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Original article

Awareness of Nursing Staff in Misurata Public Health Facilities on HIV/AIDS Transmission: A Public Health, Anaesthesia, Healthcare Management and Health Education Concern

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Abstract
Nurses make up by far the largest group of healthcare workers in any part of the world and have an important role to play in the direct management of human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) patients, and consequently face a high risk of infection. This study aimed to assess the awareness about HIV and AIDS among nurses in Misurata, Libya. The study was conducted among 351 nurses working in public hospitals in the Misurata Province, Libya. A validated self-administered questionnaire was used to investigate the nurses' awareness of HIV and AIDS. Out of the participants, 96 (27.4 %) were male and 255 (72.6 %) were female. Most of the participants were above the age of 20 years. The results revealed that the overall level of awareness about HIV/AIDS transmission was low, as only 133 (38%) of the nurses had a good level. The level of awareness was significantly affected by the demographics and work experience of the respondents. Most of the nurses who participated in this study lacked knowledge of HIV. Active educational interventions, such as regular HIV awareness programmes in hospitals, are required to improve knowledge about AIDS. Also, the nursing programme curriculum should be revised and updated in Libya to better prepare nurses to deal with incidences of HIV/AIDS.
Keywords. *Awareness, HIV, AIDS, Nurses, Libya.*

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Introduction

HIV continues to be a major global public health issue, with an estimated 40.8 million people living with HIV in 2024 worldwide. The virus remains a significant challenge due to factors like the large number of people currently infected, the high rate of new infections, the existence of millions not on treatment, and the persistence of stigma and barriers to care in some regions, which prevent the achievement of global elimination goals [1]. Information on persons living with HIV/AIDS in Libya continues to be very limited. However, the number of people living with HIV in Libya remains quite low, with between 7,500 and 9,000 adults and children living with the disease in 2021. The HIV prevalence rate of adults (aged 15– 49) stood at 0.2, while the incidence of HIV in the same age group was 0.1 per 1000 population [2]. The National Center for Disease Control (NCDC) has confirmed that HIV prevalence in Libya remains low, estimating the rate among the general population at just 0.1% to 0.3%. Out of the total 3396 records, 624(18.37%) were tested HIV positive; of which 498(14.66%) were male and 3.71% were females. Most positive samples were linked to the ages of ≥ 40 years. NCDC also reported that by the end of 2024, the total number of confirmed HIV cases reached approximately 8,271, including 369 new cases that year. The center noted that in recent years, sexual transmission has become the most common mode of infection, overtaking drug use and blood transfusion, which were previously the primary sources of transmission [3].

Nurses constitute a large component of healthcare workers and are considered the frontline healthcare providers, and have direct and close contact with patients. The prevalence of HIV among health care workers (HCWs) varies significantly by nation. HCWs are at risk through needle-stick injuries and blood splashes, particularly in settings with poor infection control, inadequate PPE, and insufficient training. It is estimated that a health care worker (HCW) exposed to a needle stick involving HIV-contaminated blood has a 0.23% risk of becoming infected. It is increased to 0.41% if the source patient has AIDS or is symptomatic. Exposure through the mucous membrane carries a risk one

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log lower at 0.09% and that for non-intact skin (abrasion) is even lower. Although the risk is small, every exposure provokes anxiety [4].

HIV awareness is vital for prevention, as it educates people on transmission, safer sex practices, and testing, leading to fewer new infections. It also helps reduce stigma by dispelling myths, fostering empathy, and encouraging early testing and treatment [5]. Thus, this study aimed to evaluate the nurses' awareness regarding HIV/AIDS at public health facilities in Misurata city.

Methodology

Study design, setting, period, and sample size

An observational descriptive cross-sectional study using a self-administered questionnaire regarding awareness toward HIV and AIDS among 351 nurses randomly selected from eight public healthcare facilities (two public hospitals and six district primary healthcare centres) in the province of Misurata from 8 September to 17 November 2024. A total of 402 questionnaires were returned, and out of these, 351 were usable (87.3% response rate).

Measurement tool

Awareness toward HIV and AIDS was measured using an awareness assessment questionnaire, which consists of two parts. The first part included questions to gather data on the socio-demographic characteristics of the study sample. The second part consisted of 12 items/questions covering different aspects of the disease and its transmission. All the items in the questionnaire were framed by offering the participants two possible answers: 'Yes' and 'NO. A score of (1) was given for each correct answer, and a zero (0) mark was given for an incorrect answer.

Ethical considerations

The study protocol was officially approved, and institutional ethical clearance was obtained from the medical directors the hospitals and public health centres involved in the study. Ethical considerations were a crucial principle in data gathering, and the researcher obtained individual consent from each nurse before collecting data for this study. The researcher explained the title and goals of the study to the participants. Written informed consent was also obtained from each of the participating nurses before they completed the questionnaire survey.

Statistical analysis

Descriptive statistics were applied to describe all the categorical variables (frequency distributions and percentages) to evaluate the awareness of nurses regarding HIV. The chi-square test was used to compare different proportions and to test the association between awareness and socio-demographic variables. A p-value of less than 0.05 was considered significant. The Statistical Package for Social Sciences (SPSS) version 20 was used in the data analysis.

Results

Demographic characteristics of the participants

The characteristics of the 351 participants are shown in (Table 1). With respect to gender, 96(27.4 %) and 255 (72.6 %) of the nurses were male and female, respectively. Regarding their education level, 123(35%), 140(40%), and 88 (25%) were short nursing course certificates, diplomas of nursing, and bachelor's degrees of nursing, respectively.

Awareness about HIV and AIDS

(Table 2) shows the responses to awareness items among the participants. Knowledge that HIV can be killed with disinfectants in the environment was reported by 24.5%, indicating some awareness of infection control practices. Also, 67.2% of nurses correctly acknowledged that an HIV-infected person can appear. In addition to that, a large proportion of nurses recognized the main routes of HIV transmission, such as unscreened blood transfusion (89.5%), sexual intercourse with an HIV-infected person (86%), and mother-to-child transmission via breast milk or placenta (71%). Moreover, a substantial proportion held misconceptions, such as believing all pregnant women with HIV will give birth to babies with AIDS (50.7%) or that HIV can be transmitted through sharing utensils and food (60%), mosquito bites (43%), hugging/handshaking (28.5%), and sharing toilets (26%).

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Table 1: Socio-Demographic Variables of Respondents (n=351)

Variable		Frequency (n)	Percentage (%)
Gender	Male	96	(27.4)
	Female	255	(72.6)
Age	15-20 years	38	(10.8)
	21-25 years	120	(34.2)
	26-30 years	74	(21.1)
	>30 years	119	(33.9)
Education level	Nursing course certificate	123	(35)
	Diploma	140	(40)
	Bachelor	88	(25.0)
Work Experience	1-2 years	118	(33.6)
	2-5years	101	(28.8)
	6-10years	51	(14.5)
	>10years	81	(23.1)

Sources of information on HIV and AIDS

The nurses' source of information regarding HIV comes mostly from health professionals (53%), schools (38.7%), television (30.6%), and the internet (27.6%) (Figure 1).

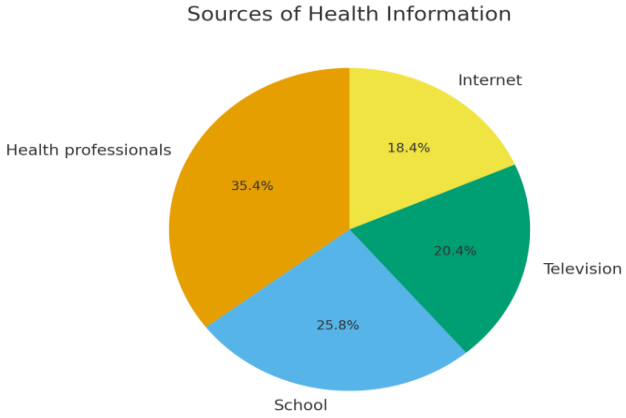

Figure 1: Nurses' source of information regarding HIV/AIDS

Table 2: Responses to awareness items among the participants (n=351)

Awareness Items	Yes (%)	NO (%)
HIV can easily be killed with disinfectant in the environment	86(24.5)	265(75.5)
All pregnant women infected with HIV will have babies born with AIDS	178(50.7)	173(49.2)
An HIV infected person can look healthy	236(67.2)	115(32.7)
It is possible to transmit the virus to family members of an HCW providing care for PLHIV, even though the HCW is not infected	117(33.3)	234(66.6)
The risk of HIV infection and transmission among HCW is high	63(18)	288(82)
Can get HIV from transfusion of unscreened blood and blood products	314(89.5)	37(10.5)
Can get HIV from sexual intercourse with an HIV infected person	303(86)	48(14)
HIV may be transmitted from the mother to the baby via breast milk or the placenta	250(71)	101(29)
Can get HIV from hugging and handshaking with an HIV infected person	100(28.5)	251(71.5)
A person can get HIV from sharing toilets and bathrooms with an HIV infected person	92(26%)	259(74)
A person can get HIV from mosquito bites	150(43)	201(57)
HIV can be transmitted through sharing utensils and food with an infected person	213(60%)	138(40%)

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Awareness levels among the respondents

The results show that awareness levels about HIV among respondents were generally low. Only 38% (n=133) demonstrated a high level of awareness, while the majority, 62% (n=218), had low awareness as shown in (Table 3). The results of further analysis showed that the awareness regarding HIV and AIDS of the participants was not significantly affected by any of the demographic factors, as all obtained p-values were > 0.05 (Table 4).

Table 3: Awareness levels among the respondents (n=351)

Awareness level	N (%)
High	133 (38%)
low	218 (62%)

Table 4: Association between socio-demographic with total awareness levels (n=351)

Variables	*Chi-square (χ2)*	*df*	*P-value*
Age	39.738	27	0.064
Gender	10.911	9	0.282
Educational	33.061	27	0.195
Experience	22.808	27	0.695

Discussion

Nurses are an integral part of any healthcare system. The expansion and strengthening of patient care requires sufficient and well-trained healthcare practitioners. Currently, the need for an effective workforce in healthcare outstrips the supply of trained personnel at all levels of service delivery. The HIV prevalence in HCWs from Africa suggests that doctors and nurses are at least as likely to become infected as other people [6]. However, HIV is an ongoing major health concern in Libya; the current study sought to examine the level of awareness of HIV/AIDS transmission among 351 Libyan nurses. The study is unique due to its large sample, and to our knowledge, it is the first of its kind in Misurata City, Libya.

The findings of this study revealed that awareness levels about HIV among respondents were generally low. Only 38% (n = 133) of participants demonstrated a high level of awareness, while the majority, 62% (n = 218), exhibited low awareness. This finding is consistent with the results of a previous study conducted in Nepal that found evidence of a significant knowledge gap among nurses with respect to HIV [7]. This trend is concerning, as low levels of awareness are strongly associated with misconceptions about modes of HIV transmission, prevention, and treatment adherence. The predominance of low awareness is concerning, as it may contribute to the persistence of misconceptions, risky behaviours, and stigma toward people living with HIV. However, some correct understanding was evident—such as recognition that HIV can be transmitted through unscreened blood transfusion (89.5%), sexual intercourse (86%), and mother-to-child transmission (71%)—serious misconceptions were also prevalent. For example, 50.7% incorrectly believed that all HIV-positive pregnant women would give birth to children with AIDS, and a considerable proportion associated HIV transmission with casual contact (e.g., sharing utensils, mosquito bites, hugging, or toilet use). These misconceptions highlight gaps in training and a reliance on incorrect community myths rather than evidence-based knowledge.

By contrast, findings of a study conducted in Iraq reported overall moderate levels of knowledge, with most participants (80.9%) falling into the moderate category, 17% demonstrating good knowledge, and only 2.1% showing poor knowledge. Importantly, over 90% of participants correctly answered key items related to HIV pathophysiology and transmission routes, such as sexual intercourse, mother-to-child transmission, and needle sharing. However, a notable weakness emerged: only 10.6% correctly recognized condoms as an effective means of HIV prevention, suggesting gaps in practical knowledge regarding preventive strategies [8].

In our study, respondents also showed strong awareness of unscreened blood transfusion (89.5%), sexual intercourse with an HIV-infected person (86%), and mother-to-child transmission (71%). This kind of awareness is consistent with the findings of a study conducted in Egypt, where most respondents demonstrated correct awareness of the main routes of transmission, namely receiving contaminated blood (83.3%), unprotected sexual intercourse with an infected person (80.2%), and sharing needles (81.4%) [9].

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The results of this study indicated that while participants demonstrated a relatively high level of knowledge regarding the primary modes of HIV transmission, several misconceptions persist. A large proportion correctly identified that HIV can be transmitted through transfusion of unscreened blood and blood products (89.5%), sexual intercourse with an infected person (86%), and from mother to child via breast milk or placenta (71%). This finding is consistent with the findings of another study [7]. Moreover, the recognition that an HIV-infected person may appear healthy (67.2%) reflects an important awareness of the asymptomatic phase of the infection, which is critical for prevention efforts. These observations are consistent with WHO and UNAIDS reports, which emphasize that blood transfusion, unprotected sexual intercourse, and mother-to-child transmission remain the major routes of HIV infection globally [10,11].

However, despite this sound knowledge, substantial gaps remain. Misconceptions were evident, with 50.7% believing that all pregnant women with HIV will inevitably give birth to babies with AIDS, 60% reporting that HIV can be transmitted through sharing utensils and food, and 43% attributing transmission to mosquito bites. Additionally, 28.5% believed HIV could spread through hugging or handshaking, while 26% cited shared toilets and bathrooms as sources of infection. Such beliefs directly contradict WHO/UNAIDS evidence, which clearly states that HIV is not spread through casual contact, food sharing, mosquito bites, or environmental exposure [10].

Misunderstandings were also observed regarding occupational risk, as only 18% perceived a high risk of HIV transmission among healthcare workers, and 33.3% incorrectly believed that healthcare workers could transmit HIV to their families without being infected themselves. However, findings of another study revealed that married HCWs were significantly more likely to be HIV-infected than single HCWs [4]. Furthermore, these findings suggest that although biomedical knowledge of HIV transmission is generally strong, persistent myths regarding casual and non-biological routes highlight the need for intensified health education. Addressing these misconceptions is essential, not only to improve preventive behaviours but also to reduce stigma and discrimination toward people living with HIV. As recommended by UNAIDS, integrating accurate information into community-based programs and healthcare worker training is vital to dispel myths and support effective HIV prevention and care strategies [11].

In our study, the knowledge related to infection control was relatively low, with only 24.5% recognizing that HIV can be killed by disinfectants in the environment. In contrast, findings in another study conducted in Ghana showed that a large proportion (71.1%) correctly acknowledged that adherence to antiretroviral therapy (ART) is essential to prevent drug resistance, while 83.2% recognized that HIV-infected individuals can be asymptomatic but remain infectious [12].

An increasing number of surgical patients are now HIV-positive or living with AIDS. Therefore, anaesthetists need to understand the disease and recognize its implications for anaesthetic management. Knowledge of HIV pathophysiology and potential interactions between anaesthetic agents and antiretroviral medications is essential for selecting appropriate anaesthetic techniques. Moreover, the risk of hospital-acquired HIV transmission underscores the importance of strict infection control measures to safeguard healthcare providers, patients, and other staff members [13]. HIV/AIDS in Libya poses significant public health challenges, including added pressure on the healthcare system, difficulties in distributing limited resources, and risks of introducing new viral strains resulting from population movement. Ongoing instability further complicates access to healthcare services and the collection of reliable data. Nonetheless, the conflict has also contributed to greater awareness and increased testing, which may have improved case detection and reduced new infections in certain groups. Effectively addressing this issue requires strengthening health information systems, expanding prevention and treatment programs, and developing targeted interventions for key populations, while carefully managing the interconnected effects of conflict, migration, and health.

Despite the low-quality data, the literature suggests there is an increase in HIV infection rates in Libya. Culturally sensitive research on sexual activities, women, HIV preventative methods, and attitudes of the Libyan public will assist in developing an effective National AIDS Programme, reducing HIV stigma, supporting People Living with HIV (PLHIV), and decreasing infection rates [14].

Conclusion

The findings of this study show an unsatisfactory level of awareness toward HIV/AIDS among frontline healthcare providers and underscore the urgent need for targeted health education interventions aimed at improving knowledge, correcting misinformation, and promoting positive attitudes toward HIV prevention and care. Thus, the

training programmes for nurses should aim at increasing their confidence and skills so that they can cope with HIV issues.

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Disclosure of conflict of interest
The authors declare no conflicts of interest

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