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Knowledge, attitude and practices (KAP) among healthcare professionals regarding HIV-related stigma

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ABSTRACT

Background: Stigma and discrimination are among the greatest challenges that face people living with human immunodeficiency virus (PLHIV), affecting their health provision. This might harm the overall retention of patients and the effective care and control of the disease. Hence, our study aimed to explore the knowledge, attitude, and practice (KAP) of HCWs in tertiary hospitals in Zagazig City, as regards HIV prevention and healthcare provision to PLHIV. **Methods:** A cross-sectional study was conducted in a convenience sample of 295 doctors and nurses from Tropical and Internal Medicine Departments in two tertiary care hospitals in Zagazig City, using a self-administered questionnaire designed to explore the KAP of HCWs, as regards HIV prevention and healthcare provision to HIV- infected people. **Results:** This study revealed that the HCWs had good knowledge about the nature and mode of transmission of HIV. Still, they needed a more detailed understanding of the disease to prevent stigmatization and discrimination of health provision. Moreover, there were significant distinctions between physicians and nurses in their participation in training programs and their performance across the KAP domains. **Conclusion:** This study can provide a benchmark for further studies in Egypt aiming to set up a training program to enhance HCWs' knowledge regarding HIV and eradicate stigmatizing attitudes and behaviors.

Introduction

Global statistics show that there were 37.7 million People Living with Human Immunodeficiency Virus (PLHIV) at the end of 2020 [1]. Egypt is generally a low HIV prevalence country [2]. However, based on the World Health Organization's (WHO) estimates, the number of newly HIV infected people in Egypt has doubled in less than 10 years despite the global decline in incidence rates [2,3]. This rise in incidence rates is

undoubtedly coupled with an increase in contact of healthcare workers (HCWs) with PLHIV.

Healthcare workers, regardless of their role, are at risk of occupational exposure to HIV and other bloodborne pathogens (via percutaneous injuries or mucocutaneous contact with blood and other potentially infectious body fluids) whilst providing healthcare to patients [4]. Strict adherence to standard precautions, and post exposure prophylaxis (PEP) remain the mainstay for preventing occupational HIV transmission in

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healthcare settings [5]. It is hence necessary to ensure that HCWs fully understand the potential routes of transmission of HIV, the preventive measures, as well as the paramount importance of prompt reporting of any potential exposure in order to allow for the timely provision of PEP and subsequent actions [6]. It is worth noted that since the emergence of the HIV epidemic, there have been concerns that the stigma of HIV may compromise the quality of healthcare provided to PLHIV [7–9]. In societies with a conservative cultural background, such as Egypt, PLHIV seeking medical assistance are vulnerable to various types of stigmas [10] namely; symbolic stigma (negative judgement and moralistic shaming and blaming toward PLHIV) and instrumental stigma (fears of acquiring the infection). Even PLHIV family members and coworkers in the healthcare facility who provide services to HIV patients can suffer from a secondary type of stigma termed “courtesy stigma” or “associative stigma” [11–13].

Unfortunately, limited studies have addressed this issue in Egypt [10,14–16]. To the best of our knowledge, there are less data available in our region; Hence, the aims of our study were to explore the knowledge, attitude, and practice (KAP) of HCWs in tertiary hospitals in Zagazig city, as regards HIV prevention and healthcare provision to PLHIV. It is worth noting that tertiary hospitals in Zagazig provide medical services for the population from both rural (77 %) and urban areas (23 %) of the governorate [17].

Methodology

Study design and setting

This descriptive cross-sectional study was conducted in Zagazig City, the capital of Sharqiyah governorate, which is the third Egyptian governorate in terms of population density. The study was conducted according to the international guidelines of Strengthening the Reporting for Observational Studies in Epidemiology; STROBE (STROBE checklist, 2007).

The questionnaire-based survey was carried out between January and March 2022 in two tertiary hospitals: Zagazig University Hospital and Zagazig Public Fever Hospital.

Study population

All physicians and nurses working in Tropical and Internal medicine Departments in both hospitals at the time of data collection were eligible to be included. Only those who agreed to participate

and completed the questionnaire form were enrolled.

Data collection tool

A self-administered questionnaire was formulated guided by questions employed in similar studies [18–21] with some modifications, as well as input from microbiology, IPC, epidemiology and public health experts. The questionnaire was initially designed in English and translated into Arabic by experts of infectious diseases and biostatistics. After translation and back translation, a panel of experts was asked to assess the preliminary questions and provide structured comments with respect to face and content validity, comprehensibility and comprehensiveness. For validation purposes, we piloted the questionnaire on 20 HCWs (8 physicians and 12 nurses) who were not included among the study participants to determine the acceptability and clarity of questions, and to confirm its face validity. It was then modified appropriately based on the feedback received during the pilot testing. Finally, the questionnaire was distributed in both English (preferred by physicians) and Arabic (preferred by nursing staff) languages.

The questionnaire comprised four parts. The first part covered the demographic data including age, sex, current job, and work duration in healthcare field. The second part focused on the knowledge domain. Items in this section assessed HCWs knowledge about HIV transmission and prevention. Items adopted a ‘Yes’, or ‘No’ or ‘Do not know’ scale and were marked as correct or incorrect. ‘Do not know’ responses to an item were marked as incorrect. The third section covers the attitude domain. Items addressed HCWs attitudes towards and beliefs about PLHIV and healthcare provision to HIV patients using ‘Yes’ or ‘No’ responses. Positive attitude statements were coded with ‘Yes’ and negative attitude statements were coded as ‘No’. The practice domain of the questionnaire comprised items that assessed acceptable and unacceptable clinical practices while providing care for HIV-infected patients as well as measures for PEP.

A scoring system, adapted from earlier studies [18–21], was used to assess the levels of KAP of each subject. Two points were allocated for each correct answer, and one point for an incorrect answer.

Data collection procedure

The questionnaire was distributed as hard copies and completed by all participants inside their healthcare facilities during the first two-months of the study.

Participants were encouraged to share the survey with their coworkers, and detailed instructions about the research objectives were provided in the participation form.

Ethical considerations

Ethical approval was obtained from the institutional review board, Faculty of Medicine, Zagazig University. The study followed the principles of the Helsinki Declaration. Participation was voluntary and participants' identities were protected through the use of anonymized data. All data collected during the study was treated with the utmost confidentiality. The completion of the questionnaire by participants was considered an informed consent for participation in the study.

Statistical analysis

Data were coded, validated, and analyzed using the Statistical Package for the Social Sciences (SPSS), version 26.0 (SPSS Inc., Chicago, IL, USA). Each variable was examined for normal distribution using Kolmogorov Smirnov test. The frequency, percentage, arithmetic mean, and mode are used to present the data. A Chi square test was used as the test of significance at a 5% level of significance. The scores for KAP were transformed into percentages by dividing the scores obtained by the respondents with the possible maximum scores and multiplied by 100. The total score of each outcome was assessed based on Bloom's cut off point [22]. Based on the total scores, level of knowledge was classified as low-level knowledge (less than 60%; <12 points), moderate level knowledge (60-80%; 12-16 points) and high-level knowledge (80-100%; >16 points). The scores were classified as positive attitude (80-100%; >20.8 points), neutral attitude (60%-80%; 15.6-20.8 points) and negative attitude (less than 60%; <15.6 points). Subsequently, level of practice was classified as poor level (less than 60%; <8.4 scores), fair level (60-80%; 8.4-11.2 points) and good level (80-100%; >11.2 points).

Results

The study included a total of 295 healthcare providers, comprising 120 physicians (40.7%) and 175 nurses (59.3%), with a gender distribution of 126 males and 169 females. The

participants' age ranged from 28 to 56 years, with an average of 43 ± 9.87 years (**Table 1**).

Of the total participants, 161 (54.6%) attended training sessions on HIV transmission and prevention, with a higher attendance rate among physicians (87.5%) compared to nurses (32%). Likewise, 117 (39.7%) participants attended sessions on HIV stigma and discrimination, with physicians (62.5%) more likely to attend than nurses (24%) (data not shown).

Knowledge domain:

The majority of respondents identified blood transfusion and sexual contact as modes of transmission of HIV (90.2% and 88.1%, respectively). We report considerable responses that represent misconception of HIV transmission. Our results suggest there are misconceptions about HIV transmission among respondents, as a notable number of incorrect responses were reported (**Figure 1**). Further research is needed to determine the extent and impact of these misconceptions.

Table 2 shows that the knowledge item with the highest percentage of correct responses was 'There is a difference between HIV infection and AIDS' at 88.1%. Of note, the item 'HIV infected person may look in good health' had the highest percentage of correct answers among physicians and the lowest percentage among nurses, with all doctors answering correctly and only 8% of nurses answering correctly.

Attitude domain:

Negative attitude was reported among 87.5% of physicians, and 56% of nurses. Individual items are presented in **figure (2)** and **tables (3&4)**. It should be highlighted that all respondents indicated that they believe all patients should undergo HIV testing before surgical operations, and that all HCWs should also be tested for HIV (**Table 3**). Moreover, all responding physicians expressed concern about performing invasive procedures (such as phlebotomy, suturing wounds and performing operations) on HIV-positive patients (**Table 4**).

Practice domain

Figure 3 presents the participants' responses to practice items. It shows that the majority of survey respondents (90.5%) suggested applying additional IPC measures while providing healthcare services to a person living with HIV positive patient. On the other hand, 62.5% of responding physicians did not advise against

delivering healthcare, including surgical procedures, to an HIV-positive patient.

Table 5 displays the respondents' scores for the three domains. The data indicates a significant difference between physicians and

nurses in all domains. Physicians scored higher in the knowledge domain compared to nurses (mean \pm SD: 10.5 ± 1.67 vs. 9.7 ± 1.79), but not in the attitude domain (mean \pm SD: 14 ± 2.25 vs. 15.4 ± 3.58) or practice domain (mean \pm SD: 7 ± 1.42 vs. 9.04 ± 2.61)

Table 1. Sociodemographic characters of participants (n=295).

	Physicians (n=120)		Nurses (n=175)	
	Frequency	(%)	Frequency	(%)
Age (in years)				
18-30	15	12.5	35	20.0
31-50	75	62.5	112	64.0
> 50	30	25.0	28	16.0
Gender				
Male	105	87.5	21	12.0
Female	15	12.5	154	88.0
Work duration (in years)				
> 1	-	-	14	8.0
1-5	-	-	21	12.0
6-10	30	25.0	21	12.0
> 10	90	75.0	119	68.0

Table 2. Participants' knowledge about HIV prevention.

Items	Correct answers		
	Doctors (n= 120) n (%)	Nurses (n= 175) n (%)	Total (n=295) n (%)
HIV infected person may look in good health (True)	120 (100.0)	14 (8.0)	134 (45.4)
There is an available vaccine for HIV prevention (False)	105 (87.5)	140 (80.0)	255 (86.4)
Using condoms when having sex with an HIV infected partner decreases the risk of transmission (True)	105 (87.5)	126 (72.0)	231 (78.3)
There is a difference between HIV infection and AIDS (True)	120 (100.0)	140 (80.0)	260 (88.1)
It is advised that children with AIDS should not go to the same school with healthy children (False)	75 (62.5)	56 (32.0)	131 (40.5)

AIDS: Autoimmune Deficiency Syndrome, HIV: Human Immunodeficiency Virus

Table 3. Attitude of respondents toward needle-stick injuries and HIV testing.

Items	Doctors (n= 120) n (%)*	Nurses (n= 175) n (%)*	Total (n=295) n (%)*
I can manage a needle stick injury from any patient (HIV positive or not)	105 (87.5)	126 (72.0)	231 (78.3)
I can manage a needle stick injury from an HIV positive patient	105 (87.5)	105 (60.0)	210 (71.1)
I believe it is necessary that all patients to be tested for HIV before undergoing surgical operations	100 (83.3)	175 (100.0)	275 (93.2)
I believe it is necessary that HIV testing should be performed on doctors, nurses, laboratory technicians and support staff in healthcare facilities	120 (100.0)	175 (100.0)	295 (100)

*Number and percentage of "Agree" responses
HIV: Human Immunodeficiency Virus

Table 4. Participants' responses to the prompt: "Would you feel worried in the following instances?"

Items	Doctors (n=120) n (%)	Nurses (n=175) n (%)	Total (n=295) n (%)
Touching the clothes or bed of an HIV-infected person	45 (37.5)	126 (72)	171 (43.4)
Performing wound dressing for an HIV-infected person	105 (87.5)	175 (100)	280 (94.9)
Performing wound dressing for an HIV-infected person while wearing gloves	90 (75)	140 (80)	230 (78)
Performing phlebotomy from a person living with HIV	120 (100)	133 (76)	253 (93.2)
Being exposed to a needle stick injury from an HIV-infected person during phlebotomy	120 (100)	168 (96)	288 (97.6)
Taking vital signs (pulse, blood pressure, or temperature) from an HIV-infected person	15 (12.5)	63 (36)	78 (26.4)
Suturing an incision for an HIV-infected patient	120 (100)	161 (92)	281 (95.3)
Assisting in a surgical operation for an HIV-infected patient	120 (100)	168 (94)	288 (97.6)
Experiencing negative comments from others because of providing healthcare services to an HIV-infected person	15 (12.5)	70 (40)	85 (28.8)
Being avoided by family members, relatives, and friends because of providing healthcare services to an HIV-infected person	15 (12.5)	98 (58)	113 (38)
Being avoided by workmates because of providing healthcare services to an HIV-infected person	15 (12.5)	63 (36)	78 (26.4)

*Number and percentage of "Agree" responses
HIV: Human Immunodeficiency Virus

Table 5. Participants' scores in knowledge, attitude, and practice domains.

	Physicians (n=120) n (%)	Nurses (n=175) n (%)	<i>p</i> value
Knowledge			
Low	70 (58.3)	152 (86.9)	<0.0001
Moderate	45 (37.5)	21 (12)	<0.0001
High	5 (4.2)	2 (1.1)	0.085
Mean ± SD	10.5±1.67	9.7±1.79	0.0001
Attitude			
Negative	105 (87.5)	98 (56)	<0.0001
Neutral	15 (12.5)	49 (28)	0.002
Positive	0	28 (26)	<0.0001
Mean ± SD	14±2.25	15.4±3.58	0.0002
Practice			
Poor	40 (33.3)	35 (20)	0.01
Fair	70 (58.3)	112 (64)	0.323
Good	10 (8.4)	28 (16)	0.056
Mean ± SD	7±1.42	9.04±2.61	<0.0001

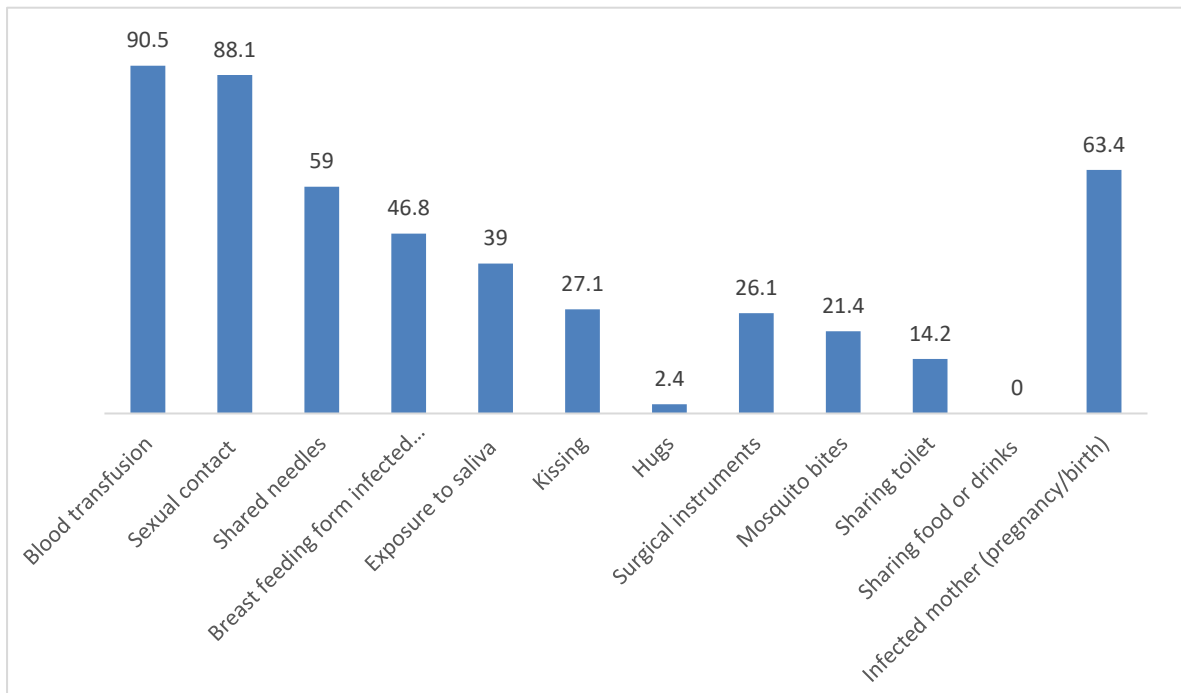
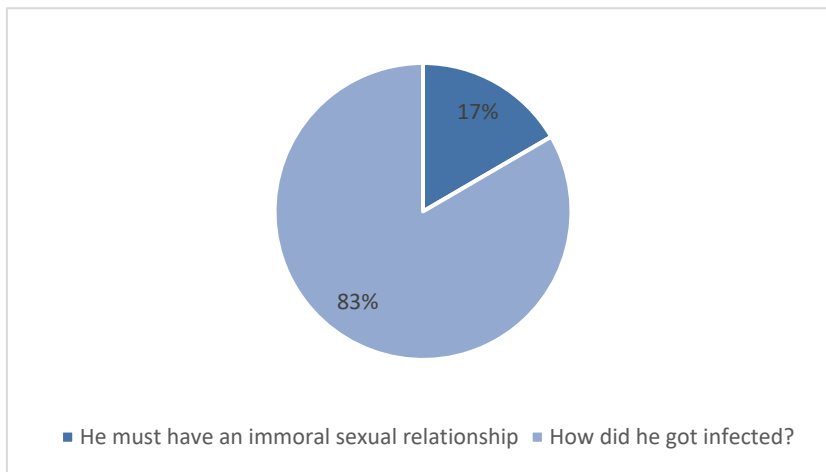
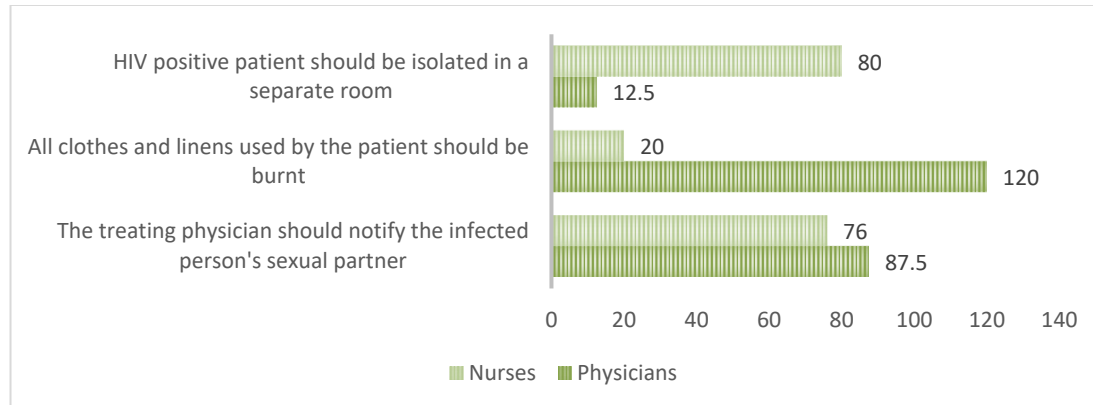
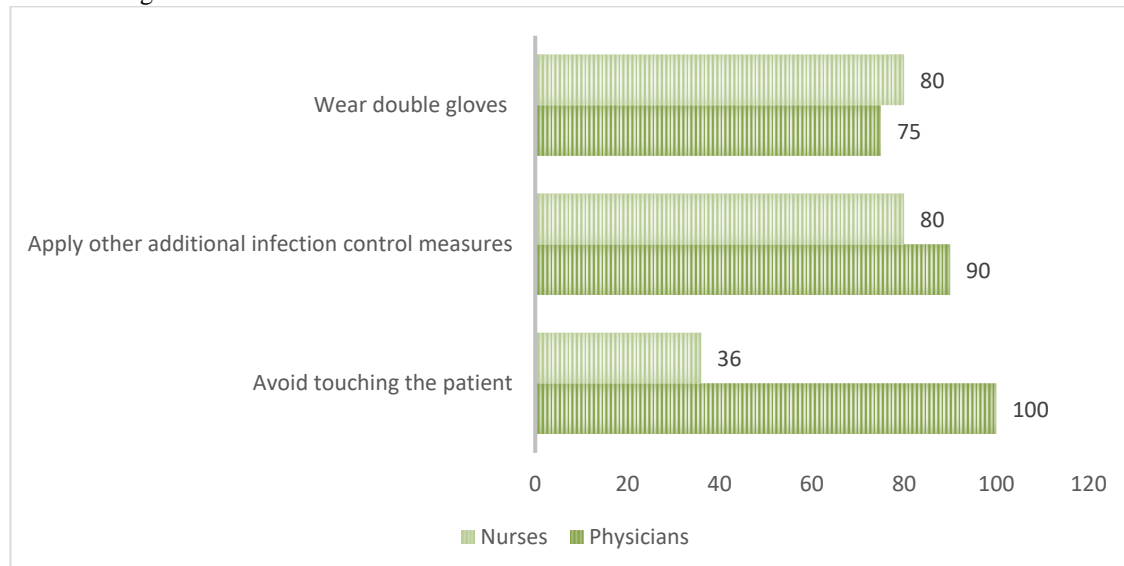
Figure 1. Participants' knowledge about HIV modes of transmission.**Figure 2.** Participants' responses to the prompt: "what comes to your mind when talking to someone with HIV?"

Figure 3. Participants' responses to practice items.

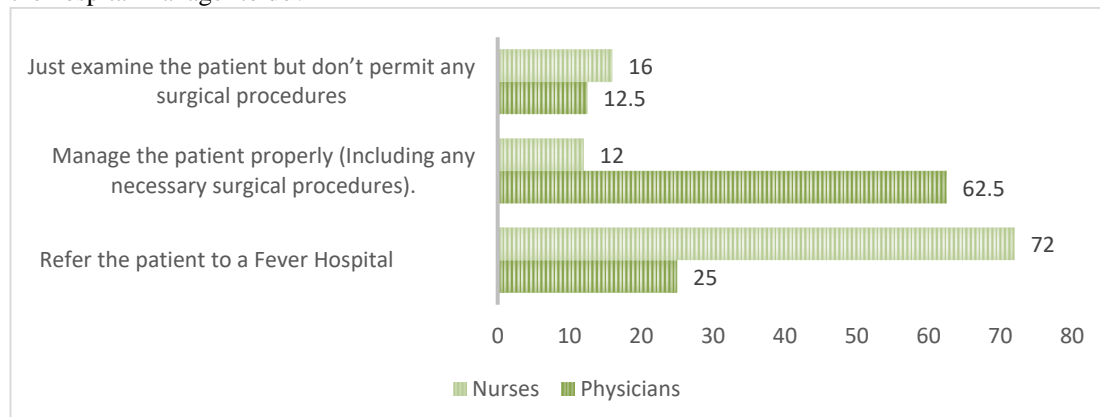
1-When a case of HIV is identified:



2-When providing healthcare services to a person living with an HIV-infected patient, do you perform any of the following actions?



3-An HIV infected patient is admitted at the hospital, and needs a surgical operation: What would you advise the hospital manager to do?



Discussion

In the pursuit of Sustainable Development Goal 3 (SDG3), "Ensure healthy lives and promote well-being for all at all ages", HCWs stand as key

agents of change, responsible for not only promoting health but also advancing equity in healthcare [23].

Our study focused on HCWs who primarily serve a diverse population, predominantly

comprising residents of rural areas, where the role of HCWs gains even greater significance.

We observed significant distinctions between physicians and nurses in their participation in training programs and their performance across the knowledge, attitude, and practice domains. Physicians exhibited a stronger inclination towards attending training sessions and achieved higher scores in the knowledge domain, even though their scores remained unsatisfactory compared to ideal benchmarks. However, it is noteworthy that this disparity in training attendance and knowledge did not consistently translate into more positive attitudes or improved clinical practices among physicians (**Table 5**). This finding aligns with the observations made by **Chambers et al.**, in a qualitative meta summary study conducted in 2015 [24]. Same result was revealed by study in Saudi Arabia conducted in 2022 [25].

The inclination of physicians as compared to nurses towards attending training sessions and their stronger grasp of theoretical knowledge could be attributed to career promotion opportunities or the continuing professional development (CPD) requirements inherent in their profession. Our findings underscore the critical need for refining training programs to strike a balance between knowledge dissemination and the enhancement of attitudes and practices, emphasizing the importance of designing CPD activities that encompass a holistic approach. In a similar study, researchers from Oman [26] found that doctors exhibited significantly higher scores in the three domains compared to other healthcare workers. Their study also observed a notable positive three-way correlation between knowledge, attitude, and practice related to HIV stigma and discrimination among nationals and expatriate HCWs. Other studies concluded that the formations of stigma may be prevented and may not develop by giving adequate and comprehensive training on HIV including stigma to physicians and nurses. [27,28]

Drivers for HIV-related stigma and prejudice often originate from the complex interplay of social, religious, and cultural factors. In our study, participants' responses to the prompt, 'What comes to your mind when encountering a patient with HIV?' revealed that 87% of participants primarily focused on how the patient might have acquired the infection. Additionally, 17% of respondents made assumptions that the patient must have engaged in

immoral sexual behavior. These findings underline the deep-rooted influence of societal beliefs and stereotypes on perceptions of HIV and PLHIV. Comparing our findings with those from countries with similar contextual backgrounds, we found similar patterns and attitudes [14,19,29,30], which suggests that these issues are not isolated but are prevalent in other regions.

The unjustified fear of encountering the infection while providing care for PLHIV or for a person living with an HIV-infected patient is evident in our study. This fear is indicated by the tendency of a significant percentage of nurses (72%) and physicians (25%) to refer patients to fever hospitals. It is also explicitly evident in their belief that extra precautions should be taken when delivering healthcare to PLHIV (**Figure 3**).

Similar findings pertinent to exaggerated or irrational fear were reported in earlier studies in other countries like Jordan [31], Yemen [32], India [33], and China [34].

Moreover, all participants in this study indicated that HIV testing should be performed on all healthcare providers and all patients undergoing surgical procedures (**Table 3**). The practice of routine preoperative testing aligns with the findings of another study conducted in India [33], where healthcare workers also found it agreeable. In a study carried out in Indonesia [35], nurses emphasized the importance of knowing the HIV status of all patients they care for. In contrast, another study in Egypt [10] found that nurses were not in favor of routine HIV testing for all patients. In another study in Jordan, It was shown that it is difficult to integrate HIV testing into health centers in as confidentiality is important [30]

Another ethical concern arose from a study in South Africa [36], where HCWs agreed that such testing could be performed, even without patient consent. In a separate study conducted in Saudi Arabia, 40% expressed a reluctance to work with PLHIV if given the option [37]. These observations raise significant concerns, as they could reflect a lack of understanding of standard precautionary measures, a lack of trust in the IPC policies and practices within their facilities, a potential shortfall in their own compliance with these practices, and a notable knowledge gap regarding the effectiveness of PEP measures. Unfortunately, comparable results were also found in two other studies in Egypt dated back to 2015 [14,38] and 2018 [10]. This indicates

that not enough efforts have been made to overcome these persistent challenges in the Egyptian healthcare system's response to HIV care and prevention. It is also worth noting that the national policy of referring HIV patients to receive care in fever hospitals might play a role in solidifying these concepts.

This discriminative manner of care provision might have a detrimental impact on the overall retention of patients and the effective care and control of the disease as demonstrated in other studies [29,39].

Limitations

This study has limitations that should be considered when interpreting the results and applying them to broader healthcare contexts or diverse populations. Firstly, the potential for non-response bias exists, given the voluntary nature of participation. It is conceivable that those who agreed to participate may already hold strong opinions on the topic, leading to a lack of representation from individuals with varying perspectives. Secondly, the study's reliance on interviews may introduce a potential source of bias, as responses are subject to participants' interpretation and recall. Additionally, the study's focus on tertiary hospitals in Zagazig may limit the generalizability of findings to healthcare settings in other regions or levels of care, considering the demographic distribution of the population served by these hospitals, with a predominant representation from rural areas. Lastly, the study's scope does not delve into the perspectives of PLHIV themselves, which could provide valuable insights into their experiences and needs."

Conclusion

Egypt's commitment to combating HIV is evident through its national HIV control program and improved accessibility to testing and treatment. Nevertheless, the findings of this study indicate that further strides are needed to enhance HCWs' knowledge regarding HIV and eradicate stigmatizing attitudes and behaviors. This is crucial to ensure that PLHIV receive equitable and high-quality care in Egypt's healthcare facilities.

Conflicts of interest: None to be declared.

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