ORIGINAL ARTICLE

Acquired Immunodeficiency Syndrome and Human Immunodeficiency Virus Knowledge, Attitude, and Perception among Pharmacists in Erbil, Kurdistan Region, Iraq

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ABSTRACT

Background: Acquired Immunodeficiency Syndrome (AIDS) is a public health problem of the 21st century and has been a pandemic disease that threatens the world's population since it was documented as a separate new disease entity in 1981. **Objectives:** This study sought to evaluate knowledge, attitudes, and perceptions about human immunodeficiency virus (HIV) and AIDS among pharmacists in Erbil, Iraq. **Methods:** A cross-sectional pilot study was conducted by using previously developed and modified questionnaires. A hundred and twenty pharmacists were approached to take part in the study including those working in government hospitals and private pharmacies as well as academic pharmacists at Hawler Medical University/College of Pharmacy. The data were analysed using Statistical Package for Social Sciences software (SPSS) version 20. **Results:** Most of the participants were female (62%) and 73.8% ranged from 20 to 29 years old. Additionally, 80.3% graduated from Hawler Medical University /College of Pharmacy. Most pharmacists (65%) had adequate knowledge about HIV/AIDS. **Conclusion:** The present results showed moderate knowledge about HIV/AIDS treatment, methods of HIV transmission, and educational information of HIV/AIDS among Erbil pharmacists. The curriculum offered should incorporate correct information about HIV/AIDS, thereby minimising fear, misconceptions, and negatives attitudes towards the infection.

Key words: Pharmacists; Erbil; HIV/AIDS; knowledge; attitudes; perception

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INTRODUCTION

The World Health organization (WHO) defines human immunodeficiency virus (HIV) as a virus that affects the immune system and weakens the individual's defence mechanism against infection and some types of cancer.[1] The virus terminates and damages the function of the immune cell, and typically it is tested using CD4 cell counts. An individual with a low CD4 count develops immunodeficiency and becomes more susceptible to infections, cancer and other diseases.[1]

In 2015, a total of 36.7 million people were living with HIV; only 18.2 million persons had access to antiretroviral therapy at the end of June 2015.[2] The prevalence of people living with HIV in Iraq is 0.1% of the total population which is considered low compared to other parts of the world. This low number may be due to the high stigmatisation and open discrimination of people living with HIV, which have greatly barred efforts to identify new cases.[3]

The major way that HIV is spread is through contaminated blood transfusion, injection drug use, unprotected sexual contact, and from a mother to her infant. The life threating nature of HIV/AIDS has led to a negative attitude and perception among the public and healthcare providers in general toward patients who are living with HIV/AIDS. With a rising number of people infected with HIV/AIDS, it is very important to eliminate this negative attitude and perception about this disease, and increase their knowledge, because these patients will need a high level of health care as the disease progresses.[4]

HIV is treated using a combination antiretroviral therapy (ART). ART is not a cure, but it can control the virus so the patient can live a longer, healthier life and reduce the risk of transmitting HIV to others. HIV combination therapies prevent HIV from replicating through different mechanisms like Protease inhibitors and Nucleoside Reverse Transcriptase Inhibitors, which reduce CD4 cell counts, which the immune system uses to repair and fight off infections and cancers.[5] In a new cohort study, HIV medications also reduced the risk of transmitting the virus to others.[6] ART is recommended for all adults with HIV infection regardless of CD4 cell count to prevent the infection progressing to AIDS.[7] The start of ART in combination with improved educational efforts among the public and in health professional courses should help to increase knowledge and change attitudes towards people living with HIV/AIDS. This should help to identify new cases in our region without stigmatisation from family and the community. Pharmacists are at low occupational risk for contracting HIV/AIDS since they have less exposure to HIV/AIDS patients compared to medical professionals. Nevertheless, pharmacists must have good knowledge and awareness about all aspects of treatment including

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infection control for HIV/AIDS patients and others with contagious infectious diseases. This study was designed to assess knowledge, attitudes, and perception towards HIV/AIDS among Erbil pharmacists.

Methodology

A prospective cross-sectional pilot study was carried out from February 15 to March 15, 2017 using previously developed and modified questionnaires.[8] No formal sampling methods were used for the survey; the pharmacists were working in government hospitals and private pharmacies and some were academic pharmacists (Hawler Medical University/College of Pharmacy). They were approached and asked to fill out the questionnaires. Verbal consent was obtained from them, and then the data were collected manually.

The response rate was 50% of the total 120 pharmacists who were approached; only 61 pharmacists were willing to participate in the survey. The pharmacists who refused to fill out the questionnaires explained that they did not have time, or they lacked interest to fill it out. Some said they did not have any idea about the topic; others thought that such a survey was not useful to our society. The questionnaires included 38 items in four sections to evaluate pharmacists' knowledge about, attitude and perception of HIV/AIDS and people who are living with the disease. The first section included questions about social status. The second section tested pharmacists' knowledge about HIV/AIDS, answered using a dichotomous scale (yes or no). Sections three and four assessed pharmacists' attitude and perception about the disease answered on a Likert-type scale (strongly agree, agree, neutral, disagree, strongly disagree).

The information from the returned questionnaires was coded and entered into Statistical Package for Social Sciences (SPSS) version 20 for analysis. Social status was analysed using descriptive statistics. Knowledge, attitude and perception for each question were analysed by using Chi-square test. According to the median split method,[9-21] pharmacists with a total score of less than 16 (median) were considered as having inadequate knowledge regarding HIV/AIDS and pharmacists with scores from 16-20 were considered as having adequate knowledge.

RESULTS

Pharmacists' characteristics

A total of 61 surveys were completed although the target number was 100 or more; the response rate was low. The mean age of respondents was 28 years (mean 28 ± 7), 73.8% were in the age range of 22-29 years, and 62% were female. Most of the pharmacists (80.3%) who participated in the study graduated from Hawler Medical University/College of Pharmacy; the others graduated from different universities in different countries [Table 1]. All the pharmacists that participated were post-graduates.

Pharmacists' knowledge

The knowledge of the Erbil pharmacists was evaluated by the questions mentioned in Table 2, and each true answer was given a score of one to evaluate knowledge. As shown in Table 3, most pharmacists (65%) had adequate knowledge about HIV/AIDS. According to Table 4, pharmacists aged between 22-29 had adequate knowledge about HIV/AIDS (64.4% of the total adequate knowledge) and female pharmacists had adequate knowledge about HIV/AIDS (60% of the total adequate knowledge) [Table 5].

Pharmacists' attitudes

Table 6 shows the attitudes of pharmacists towards HIV/AIDS. The majority had a positive attitude about their curriculum providing them with necessary education/information about working safely with HIV/AIDS patients. Also they showed a positive attitude toward taking care of and providing treatment for these patients.

Pharmacists' perceptions

The results in Table 7 about perception in general, showed pharmacists had a negative attitude on three items. When it comes to the perception towards people living with HIV/AIDS (PLWHA), most pharmacists had positive perceptions about patients who got the infection through drug use and sex. More than half of the participants had positive attitudes towards people who are living with this infection believing they should not be ashamed of themselves. They had negative perceptions about PLWHA believing they should minimise attending public activities like fun fairs and concerts. They also had negative perceptions about working with colleagues who are HIV positive. Also, they showed negative perceptions about a HIV/AIDS person, believing that he/she has poor personal hygiene.

DISCUSSION

This study was conducted to evaluate the knowledge, attitude, and perception towards HIV/AIDS among Erbil pharmacists. This study reported a positive attitude of pharmacists in Erbil, Iraq toward the infection in general. Nearly half of them agreed (44.2%) that their curriculum had provided them with adequate information and education to safely handle HIV/AIDS patients; others (32.8%) chose neutral as their answer saying they do not know if they have enough information because they have not dealt with any HIV/AIDS patients before, and this may be the reason that 32.8% of them had answered they are not confident enough to provide consultation, care, and treatment. Perhaps their curriculum was not enough to make them confident. Moreover, 64.5% of them preferred not sharing facilities and equipment with people with HIV/AIDS and that may be due to the lack of knowledge in the way the infection is transmitted.

Most of the pharmacists are willing, will not refuse, and will not avoid taking care of patients with HIV/AIDS in wards, although they are still afraid of becoming infected and being stigmatised by their family and friends. This positive attitude may be due to all the pharmacists taking an oath that they will not discriminate against any patient with any type of disease when it comes to treatment. When comparing the attitude of

Table 1: Pharmacist's characteristics

Social status		n	%
Gender			
	male	23	38
	female	38	62
	total	61	100
Age			
	22-29	45	73.8
	30-39	12	19.7
	>40	4	6.6
	total	61	100
University of graduation			
	Hawler medical university	49	80.3
	Baghdad university	4	6.6
	Mosul university	2	3.3
	Syrian international university of science and technology	2	3.3
	Near-Est university Cyprus	2	3.3
	Al-Ahliyya -Amman university Jordan	1	1.6
	Comenius university -Bratislava Slovakia	1	1.6
	total	61	100

Table 2: Erbil pharmacist's knowledge about HIV/AIDS

Survey questions	Wrong n (%)	Right n (%)
1-Is HIV/AIDS is a curable disease?	14(23)	47(77)
2-Is it true that the virus is the cause of HIV/AIDS?	6(9.8)	55(90.2)
3-Can AIDS cause death?	6(9.8)	55(90.2)
4-Currently there is no effective drug that can cure HIV/AIDS	13(21.3)	48(78.7)
5-Can a healthy looking person be positive For HIV/AIDS?	5(8.2)	56(91.8)
6-Can HIV transmitted by sharing bathrooms?	19(31.1)	42(69.9)
7-Can HIV transmitted by mosquito bites?	33(54.1)	28(45.9)
8-Can HIV/AIDS be transmitted through air?	6(9.8)	55(90.5)
9-Can HIV/AIDS be transmitted from shearing needles?	3(4.9)	58(95)
10-Can HIV/AIDS spread through social contact such as shaking hand, sharing cloths?	11(18)	50(82)
11-Can HIV/AIDS be transmitted from an infected mother her child during pregnancy?	11(18)	50(82)
12-Can HIV/AIDS spread upon receiving blood from a Blood Bank?	5(8.2)	56(91.8)
13-Can HIV transferred from one individual to another Individual during sexual intercourse?	1(1.6)	60(98.8)
14-Unprotected sex can increase the possibility of HIV/AIDS Infection?	3(4.9)	58(95.1)
15-Can a condoms protect a person from getting infected With HIV/AIDS?	14(23)	47(77)
16-Can antiviral drugs such as amantadine and acyclovir Be used to treat HIV/AIDS?	16(26.2)	45(73.8)
17-Having safe sex can reduce the probability of getting Infected with HIV/AIDS?	7(11.5)	54(88.5)
18-Is it true that male circumcision can decrease HIV transmission?	32(52.5)	29(47.5)
19-AIDS increase probability of acquiring other Infection?	4(6.6)	57(93.4)
20-Can contact with faeces, urine saliva causes HIV?	29(47.5)	32(52.5)

Table 3: Level of knowledge among pharmacists

Knowledge	Frequency	Percent
Inadequate	21	34.4
Adequate	40	65.6
Total	61	100

*Median split method

Table 4: Knowledge according to age

			Total scores		Total	*p value
			inadequate	adequate		
Age	22-29	Count	16	29	45	0.910
		% within age	35.6%	64.4%	100.0%	
		% within total scores	76.2%	72.5%	73.8%	
		% of Total	26.2%	47.5%	73.8%	
	30-39	Count	4	8		
		% within age	33.3%	66.7%	100.0%	
		% within total scores	19.0%	20.0%	19.7%	
		% of Total	6.6%	13.1%	19.7%	
	>40	Count	1	3		
		% within age	25.0%	75.0%	100.0%	
		% within total scores	4.8%	7.5%	6.6%	
		% of Total	1.6%	4.9%	6.6%	
Total		Count	21	40		
		% within age	34.4%	65.6%	100.0%	
		% within total scores	100.0%	100.0%	100.0%	
		% of Total	34.4%	65.6%	100.0%	

Chi-Square test; Significant P<0.05

Erbil pharmacists and Saudi Arabian doctors,[22] Saudi Arabian doctors had negative and discriminative attitude towards patients with HIV and AIDS. Erbil pharmacists were positive and indiscriminative when it comes to doing their jobs as health care providers.

In this study, pharmacists had positive perceptions of people who got an HIV infection through sexual activity or through drug use; 44.3% disagreed with this statement and 27.9% had no opinion. The pharmacists had positive perceptions of patients with HIV/AIDS believing they should not be ashamed of themselves (53.1%). This is considered to be a very positive perception taking into consideration that they live in a closed society which does not accept these behaviours and stigmatises people living with a contagious infection that is spread through bad behaviours; Erbil's pharmacists look at the subject with empathy. Most of them had explained to the researcher that no one

Table 5: Knowledge according to gender

			Total scores		Total	*p value
			Inadequate	Adequate		
gender	male	Count	7	16	23	0.610
		% within gender	30.4%	69.6%	100.0%	
		% within total scores	33.3%	40.0%	37.7%	
		% of Total	11.5%	26.2%	37.7%	
	female	Count	14	24	38	
		% within gender	36.8%	63.2%	100.0%	
		% within total scores	66.7%	60.0%	62.3%	
		% of Total	23.0%	39.3%	62.3%	
Total		Count	21	40	61	
		% within gender	34.4%	65.6%	100.0%	
		% within total scores	100.0%	100.0%	100.0%	
		% of Total	34.4%	65.6%	100.0%	

Chi-Square test; Significant P<0.05

Table 6: Erbil pharmacist's attitudes about HIV/AIDS

Statement	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly disagree n (%)
My curriculum has provided me with necessary education/information to work safely with HIV/AIDS patients	11(18)	16(26.2)	20(32.8)	5(8.2)	9(14.8)
I am willing to assist/take care of HIV/AIDS patients in wards	14(23)	20(32.8)	12(19.7)	10(16.4)	5(8.2)
I feel that I am competent enough to provide treatment, care and counseling for HIV/AIDS patients	5(8.2)	15(24.6)	21(34.4)	15(24.5)	5(8.2)
I am concerned about being stigmatized by my family and friends because I have to provide care for patients with HIV/AIDS	4(6.6)	20(32.8)	20(32.8)	11(18)	6(9.8)
I do not mind sharing equipment or facilities with people infected with HIV/ AIDS	7(6.6)	2(3.3)	1(11.6)	22(18)	29(47.5)
I would prefer not to take care of HIV/ AIDS	3(4.9)	11(18)	14(23)	17(27.9)	16(26.2)
I may try to avoid caring for HIV/AIDS patients	7(11.5)	12(19.7)	19(31.1)	14(23)	9(14.8)
I fear becoming infected with HIV/AIDS if I have to care for an HIV patients	9(14.8)	22(36.1)	14(23)	10(16.4)	6(9.8)
I would refuse to treat a patient infected with HIV/AIDS to protect myself and my family.	4(6.6)	14(23)	21(34.4)	13(21.3)	9(14.8)

Table 7: Erbil pharmacist's perceptions of people living with HIV/AIDS

Statement	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly disagree n (%)
People who got HIV/AIDS through sex or drug use got what they deserved	6(9.8)	11(18)	17(27.9)	14(23)	13(21.3)
PLWHA should feel ashamed of themselves.	4(6.6)	10(16.4)	14(23)	20(32.8)	13(21.3)
PLWHA would make other colleagues apprehensive	1(1.6)	21(34.4)	30(49.2)	5(8.2)	4(6.6)
PLWHA have a poor personal hygiene	7(11.5)	22(36.1)	15(24.6)	14(23)	3(4.9)
People who behave recklessly should be blamed for AIDS	8(13.11)	19(31.11)	17(27.9)	11(18)	6(9.8)
PLWHA should try and minimize their attendance of public activities (e.g., funfair, concert)	3(4.9)	23(37.7)	14(23)	18(29.5)	3(4.9)

deserves to be affected with such a disease. When we compared Erbil pharmacists to Nigeria's pharmacy students,[23] the students had negative perceptions toward people living with HIV/AIDS.

Erbil pharmacists showed moderate knowledge about HIV/AIDS (65.6%) with a total score above the median of 16, 77% had the right answer that the infection had no cure, 78.7% know that currently there is no effective drug that can cure HIV/AIDS. To better understand this point, we have to know the definition of cure when it comes to HIV infection, because the definition of cure is essential to clarify for clinicians and people who are living with HIV. The optimal outcome would be the complete eradication within an individual of all replication-competent HIV. Such a sterilising cure will be challenging to achieve and difficult to verify with current technologies.[24] A possible outcome will be the achievement of long-term reduction. Reduction is likely to be a necessary precursor for the development of an HIV cure and is increasingly used in the field to show the goal of long-term undetectable viremia for an as-yet-undefined period (probably of several years) in the absence of ART. The concept of disease reduction means improvement, although with some uncertainty, and is already well-known in medical settings.[25]

The major routes of HIV transmission are blood, semen, pre-semen and vaginal fluid, and breastfeeding and it is not transmitted through saliva, faeces, and urine.[26] Overall, 47.7% had the wrong answer and thought that HIV is transmitted through saliva, faeces and urine. This is considered a high number, considering that there is no report of any person getting the infection through these means.[27] Additionally, 98.8% of the pharmacists had the right answer that HIV infection is mainly transmitted through sexual intercourse and unprotected sex can increase the probability of infection. 23% said that condoms cannot protect the person from getting infected but according to a meta-analysis, latex condoms can decrease the chance of getting the infection by 60-70%. Condoms are considered to be the primary recommendation to prevent transmission.[28] Most of the pharmacists answered correctly that HIV is transmitted through blood (91.8%) and through needles (95%). A patient could receive infected blood from a blood bank, but this should not be the case because all donated blood should be tested for HIV, routine eligibility screening questionnaire and always using a new syringe for each patient. If the donor tested positive, he or she should be notified and should not be allowed to donate blood or organs. Those with high exposure to HIV should not be allowed to donate blood because HIV will not be apparent in the blood before three months of exposure. This is true for developed countries while in undeveloped countries blood scanning is still an issue.[29] One out of 1.5 million are at risk of acquiring HIV from blood transfusion.[30] There have been some cases of patients receiving blood contaminated with HIV, with one of them reported in Missouri USA.[31] Although the donor had tested for HIV by enzyme immunoassay and nucleic acid amplification testing of minipools of plasma specimens, both tests were negative and the donor showed no risk for HIV infection according to the routine eligibility screening questionnaire. Later on, the donor tested positive for HIV and two patients had received a blood transfusion from that donor. One of them had died two days after receiving the blood due to heart complications and the second one tested positive for HIV and started ART.

There have been many misconceptions about mosquito bites and their role in the transmission of the infection. There are misconceptions as some insects transmit Malaria, and thus some assume also HIV/AIDS.[32] The pharmacists showed a lack of knowing that HIV infection is not transmitted through mosquito bites (45.9%). Studies have shown that HIV is not transmitted through insect bites because the pathogenesis of the virus is specific to the T-cell (more specifically T4 antigens) that are present on the cell surface in humans; the virus binds to T-cells and starts replication. When mosquitoes suck the blood of individuals with HIV, the virus cannot replicate and the enzyme in the gut of the mosquitoes gets digested, so it is unlikely that a person gets infected from mosquito bites.[33]

Mother-to-child transmission (MTCT) of HIV infection is the major cause of HIV infection in infants and young children younger than 5 years. In the absence of HIV prevention actions, the rates of MTCT of HIV have been estimated to range from 15% to 45% and that includes labour, delivery or breastfeeding.[34] According to a study, the early start of treatment of three types of ART is necessary especially in those whose CD4 count is 400-500 cell per µl during pregnancy and breastfeeding; these women showed better outcomes than those who did not receive the treatment or those with monotherapy.[35] To decrease MTCT, most HIV positive mothers are scheduled for C-section.[36] 82% of the pharmacists were aware that HIV is transmitted during pregnancy.

26.2% did not know that antivirals like acyclovir and amantadine were not used for the treatment of HIV. ART that is used for treatment of HIV infection or so-called antiretroviral drugs (ARV) are attacking HIV in different ways. The first class are nucleoside reverse transcriptase inhibitors (NRTIs or 'nukes') and those include drugs like Zidovudine Retrovir and Didanosine. The second class are non-nucleoside reverse transcriptase inhibitors (non-nukes or NNRTIs) like Nevirapine and Delavirdine. The third class are Protease inhibitors or PIs like Saquinavir and Indinavir. Those three types block the reverse transcriptase enzyme building HIV DNA. The fourth class are Entry inhibitors that prevent HIV from entering a cell, like Enfuvirtide and Maraviroc. The fifth class are HIV integrase inhibitors that prevent HIV from inserting its genetic code into the human cell's code, and those include drugs like Raltegravir and Dolutegravir.[37]

Male circumcision provides 50%-60% protection for a man who is HIV negative. According to WHO, male circumcision should be considered as a method for intervention and protection against HIV transmission.[38] In a randomized control trial conducted in Kenya,[39] the result showed that male circumcision can prevent infection transmission; this was also supported by another randomised trial conducted in Uganda.[40] Unfortunately, Erbil pharmacists were not familiar with this and 52.5% had the wrong answer.

CONCLUSIONS

This study concluded that the pharmacists had a positive attitude as they are willing to take care of and assist patients with HIV/AIDS. Their perception towards HIV/AIDS was positive that these patients should not be ashamed of themselves, and had moderate knowledge about the routes of transmission and treatment.

Recommendations

1. It is highly recommended that this study be conducted again with a larger number of participants, and the same study should be conducted among other health care providers including doctors, nurses, and dentists.
2. A future study should also be conducted among students who are attending health care colleges, so we can see if there are any gaps in the curriculum, and to understand if graduates forgot information after graduation.
3. The curriculum should cover HIV/AIDS in general and any other sexual transmitted diseases (STD).
4. Conferences and seminars should be conducted by the Ministry of

Health and syndicates to improve awareness and knowledge about the issue. Health care professionals can learn how to safely provide care for these patients.

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