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Original Article

Nurses' knowledge and attitudes regarding HIV/AIDS in Erbil City: a cross-sectional study

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Abstract

Introduction: Lack of knowledge about the spread of human immunodeficiency virus (HIV) is the primary reason behind the discriminatory attitudes of nurses towards people living with HIV and acquired immunodeficiency syndrome (AIDS). Therefore, this study aimed to investigate nurses' knowledge and attitudes towards HIV/AIDS.

Methodology: This descriptive cross-sectional study involved 188 nurses working in two major public hospitals in Erbil city. The study participants were selected using a census method. The questionnaires were designed to specifically evaluate the nurses' knowledge and attitudes towards HIV/AIDS. The data were analyzed using IBM SPSS version 26.

Results: The mean score of knowledge about HIV/AIDS was 65.60 ± 9.79, which was at a moderate level. The mean score of attitudes toward HIV/AIDS was 36.64 ± 10.34, which was at a poor level. There was a low negative correlation between knowledge and attitude towards HIV/AIDS (p = 0.009). Married individuals and Muslims had higher knowledge, while participants aged over 30 years had a more positive attitude. Single individuals, urban residents, and Christians had more positive attitudes compared to their counterparts.

Conclusions: Lack of knowledge of HIV/AIDS and its transmission can impede the care process, while a positive attitude towards patients with AIDS is essential for providing compassionate care. Therefore, it is crucial to explore effective strategies that can enhance healthcare providers' knowledge and attitudes towards patients with AIDS. This approach can improve the quality of care provided to this vulnerable population.

Key words: nurses; knowledge; attitude; HIV/AIDS; awareness.

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Introduction

Human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) has become one of the most important public health problems in recent years [1]. HIV can be transmitted in several ways, including through infected blood and blood derivatives; sexual intercourse; and from infected mothers to their fetuses via the placenta, during childbirth, or via breastfeeding [2].

According to the Joint United Nations Program on HIV/AIDS, around 78 million people have been infected with HIV since the beginning of the epidemic. Approximately 35 million people have died from AIDS-related illnesses, and 36.7 million people were living with HIV worldwide by the end of 2015 [3]. In 2017, approximately 2.1 million people were newly infected with HIV, and 1.1 million people died from AIDS-related illnesses [4]. The global HIV-infected population is expected to exceed 36·9 million people by 2030 [2].

Iraq has a relatively low prevalence of HIV/AIDS compared to the other countries in the Middle East region [5]. Iraq has made significant progress in expanding access to HIV testing and treatment. The number of people living with HIV/AIDS receiving antiretroviral therapy has increased from 111 in 2010 to 1,164 in 2019 [6]. However, there are still significant challenges in combating the disease, including limited access to testing and treatment, stigma, discrimination, and inadequate healthcare infrastructure [7].

HIV/AIDS is a critical healthcare problem due to its high prevalence among different age groups, high mortality rate, and high healthcare costs. Therefore, healthcare systems have a major responsibility in the prevention, management, and care for patients with HIV/AIDS [8]. The World Health Organization (WHO) has developed guidelines for the care and management of HIV/AIDS, which emphasize the importance of healthcare workers' knowledge and attitudes towards the disease [9].

Nursing HIV-positive and AIDS patients requires special skills and attitudes. However, a number of studies have suggested that healthcare workers, including nurses, hold negative attitudes towards

people living with HIV and AIDS [10,11]. These negative attitudes often manifest as discrimination and stigma, which undermine all efforts to reach out to people with HIV with information, testing, treatment, and preventive measures to reduce their risk of infection [12].

Amidst the negative attitudes towards people living with HIV or AIDS, the level of knowledge that nurses possess about the disease may have an impact on the quality of care they provide [13]. Inadequate knowledge or a lack of knowledge on HIV and AIDS can lead to nurses exhibiting fear, stigmatization, and unwillingness to care for people living with the disease [14]. Good knowledge of HIV/AIDS is an important step in reducing the fears, anxiety, and negative attitudes exhibited by nurses [15]. Lack of knowledge and misconceptions about the spread of HIV is the primary reason for nurses' discriminatory attitudes towards people living with HIV and AIDS [12,16].

Several studies have addressed nurses' knowledge and attitudes towards HIV/AIDS worldwide, including in the Middle East region. A study conducted in Iran found that nurses had a good level of knowledge about HIV/AIDS [17]. Another study conducted in Saudi Arabia found that around 62% of the participants had adequate knowledge about the disease [18]. In Iraq, few studies have explored nurses' knowledge and attitudes towards HIV/AIDS. One study conducted in Erbil found that nurses had medium knowledge about the disease. Only 25 participants (11.5%) had high level of knowledge regarding HIV/AIDS, and only 3 of participants (1.4%) had high attitudes toward HIV/AIDS [5].

HIV is a behavior-related disease, and knowledge and awareness regarding its transmission and prevention can have a significant impact on its spread [2]. Therefore, nurses play a critical role in the prevention, care, and management of HIV/AIDS. Their knowledge and attitudes towards the disease are crucial determinants of the quality of care provided to people living with HIV/AIDS. Further research is needed to explore nurses' knowledge and attitudes towards HIV/AIDS in Erbil city, the capital of Kurdistan region of Iraq; and to develop effective prevention, care, and management programs for the disease in Iraq. Thus, the aim of this study was to evaluate the nurses' knowledge and attitudes regarding HIV/AIDS in Erbil city.

Methodology

Study design and setting

This descriptive cross-sectional study assessed nurses' knowledge and attitudes towards HIV/AIDS. The study was conducted at two major public hospitals in Erbil city, the Rizgari and Hawler hospitals, both located in the Kurdistan region of north Iraq.

Sampling and sample size

The census method was used to gather data from all nurses working in the two major hospitals. Unfortunately, there was no formal report about the exact number of nurses in both hospitals. However, it was estimated that approximately 250 nurses were working in the hospitals during the sampling period. The inclusion criteria were all nurses of both genders working in the two mentioned hospitals who agreed to participate, and those who did not complete the questionnaire were excluded. Finally, 188 participants completed the questionnaires, resulting in a response rate of 75.2%.

Study instruments

The questionnaire consisted of three sections:

1. Demographic characteristics. This section included five items on age, gender, marital status, residence, and religion.
2. Knowledge about HIV/AIDS. Based on a review of the literature [5,19–24], we developed a questionnaire to assess knowledge about HIV/AIDS. This questionnaire consisted of 18 items/questions covering different aspects of the disease and its transmission. The first 9 items required responses in a false/true/uncertain format; while the remaining 9 required responses in a likely/unlikely/uncertain format. A score of 1 was assigned to a true response, and a 0 to the rest, resulting in a total score range of 0–18. For ease of interpretation, we standardized the scores on a scale of 0–100 using the linear transformation method. Scores < 25 were considered very low, 25–50 were considered low, 50–75 were considered moderate, and scores > 75 were considered good. We used the qualitative content validity criteria to check content validity. The questionnaire was sent to five nursing faculty members who were asked to provide feedback and suggestions. The questionnaire was revised according to their suggestions.
3. Attitude towards HIV/AIDS questionnaire: Based on a review of the literature [5,19–24], we developed a questionnaire to assess the attitude towards HIV/AIDS. This questionnaire consisted of 20 items covering different topics related to the definition and nature of disease,

the methods for managing the disease, and the ways of transmission; with responses measured on a Likert scale ranging from strongly disagree to strongly agree. The scoring for each item ranged from 1–6, resulting in a total score of 20–120. For ease of interpretation, we standardized the scores on a scale of 0–100 using the linear transformation method. Scores < 25 were considered very poor, 25–50 were considered poor, 50–75 were considered moderate, and scores > 75 were considered good. To check content validity, we used qualitative content validity. The questionnaire was sent to five nursing faculty who were asked to provide feedback and suggestions. The questionnaire was revised according to their suggestions. The alpha Cronbach were measured to check the reliability, and the score was 0.6.

Data collection

Data were collected using the specially designed questionnaire described above. The questionnaire was distributed among nurses in both Kurdish and English languages, and participants were free to choose the language they were most comfortable with. Of the 188 participants, 126 nurses selected the Kurdish language version and 62 nurses selected the English language version. Data was collected from 25 March to 15 May 2022 to assess nurses' knowledge and attitudes towards HIV/AIDS. All participants were informed of the research aim, and their participation was voluntary and anonymous. The nurses were given questionnaires in person, and the participants were asked to answer the questionnaires' questions with adequate focus and precision, avoiding haste. The participants were informed how to answer the questionnaire and encouraged to complete each part in detail.

Statistical analysis

IBM SPSS version 26 (IBM Corp, Armonk, NY, USA) was used for data analysis. Frequencies, percentage, mean, and standard deviation were used to describe participants' characteristics. Skewness, kurtosis, and the Levene test were used to assess parametric conditions. Since the parametric conditions were met, bivariate analysis was conducted using independent t-test, analysis of variance (ANOVA), and Pearson correlation coefficient. Multivariate linear regression with stepwise model was used to determine the predictors of knowledge and attitude toward HIV/AIDS scores. A p value ≤ 0.05 was considered statistically significant.

Ethics approval and consent to participate

The Erbil Polytechnic University approved the study protocol. The researcher obtained approval from the Directorate of Health, and the managers of both hospitals. Ethical considerations were a crucial principle of data gathering and the researcher obtained ethical consent from each nurse individually before collecting data for this study. The researcher explained the title and goals of the study to the participants.

Results

The majority of the participants were less than 30 years old, with the youngest participant being 22 years old and the oldest being 46 years old. Most of the participants were female (66%), married (87.2%), Muslim (95.7%), and living in urban areas (74.5%) (Table 1).

Table 1. Characteristics of participants and their association with knowledge and attitude towards HIV/AIDS (n = 188).

Variables	N (%)	HIV knowledge		Statistical test (value)	HIV attitude		Statistical test (value)
		Mean	SD		Mean	SD	
Age (years)							
< 25	84 (44.7)	66.67	9.76		37.38	9.71	
25–30	84 (44.7)	66.40	9.83	F = 7.67 (0.001)	34.52	10.37	F = 5.31 (0.006)
> 30	20 (10.6)	57.78	5.81		42.40	10.71	
Gender							
Male	64 (34.0)	66.32	10.93	t = 0.68 (0.50)	34.56	11.98	t = – 1.99 (0.048)
Female	124 (66.0)	65.23	9.18		37.71	9.26	
Marital Status							
Married	164 (87.2)	66.26	10.03	t = 3.32 (0.002)	36.07	10.02	t = – 1.74 (0.09)
Single	24 (12.8)	61.11	6.55		40.50	11.88	
Residence area							
Urban	140 (74.5)	65.56	9.68	t = – 0.11 (0.91)	38.28	9.57	t = 3.87 (< 0.001)
Rural	48 (25.5)	65.74	10.21		31.83	11.11	
Religion							
Muslim	180 (95.7)	66.05	9.70	t = 3.03 (0.003)	35.87	9.88	t = – 17.18 (< 0.001)
Christian	8 (4.3)	55.55	5.94		54.00	2.14	

AIDS: acquired immunodeficiency syndrome; HIV: human immunodeficiency virus; SD: standard deviation.

Table 2. Participants' knowledge about HIV/AIDS (n = 188).

Items	Correct response N (%)
1. HIV can reduce the body's natural protection against disease.	184 (97.9)
2. AIDS is an infective disease caused by a virus.	152 (80.9)
3. There is no cure for AIDS at present.	124 (66.0)
4. A person with HIV can look and feel healthy and well.	128 (68.1)
5. There is a vaccine available to the public that protects a person against the HIV.	56 (29.8)
6. A person can be infected with HIV and not have the disease AIDS.	92 (48.9)
7. Any person with HIV can pass it on to someone else during sexual intercourse.	176 (93.6)
8. A pregnant woman who has HIV can pass it on to her baby.	176 (93.6)
9. Condom is an effective means of reducing HIV transmission.	20 (10.6)
How likely do you think it is that a person will get HIV infection from:	
10. Shaking hands, touching, or kissing on the cheek with someone who has HIV?	152 (80.9)
11. Kissing—with exchange of saliva—a person who has HIV?	116 (61.7)
12. Being coughed or sneezed on by someone who has HIV?	64 (34.0)
13. Sharing plates, forks or glass with someone who has HIV?	112 (59.6)
14. Eating at a restaurant where the cook has HIV?	68 (36.2)
15. Engaging in anal sex?	180 (95.7)
16. Sharing needles for drug use with someone who has HIV?	176 (93.6)
17. Using public toilet?	88 (46.8)
18. Being fed breast milk of mother with HIV/AIDS?	156 (83.0)

AIDS: acquired immunodeficiency syndrome; HIV: human immunodeficiency virus.

Table 3. The participants' attitude toward HIV/AIDS (n = 188).

Items	Strongly disagree (n/%)	Moderately disagree (n/%)	Slightly disagree (n/%)	Slightly agree (n/%)	Moderately agree (n/%)	Strongly agree (n/%)
1. Most people who have AIDS have only themselves to blame.	28 (14.9)	20 (10.6)	16 (8.5)	24 (12.8)	24 (12.8)	76 (40.4)
2. Most people who have AIDS deserve what they get.	40 (21.3)	36 (19.1)	16 (8.5)	12 (6.4)	32 (17.0)	52 (27.7)
3. Patients who are HIV positive should not be put in rooms with other patients.	-	8 (4.3)	12 (6.4)	28 (14.9)	36 (19.1)	104 (55.3)
4. If I were assigned to a patient with AIDS, I would worry about putting my family and friends at risk of contracting the disease.	108 (57.4)	28 (14.9)	20 (10.6)	16 (8.5)	12 (6.4)	4 (2.1)
5. Young children should be removed from the home if one of the parents is HIV positive.	4 (2.1)	28 (14.9)	4 (2.1)	28 (14.9)	36 (19.2)	88 (46.8)
6. I think that patients with AIDS have the right to the same quality of care as any other patient.	132 (70.2)	24 (12.8)	8 (4.3)	4 (2.0)	8 (4.3)	12 (6.4)
7. It is especially important to work with patients with AIDS in a caring manner.	20 (10.6)	28 (14.9)	52 (27.7)	32 (17.0)	16 (8.5)	40 (21.3)
8. I think that people who are IV drug users deserve to get AIDS.	104 (55.2)	32 (17.0)	24 (12.8)	12 (6.4)	8 (4.3)	8 (4.3)
9. I think that women who give birth to children with HIV should be prosecuted for child abuse.	116 (61.7)	12 (6.4)	32 (17.0)	12 (6.4)	4 (2.1)	12 (6.4)
10. Homosexuality should be illegal.	120 (63.8)	4 (2.1)	8 (4.3)	8 (4.3)	48 (25.5)	-
11. I feel more sympathetic toward people who get AIDS from blood transfusion than those who get it from IV drug abuse.	116 (61.7)	28 (14.9)	12 (6.4)	4 (2.1)	12 (6.4)	16 (8.5)
12. Patients with AIDS should be treated with the same respect as any other patient.	88 (46.8)	44 (23.4)	36 (19.2)	4 (2.1)	4 (2.1)	12 (6.4)
13. If I found out that a friend of mine was a homosexual, I would not maintain the friendship.	148 (78.7)	20 (10.7)	4 (2.1)	8 (4.3)	4 (2.1)	4 (2.1)
14. I am worried about getting AIDS from social contact with someone.	52 (27.7)	60 (31.9)	24 (12.8)	4 (2.1)	16 (8.5)	32 (17.0)
15. I am sympathetic toward the misery that people with AIDS experience.	76 (40.4)	48 (25.5)	32 (17.0)	4 (2.1)	12 (6.4)	16 (8.5)
16. I would like to do something to make life easier for people with AIDS.	108 (57.4)	40 (21.3)	28 (14.9)	-	8 (4.3)	4 (2.1)
17. I would do everything I could to give the best possible care to patients with AIDS.	92 (48.9)	48 (25.5)	28 (14.9)	8 (4.3)	8 (4.3)	4 (2.1)
18. Children or people who get AIDS from blood transfusions are more deserving of treatment than those who get it from IV drug abuse.	108 (57.4)	44 (23.4)	4 (2.1)	16 (8.5)	4 (2.1)	12 (6.4)
19. I would be worried about my child getting AIDS if I knew that one of his teachers was a homosexual.	92 (48.9)	56 (29.8)	8 (4.3)	8 (4.3)	12 (6.4)	12 (6.4)
20. I have no sympathy for people who get AIDS from sexual promiscuity.	72 (38.3)	48 (25.5)	36 (19.2)	–	12 (6.4)	20 (10.6)

AIDS: acquired immunodeficiency syndrome; HIV: human immunodeficiency virus; IV: intravenous.

Table 2 summarizes the participants' knowledge about HIV/AIDS. Over 90% of the participants answered the five items correctly, including, "HIV can reduce the body's natural protection against disease"; "infection can occur from engaging in anal sex?"; "any person with HIV can pass it on to someone else during sexual intercourse"; "a pregnant woman who has HIV can pass it on to her baby"; and "infection can occur from sharing needles for drug use with someone who has HIV?". However, only 10.6% of the participants answered correctly the item on "condom is an effective means of reducing HIV transmission." The mean score of knowledge about HIV/AIDS was 65.60 ± 9.79 (minimum = 44.44, maximum = 83.33), indicating a moderate level of knowledge. Only 2.1% (n = 4) of the participants had poor knowledge, 80.9% (n = 152) had moderate knowledge, and 17% (n = 32) had good knowledge about HIV/AIDS.

Table 3 summarizes the participants' attitude toward HIV/AIDS. Most of the participants agreed moderately to strongly with the following items: "patients who are HIV positive should not be put in rooms with other patients"; and "young children should be removed from the home if one of the parents is HIV positive". In addition, most of the participants moderately to strongly disagreed with most of the items. The mean score of attitudes towards the HIV/AIDS was 36.64 ± 10.34 (minimum = 16, maximum = 57), indicating a poor level of attitude. Specifically, 12.8% (n = 24) of the participants had very poor attitude, 70.2% (n = 132) had a poor attitude, and 17% (n = 32) had a moderate attitude toward the HIV/AIDS.

There was a poor negative correlation between knowledge and attitude towards HIV/AIDS (r = – 0.19, p = 0.009). There was a significant correlation between HIV/AIDS knowledge, age, marital status, and religion (Table 1). In addition, there was a significant association between HIV/AIDS attitudes, age, gender, living place, and religion. For further analysis, we used multiple linear regression with stepwise model, considering knowledge and attitude toward HIV/AIDS as the dependent variables and other study variables as independent variables. The results showed that marital status and religion were predictors of knowledge about HIV/AIDS; and age < 25 years, marital status, residence, and religion were predictors of attitudes toward HIV/AIDS (Table 4).

Discussion

This study investigated nurses' knowledge and attitudes towards HIV/AIDS and concluded that nurses had moderate knowledge but poor attitudes towards HIV/AIDS. While having knowledge and awareness is important, it is not enough to ensure appropriate performance. It is crucial for nurses' attitudes towards HIV/AIDS to be based on scientific principles and to evolve accordingly. A similar study conducted on nursing students in Erbil observed that while most students had moderate knowledge about HIV/AIDS, their attitudes towards patients with HIV/AIDS were negative. Many nursing students believed that these patients did not deserve the same level of respect and medical care as other patients [5].

The results of several studies conducted outside Iraq are consistent with the present study. Studies by Kok *et al.* in Turkey, Bhupendra *et al*. in India, and Kiyene in Africa showed that most nurses and nursing students had moderate to good levels of knowledge about HIV/AIDS [25–27]. Similarly, Boakye *et al.* in Ghana and Shahzadi *et al.* in Pakistan observed that nurses had satisfactory knowledge about HIV/AIDS, but some still held misconceptions about HIV transmission, which led to negative, discriminatory, or unethical attitudes among nurses [12,28]. Although some of these studies focused on nursing students, their

Table 4. Multiple regression analysis summary for knowledge and attitude about HIV/AIDS.

Variable	Unstandardized coefficients		Standardized coefficients	t	*p* value	95% Confidence interval for B		Adjusted R Square
	B	Standard error	Beta			Lower	Upper	
Knowledge about HIV/AIDS								
Constant	83.76	4.46		18.77	< 0.001	74.96	92.56	
Marital status (married = 1, single = 2)	– 5.70	3.42	– 0.20	– 2.76	0.001	– 9.77	– 1.62	0.08*
Religion (Muslim = 1, Christian = 2)	– 11.25	2.06	– 0.23	– 3.30	0.006	– 17.99	– 4.52	
Attitudes towards HIV/AIDS								
Constant	14.57	4.8						
Age < 25 years (reference age > 30 years)	5.84	1.38	0.28	4.22	< 0.001	3.11	8.57	0.29**
Marital status	4.93	1.99	0.16	2.48	0.01	1.00	8.86	
Living place (urban = 1, rural = 2)	– 8.63	1.55	–0.36	– 5.56	< 0.001	– 11.70	– 5.56	
Religion	23.72	3.28	0.46	7.24	< 0.001	17.26	30.18	

*F = 8.56, p < 0.001; ** F = 20.09, p < 0.001. AIDS: acquired immunodeficiency syndrome; HIV: human immunodeficiency virus.

results are still worth comparing. While there may be some differences in the levels of knowledge and attitudes found in these studies, they all highlight the existence of gaps in nurses' knowledge and attitudes towards HIV. These gaps must be addressed through appropriate measures to effectively bridge them. This will help ensure that patients with HIV receive routine and high-quality care.

Amiri *et al.* reported that nursing and medical students had a moderate level of knowledge about AIDS, which is similar to the results of our study, despite differences in the study population. However, in their study, 97% of the participants had a positive attitude towards AIDS prevention and control, with only 3% having a negative attitude. It is worth noting that most of the participants in that study were medical students, and their field of study and understanding of disease consequences might be expected to result in a higher positive attitude towards disease control and prevention [29].

Continuing education is crucial for nurses and other healthcare professionals to improve their knowledge and attitudes towards people living with HIV/AIDS. Our results indicate a lack of information about HIV/AIDS among nurses, and efforts need to be made to develop their knowledge and attitudes towards these people. Studies have identified lack of education as one of the reasons for nurses' reluctance to care for people with HIV/AIDS and their negative attitudes in countries like the US and India [30,31]. Therefore, training that covers sensitive topics about vulnerable groups, particularly patients with HIV/AIDS, is an effective strategy that should be implemented worldwide.

Although the present study found no correlation between nurses' knowledge and their attitude towards HIV/AIDS, some studies have reported a positive relationship between knowledge and attitudes of nurses and nursing students towards HIV/AIDS [8,32–34). However, other studies have found that nursing students' level of knowledge did not affect their attitude or willingness to care for patients with HIV/AIDS [25,35]. These results may be related to the reluctance of student nurses to provide care for patients with HIV/AIDS in clinical practice or to the fact that caring for patients with HIV/AIDS was a rare situation in clinical practice. It is possible that the training programs might not be enough to increase students' willingness to provide nursing care to patients with HIV/AIDS.

Philip *et al.* recommended that educational programs and curricula be designed for healthcare students to improve their knowledge about reducing biases and personal prejudices towards patients with HIV [36]. Nurses should increase their knowledge about patients' rights and professional ethics to improve the care of patients with HIV and reduce the fear of complications and negative attitudes towards these patients. As caring is a fundamental aspect of the nursing profession, and all patients have equal rights, it is crucial to improve nurses' attitudes towards AIDS through acquiring knowledge [8].

In this study, marital status and religion were predictors of nurses' knowledge about HIV/AIDS; while age less than 25 years, marital status, residence, and religion were predictors of nurses' attitudes towards HIV/AIDS. The study concluded that married individuals and Muslims had significantly higher knowledge about HIV/AIDS compared to single individuals and Christians. Participants who were over 30 years old had more positive attitudes towards HIV/AIDS compared to those who were less than 25 years old. Single participants, participants living in urban areas, and Christians had more positive attitudes towards HIV/AIDS; than married individuals, participants living in rural areas, and Muslims. Amiri *et al.* reported a significant relationship between knowledge about HIV, level of education, field of study, and age. However, they observed no significant relationship between knowledge, gender, marital status, accidental needlestick injury, experience of caring for patients with HIV/AIDS, hepatitis B virus (HBV) and HIV testing, and vaccination against HBV. In addition, they observed no significant relationship between level of education, age, field of study, and attitude [30]. Boakye *et al.* and Okpala *et al.* reported a low significant correlation between participants' knowledge of HIV and their age [37,38]. Lotfipur *et al.* also did not report a significant relationship between gender, knowledge, and attitude [39]. Alipour *et al.* demonstrated no significant relationship between knowledge, attitude, and marital status; but gender had a significant relationship with knowledge [40]. Overall, these results are consistent with some of the present study's results and inconsistent with others. The disparity may be due to differences in the research population (medical students or others), sample size, cultural and religious differences, and different geographical locations.

The findings of this study emphasized the need to increase nurses' knowledge and attitudes towards HIV/AIDS and methods of transmission to provide ethical and non-discriminatory care to patients with HIV. However, this study had some limitations. It was conducted on a limited number of nurses in Erbil; so, the results cannot be generalized to all Iraqi nurses and

other healthcare groups. Additionally, individual differences and mental state could have influenced participants' responses, which were beyond the researcher's control. The study used subjective concepts such as knowledge and attitude, which can only be evaluated from an individual's perspective; so, the accuracy and correctness of the answers provided by participants may also be a limitation of the research.

Conclusions

The findings of the present study reveal that nurses generally possess moderate knowledge and poor attitudes towards HIV/AIDS. Furthermore, the study highlights a weak correlation between the nurses' knowledge and attitudes regarding HIV/AIDS. Additionally, the results suggest that marital status and religion are significant predictors of knowledge about HIV/AIDS; while age under 25 years, marital status, residence, and religion are predictors of attitudes toward HIV/AIDS among nurses. These findings underscore the importance of targeted interventions and education programs aimed at improving the knowledge and attitudes of nurses towards HIV/AIDS, particularly focusing on the identified demographic and social factors that influence their perceptions and understanding of the disease. Studies with a larger sample size and including nurses from other Iraqi hospitals are recommended to achieve stronger results.

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Availability of data and material

The data underlying this study are included in the article.

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Conflict of interests

No conflict of interests is declared.

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