

Factors affecting over all knowledge score:

After summation of total scores of 25 questions for each participant, it found to be ranged between 8 and 22 with mean score 16.1 ± 2.6, the total score then categorized into high and low score by using 18 as a cutoff point which is the 75th quartile (Figure 1). 188(83.6%) from the total population had a low score (18 or less from 25), and only 16.4% were scored high (>18). The same method of analysis conducted to the score of the knowledge about mode of HIV transmission (12 questions), about HIV facts (5 questions), about prevention strategies (8 questions).

Table 3: Answers of questions about HIV facts.

HIV fact	Accurate answer	Correct No. (%)	Incorrect No. (%)	No answer No. (%)
1. Large quantity of blood has the same risk for HIV transmission as small amount.	No	33(14.7)	186(82.7)	6(2.7)
2. Simple disinfectants such as household bleach can inactivate the virus.	Yes	63(28)	158(70.2)	4(1.8)
3. Outside the body, HIV is very hard to kill.	No	102(45.3)	103(45.8)	20(8.9)
4. An HIV person can looks healthy.	Yes	167(74.2)	43(19.1)	15(6.7)
5. Alcohol intake can kill the virus in the body.	No	199(88.4)	19(8.4)	7(3.1)

Table 4: Answers of questions about HIV prevention strategies.

Prevention rout	Accurate answer	Correct No (%)	Incorrect No (%)	No answer No (%)
1. Gloves should be used when in contact with HIV person sweat and saliva.	No	78(34.7)	137(60.9)	10(4.4)
2. After a needle stick, stopping the bleeding may reduce the risks of getting HIV	No	87(38.7)	134(59.6)	4(1.8)
3. Flushing the site of sharp injury with running water can reduce the risk of getting HIV infection.	Yes	92(40.9)	122(54.2)	11(4.9)
4. There are some drugs which can prevent getting HIV infection after exposure to blood or body fluids of HIV positive person.	Yes	95(42.2)	119(52.9)	11(4.9)
5. Precautions for avoiding HBV infection are also appropriate for avoiding HIV infection.	Yes	183(81.3)	30(13.3)	12(5.3)
6. Bending a needle by hand is more risky for obtaining needle stick injury.	Yes	198(88)	18(8)	9(4)
7. Gloves should be used when handling blood specimen.	Yes	203(90.2)	14(6.2)	8(3.6)
8. All blood for transfusion should be screened for HIV	Yes	216(96)	5(2.2)	4(1.8)

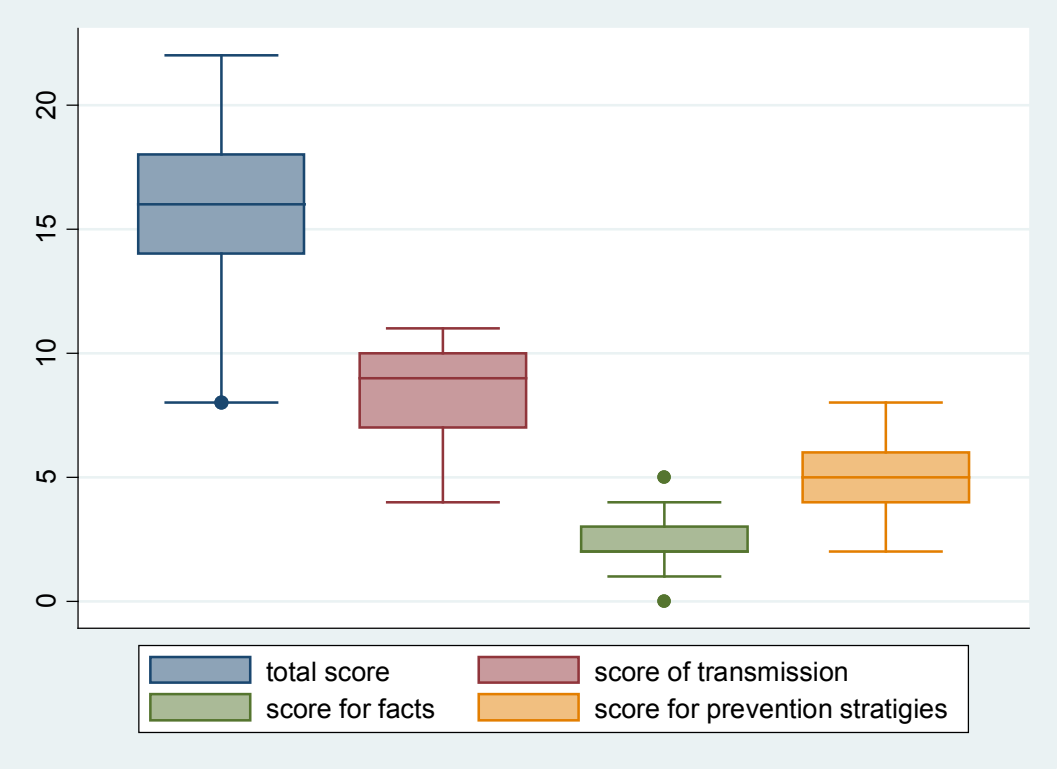

Figure 1: Quartiles of total score and scores of transmission, facts and prevention strategies.

Table 5: Distribution of knowledge score by place of work.

Knowledge score	TMC	CH	Nursing students	*P* value X^2
Total (25Qs)				
Mean ±SD	15.6 ± 2.7	17 ± 2.4	15.6 ± 2.4	
≤18	66(35.1)	53(28.2)	69(36.7)	0.003
>18	12(32.4)	20(54.1)	5(13.5)	
Transmission (12Qs)				
Mean ±SD	8 ± 1.5	9.1 ± 1.3	8.2 ± 1.5	
≤10	74(35.1)	66(31.3)	71(33.6)	0.337
>10	4(28.6)	7(50)	3(21.4)	
Facts				
Mean ±SD(5Qs)	2.5 ± 1	2.7 ± 1	2.3 ± 1	
≤3	70(37.4)	52(27.8)	65(34.8)	0.004
>3	8(21.1)	21(55.3)	9(23.7)	
Prevention (8Qs)				
Mean ±SD	4.9 ± 1.4	5.3 ± 1.2	5.1 ± 1	
≤6	67(33.7)	63(31.7)	69(34.7)	0.288
>6	11(42.3)	10(38.5)	5(19.2)	

Table 6 illustrates the impact of 7 factors on the total knowledge score regarding age, by using 30 years as a cutoff point there was no difference between both groups, male respondents were found to be slightly more knowledgeable about HIV when compared to females, to be single or married has no effect on the score, opposite to the expected the nurses with university level of education has lower score than high and low grade diploma (P = 0.017) this can be explained by including of nursing students in the sample who are considered as university level of education but still not complete their study and with no experience, registered nurses were significantly more knowledgeable than students (P = 0.007), more experience years gave them more score. The effect of the same 7 factors on the calculated score studied (Table 7, 8 and 9) for each theme separately after categorization by 75th quartile we found that the differences were not statistically significant for the all factors except for education level with high diploma and knowledge about HIV preventive strategies (P = 0.034) and also significant for history of attending HIV teaching program and knowledge about HIV transmission routs (P = 0.040).

Table 6: Factors affecting the total knowledge score.

Factor	Total knowledge score		*P* value
	≤18	>18	
Age			
<30 years	107(83.6%)	21(16.4%)	0.855
≥30years	73(82%)	16(18%)	
Sex			
Male	34(77.3%)	10(22.7%)	0.260
Female	150(84.7%)	27(15.3%)	
Marital state			
Single	115(79.9%)	29(20.1%)	0.420
Married	49(86%)	8(14%)	
Education level			
University	59(90.8%)	6(9.2%)	0.017
High degree diploma	26(68.4%)	12(31.6%)	
Low degree diploma	72(80%)	18(20%)	
Working			
Student	69(93.2%)	5(6.8%)	0.007
Registered nurse	119(78.8%)	32(21.2%)	
Attend HIV teaching program			
Yes	27(77.1%)	8(22.9%)	0.308
No	140(85.4%)	24(14.6%)	
Years of experience			
≤15years	86(76.8%)	26(23.2%)	0.953
>15 years	16(76.2%)	5(23.8%)	

Table 7: Factors affecting HIV transmission knowledge score

Factor	HIV transmission knowledge score		*P* value
	≤10	>10	
Age			
<30 years	124(96.9%)	4(3.1%)	0.075
≥30years	81(91%)	8(9%)	
Sex			
Male	39(88.6%)	5(11.4%)	0.142
Female	169(95.5%)	8(4.5%)	
Marital state			
Single	134(93.1%)	10(6.9%)	0.515
Married	55(96.5%)	2(3.5%)	
Education level			
University	61(93.8%)	4(6.2%)	0.943
High degree diploma	35(92.1%)	3(7.9%)	
Low degree diploma	84(93.3%)	6(6.7%)	
Working			
Student	71(95.9%)	3(4.1%)	0.558
Registered nurse	140(92.7%)	11(7.3%)	
Attend HIV teaching program			
Yes	30(85.7%)	5(14.3%)	0.040
No	157(95.7%)	7(4.3%)	
Years of experience			
≤15years	106(94.6%)	6(5.4%)	0.052
>15 years	17(81%)	4(19%)	

Table 8: Factors affecting knowledge score about HIV facts

Factor	knowledge score about HIV facts		*P* value
	≤3	>3	
Age			
<30 years	104(81.2%)	24(18.8%)	0.592
≥30years	75(84.3%)	14(15.7%)	
Sex			
Male	34(77.3%)	10(22.7%)	0.260
Female	150(84.7%)	27(15.3%)	
Marital state			
Single	120(83.3%)	24(16.7%)	0.541
Married	45(78.9%)	12(21.1%)	
Education level			
University	56(86.2%)	9(13.8%)	0.287
High degree diploma	32(84.2%)	6(15.8%)	
Low degree diploma	69(76.7%)	21(23.3%)	
Working			
Student	65(87.8%)	9(12.2%)	0.255
Registered nurse	122(80.8%)	29(19.2%)	
Attend HIV teaching program			
Yes	26(74.3%)	9(25.7%)	0.125
No	141(86%)	23(14%)	
Years of experience			
≤15years	93(83%)	19(17%)	0.229
>15 years	15(71.4%)	6(26.6%)	

Table 9: Factors affecting knowledge score about HIV prevention strategies

Factor	knowledge score about HIV prevention strategies		*P* value
	≤6	>6	
Age			
<30 years	114(89.1%)	14(10.9%)	0.830
≥30years	78(87.6%)	11(12.4%)	
Sex			
Male	37(84.1%)	7(15.9%)	0.431
Female	158(89.3%)	19(10.7%)	
Marital state			
Single	129 (89.6%)	15(10.4%)	0.468
Married	49(86%)	8(14 %)	
Education level			
University	61(93.8%)	4(6.2%)	0.034
High degree diploma	29(76.3%)	9(23.7 %)	
Low degree diploma	79(87.8%)	11(12.2%)	
Working			
Student	69(93.2%)	5(6.8%)	0.127
Registered nurse	130(86.1%)	21(13.9%)	
Attend HIV teaching program			
Yes	30(85.7%)	5(14.3%)	0.581
No	145(88.4%)	19(11.6%)	
Years of experience			
≤15years	94(83.9%)	18(16.1%)	0.739
>15 years	19(90.5%)	2(9.5%)	

DISCUSSION

The goals of the current study were to assess the HIV/AIDS Knowledge levels in three knowledge subsections (mode of transmission, HIV facts and prevention strategies). The results showed that participants had low knowledge about HIV and AIDS. However, taking into consideration that the target population of the present study was nurses however, subgroup is nursing student their knowledge on HIV/AIDS was also insufficient for future health care professionals. Nurses are the frontline of HIV/AIDS stoppage, care, and support. Therefore, it is necessary that they have enough knowledge to reduce the risk of occupationally-acquired HIV/AIDS infection. The result showed that 83.6% had a low score (18 or less from 25) among 225 Libyan nurses, are consistent with other studies in other countries; for example, A study by Zeinab and *et al*. (2011) found low level of knowledge among Jordan nurses[21], In another study of 177 nurses in Northeastern China (Chen and Han, 2004), the results showed that the mean score on basic HIV/AIDS knowledge test was 6.66 out of 12.[15] Pilyugina *et al.* (2000) conducted a study that included a sample of 321 health care workers; 48% of them rated their HIV/AIDS knowledge as moderate to sufficient.[22]

In our study 40% wrongly answered that HIV could be transmitted by bite of mosquitoes or bedbugs as in Singapore, 10 to 25% of 1,500 nurses wrongly believed that HIV/AIDS could be transmitted by mosquitoes (Bishop and Swee, 2000)[23] Similar to our figure Christina Ouzouni *et al*. (2012) found that 39.8% of the studied nurses' student believed that HIV can be transmitted through mosquitoes.[7]

In present study about 29% of respondents they answered incorrectly about sharing cups and plate with an HIV person can get the infection, an 30.7% on hugging of infected person, 27.1% when swimming in the same pool with infected person and 80% when handling belongs of HIV positive person, Christina Ouzouni *et al.* (2012)[7] revealed that 15.4% of the respondents agreed that HIV could be spread through swimming pools, 1.8% through hugging an infected person. 84% of our participants wrongly answered about that the blood and semen are the only body fluids to transmit HIV versus 53.03% of the registered nurses. In South Africa[19] not sure the knowledge of other body fluids that could transmit HIV and AIDS.

From our study population 45.8% and 70.2% did not know that HIV can be simply inactivated outside the body also in Yabin Mo study[19] most of the registered nurses did not have adequate knowledge on the disinfection of HIV.

When the nurses asked about the role of the amount of exposed blood in HIV transmission 82.7% incorrectly did not agreed that increasing the amount of exposed blood increase the risk of transmission very nearly figure (78.8%) found in Yain Mo study.[19]

Wearing the gloves when contact with HIV person sweat and saliva answered incorectly by 60.9% also the same

result obtained by Yain Mo study[19] where the registered nurses overestimated the role played by certain body fluids such as sweat and saliva as an important source of HIV transmission.

About 60% believe (wrongly) that stopping the bleeding at the site of a sharp injury will reduce the risk of virus transmission, however 54.2% of them know that flushing the site of sharp injury can reduce the risk of getting HIV infection, Yain Mo study[19] showed that 87.89% of registered nurses knew that stopping the bleeding at the site would increase the risk of getting HIV after getting a sharp injury; Therefore it could be assumed that Libyan nurses have practice when dealing with accidental sharp injury.

WHO recommend post-exposure prophylaxis (PEP) by use of antiretroviral therapy (ART) within 72 hrs of exposure to HIV for 28 days course in order to prevent infection, PEP is often recommended for health-care workers following needle stick injuries in the workplace.[24] This information is not known for 52.9% of our participants.

Regarding the source of HIV/AIDS information the nurses in this study mention that official study and magazine followed by friends and colleges are the main source of information, however in Jordan half of the nurses obtained information on HIV/AIDS through the internet.[21] In Christina et al. (2012)[7] the majority of the participants (80.7%) stated that the main source of information about HIV and AIDS was television[7] however, we have to put into consideration that the information provided in television or internet is limited and the problem is underestimated with inadequate information provided for the prevention of transmission of the HIV virus.

In our study 68.6% of our registered nurses had attended HIV teaching program Wu et. al. (2002)[25] found that a considerable number of health care workers in China had not received any HIV/AIDS training, and 46–62% were misinformed of transmission means of HIV/AIDS. In Jordan 30% had attended a formal educational program on AIDS.[21]

This study indicated that the majority of Libyan nurses were interested in willing to participate in training course with HIV/AIDS, the same as majority of Jordan nurses (96.8%) interested in participating HIV/AIDS program.[25] This result is supported by VanWissen and Siebers (1993)[26] who found that 21% of the respondents (n = 562) considered the provision of education by the employer as inadequate.[26] In Pilyugina *et al.* (2000) study 89% of the respondents request further training.[22]

CONCLUSION

Although the sample in this study may not necessarily represent the target population of Libyan nurses however it does represent an important subgroup of them for evaluating knowledge about HIV infection.

The study identified many misconceptions as more than two thirds of the studied nurses and nursing students have low scoring, the total knowledge score significantly increased by graduation with high degree diploma and among registered nurses than nursing students. In transmission questions, increased significantly by history of attending of HIV teaching programs.

RECOMMENDATIONS

As the findings of this research show low level of knowledge among most of the participant, we can recommend the need of expansion of nursing curricula to ensure that specific up to date information on HIV and AIDS is provided to nursing students.

Involvement of registered nurses in regular training courses about all aspects of HIV infection under the umbrella of continuous professional education is required.

Further study for assessment of attitude and practice of health care providers (nurses and doctors) beside the assessment of knowledge toward HIV and HIV infected person on large scale is needed including Libyan and non-Libyan nurses.

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