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Website: www.jfcmonline.com
DOI: 10.4103/jfcm.jfcm_136_22

Stigmatization and discrimination against people living with HIV/AIDS: Knowledge, attitudes, and practices of healthcare workers in the primary healthcare centers in Madinah, Saudi Arabia, 2022

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Abstract:

BACKGROUND: There are very few studies in Saudi Arabia on stigmatization and discrimination against people living with HIV/AIDS (PLWHA), a critical step for the prevention and control of HIV. The aim of this study was to assess the level of stigmatization and discrimination against PLWHA by healthcare workers (HCWs) as well as their knowledge, attitude, and practices (KAP).

MATERIALS AND METHODS: This cross-sectional study included 182 HCWs at primary healthcare centers in Medina, Saudi Arabia. The validated short version of the Healthcare Provider HIV/AIDS Stigma Scale and the AIDS Attitude Scale were used in this research. Student's *t*-test and analysis of variance (ANOVA) were used to assess the differences in the mean knowledge, attitudes, and practices KAP scores by various sociodemographic factors. Multiple linear regression analysis was used to determine factors associated with KAP scores.

RESULTS: Most participants were males (58.2%) and aged more than 30 years (60.4%). The tendency to stigmatizing behavior was present in 24.2%–68.17% of the participants, and discriminatory practice was present in 11.5%–50% of the participants. In multiple linear regression analysis, factors that independently predicted the knowledge score were being a doctor compared to nurses ($P < 0.001$), receiving in-service training for PLWHA ($P < 0.001$), and male gender ($P = 0.002$). Attitude was predicted by being female ($P = 0.008$) and a doctor ($P = 0.005$). Practice was predicted by the knowledge score ($P < 0.001$) and being married ($P = 0.035$).

CONCLUSION: This study found that stigmatization and discrimination were less prevalent in HCWs who had good HIV-related knowledge and had received in-service training for PLWHA. The results highlight the significance of continuing education and training opportunities for HCWs to provide effective and appropriate treatment to PLWHA.

Keywords:

AIDS, discrimination, healthcare works, HIV, people living with HIV/AIDS, primary care, stigma

Introduction

Stigmatization and discrimination against HIV-positive persons have long been recognized as the possible barriers to the global efforts of dealing with the HIV/AIDS

pandemic.^[1] HIV stigma is defined as negative attitudes and beliefs about people with HIV. It is the prejudice that comes with labeling an individual as part of a group believed to be socially undesirable. While stigmatization refers to an attitude or belief, discrimination is the behavior that results from those attitudes or beliefs. HIV

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How to cite this article: Alharbi HH, Al-Dubai SA, Almutairi RM, Alharbi MH. Stigmatization and discrimination against people living with HIV/AIDS: Knowledge, attitudes, and practices of healthcare workers in the primary healthcare centers in Madinah, Saudi Arabia, 2022. *J Fam Community Med* 2022;29:230-7.

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Received: 05-04-2022

Revised: 20-05-2022

Accepted: 28-05-2022

Published: 07-09-2022

discrimination is the act of treating people living with HIV differently than those without HIV.^[2]

Cultural norms about sexual risk and beliefs about HIV influence the attitudes and practices of healthcare workers (HCWs) toward people living with HIV/AIDS (PLWHA).^[3] Several studies have tried to examine the scope of the problem; some HCWs view HIV-positive persons as reckless and embarrassing.^[3-5] Providers view PLWHA as a threat to themselves and society and try to avoid treating them.^[4] Even though many healthcare professionals are aware of successful therapies, others still see HIV infection as a death sentence. As a result, some doctors claim that assisting AIDS patients is a waste of time and resources.^[4]

Many HCWs are concerned about HIV transmission through casual contact, and therefore, many HIV/AIDS patients face stigmatization and discrimination.^[4] According to one study, health practitioners' knowledge of HIV/AIDS transmission contributed to their reported discomfort when dealing with PLWHA.^[4] Lack of knowledge and training also contribute to stigmatization and discrimination.^[5] Furthermore, lower levels of stigmatization were linked to good job experience and past encounters with PLWHA.^[6] Greater discriminatory behavior acts were present when treating PLWHA open wounds or when there is contact with body fluids.^[7,8] Because there is not much research on stigma and discrimination against PLWHA in Saudi healthcare personnel,^[9] it is critical to understand this phenomenon. HIV-positive persons are not accepted in Saudi society.^[10] The hypothesis is that there is a high prevalence of stigmatization and discrimination against HIV-positive people by primary HCWs in Medina since few studies have been published on this issue in Saudi Arabia.^[11] Despite the progress made in public health and preventive medicine to reduce the spread of HIV, factors that hinder or limit patients' access to HIV services remain undetermined. Understanding these factors is of primary importance and should be the first step to confronting HIV/AIDS and creating a nonstigmatizing and nondiscriminatory environment, particularly in healthcare settings.^[5]

The purpose of the study was to assess the level of stigma and discrimination against PLWHA among HCWs and identify factors associated with knowledge, attitude, and practice (KAP).

Materials and Methods

This study used an analytical cross-sectional design approach to target HCWs in the primary healthcare centers (PHCs) in Madinah, Saudi Arabia. A total of 39 PHCs were approached from December 2021 to

March 2022. Ethical approval was obtained from the Institutional Review Board vide Letter No. 193-2021 dated 16/12/2021, and informed written consent was taken from all participants in the study. An informative letter explaining the objectives of the study and asking for consent was attached to the questionnaire.

Primary HCWs (doctors, nurses, pharmacists, and lab technicians) were eligible if they had at least 1-year work experience and provided consent for participation. Estimated sample size was chosen based on previous literature^[12,13] as follows: " $n = Z^2pq/d^2$, Cochran equation, where n: calculated sample size; Z: the z-value for the selected level of confidence $(1-\alpha) = 1.96$; P: estimated prevalence of stigmatizing behavior in HCWs = 65%, i.e., 0.65; q: $(1-P) = 35%$, i.e., 0.35; and D: the maximum acceptable error = 0.07." The calculated minimum sample size was, therefore, 179, with an additional 10% to compensate for nonresponse. In total, 200 participants were initially included in this research. However, after data clearance and the exclusion of incomplete questionnaires and nonresponse, a total of 182 participants were analyzed. The study instrument is self-administered in English language, made available in multimodal methods, as online surveys and printed paper versions, and distributed to busy clinics. It consisted of two major parts, the first of which was the sociodemographic, designed to elicit such demographics of the participants as age, gender, employment, job experience, training on HIV/AIDS, and previous encounters with PLWHA. The second part contained three major sections of KAP sections. This valid reliable instrument was constructed from the literature reviews.^[6,14,15] Both relevant contents and constructs were validated by preventive medicine experts. The short version of the Healthcare Provider HIV/AIDS Stigma Scale and the AIDS Attitude Scale are used commonly by the United Nations Organization's AIDS program mainly in the developing world.^[16]

The knowledge section consists of 13 items relating to HIV knowledge and is meant to assess respondents' awareness of disease transmission and prevention. The minimum score was 0 if all items were answered incorrectly, and the maximum score was 13, if all items were answered correctly. Items were marked using "True/False/Do not know." Responses of False or "I don't know" were marked as "False." The median was used as cutoff point.

The attitude section contained 13 items that used "Yes" or "No" responses to assess attitudes and beliefs on HIV infection and PLWHA. Positive attitude comments were classified with "Yes," and negative attitude statements were coded with "No." The median was used as a cutoff point. Stigmatizing behaviors were determined

from responses in the attitude domain. In the practice domain, measured on an 8-item scale of “Yes,” “No,” and “Not applicable,” “Yes” was used to code good practice statements in dealing with PLWHA, and “No” to code bad practice statements. The median was used as a cutoff point. Discriminatory acts were determined from the practice domain responses that displayed poor and good practice acts of HCWs toward PLWHA.

Statistical analysis was carried out using the Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL, USA), version 22. Descriptive statistics were obtained by frequencies and percentages for all categorical variables, while mean was used to describe scale variables. The dependent variables: KAP scores were checked for normality using Shapiro–Wilk and Kolmogorov–Smirnov tests. The median was used to determine the cutoff points for total score KAP (10, 9, and 6, respectively). *t*-tests and ANOVA were used to measure the association between the sociodemographic factors and the total scores of KAP. The variables that were significant in the bivariate analysis were included in the multivariate analyses. The “entre” approach was used to conduct multiple linear regression. The variance inflation factor and tolerance were used to check multicollinearity between the independent variables in the models. $P < 0.05$ was considered statistically significant.

Results

A total of 182 primary HCWs completed the questionnaires. The majority were males (58.2%), married (73.1%), and aged more than 30 years (60.4%). The mean (standard deviation [SD]) age was 34.4 (7.6) years, with ages ranging from 21 to 60 years [Table 1]. Most of the respondents were doctors (65.4%) and had more than 5 years of work experience (55.5%). Less than half (46.2%) had had training on HIV/AIDS and 62 (34.1%) claimed they had experience in working with PLWHA.

The mean (SD) total knowledge score was 10.7 (2.3), with a minimum score of 5 and maximum score of 13 and median score of 10. The total number of participants who were knowledgeable about HIV/AIDS was 114 (62.6%), and those who were not knowledgeable were 68 (37.4%).

About 116 participants (63.7%) believed incorrectly that after an accidental needlestick injury at work, the chance of contracting HIV was considerably high. One hundred and five participants (57.7%) incorrectly believed that HIV was difficult to eradicate by using a disinfectant in the environment. Moreover, 50 participants (27.5%) did not know that “HIV could be passed from mother to infant through the placenta or breast milk.” Similarly, 44 participants (24.2%) incorrectly believed that

Table 1: Sociodemographics and work-related characteristics of the healthcare workers at the PHCs in Medinah

Variables	N (%)
Gender	
Male	106 (58.2)
Female	76 (41.8)
Age	
≤30	72 (39.6)
>30	110 (60.4)
Marital status	
Married	133 (73.1)
Not married	49 (26.9)
Nationality	
Saudi	148 (81.3)
Non-Saudi	34 (18.7)
Professions	
Doctors	119 (65.4)
Nurses	45 (24.7)
Others	18 (9.9)
Type of employment	
Governmental	156 (85.7)
Private	26 (14.3)
Experience providing care to PLWHA	
Yes	62 (34.1)
No	120 (65.9)
Received in-service-training to PLWHA	
Yes	84 (46.2)
No	98 (53.8)
Working experience (years)	
>5	101 (55.5)
≤5	81 (44.5)

PLWHA=People living with HIV/AIDS

“HIV-positive pregnant mothers will give birth to AIDS-infected children” [Table 2].

Regarding attitude and stigma, the mean (SD) total attitude score was 9.0 (2.0), with a range of 3–13 and a median score of 9. Participants who showed a positive attitude were 82 (45.1%), and those whose attitude was negative were 100 (54.9%). Table 2 shows that the majority (68.1%) of participants believed that people got infected with HIV because they engaged in irresponsible behaviors. About 53.3% thought that most people with HIV/AIDS only had themselves to blame, which indicates a negative attitude toward PLWHA and shows a tendency to stigmatizing behavior. The tendency to stigmatize was also apparent in 76 participants (42%) who would not purchase food from a vendor diagnosed with HIV/AIDS. Furthermore, 68 participants (37.4%) believed that most PLWHA did not care if they infected others. Moreover, 44 participants (24.2%) believed that HIV-positive children should not attend school with HIV-negative children [Table 2].

Regarding practice and discrimination, the mean (SD) total practice score was 6.4 (1.3), with a minimum

Table 2: Description of knowledge, attitude, and practice of healthcare workers at PHC centers in Medinah regarding HIV/AIDS

Knowledge domain questions	Correct answers N (%)	Incorrect answers N (%)
HIV can easily be killed with disinfectants in the environment	77 (42.3)	105 (57.7)
All pregnant women infected with HIV will have babies born with AIDS	138 (75.8)	44 (24.2)
An HIV-infected person can look healthy	167 (91.8)	15 (8.2)
There is a high risk of transmitting HIV to family members of a healthcare worker who provides care to patients with HIV, even though the HCW is not infected	130 (71.4)	52 (28.6)
The risk of infection with HIV is high after an accidental needlestick injury at the workplace	66 (36.3)	116 (63.7)
A person can get HIV from transfusion of unscreened blood and blood products	165 (90.7)	17 (9.3)
A person can get HIV from sexual intercourse with an HIV-infected person	162 (89.0)	20 (11.0)
HIV can be transmitted from the mother to the baby through breast milk or the placenta	132 (72.5)	50 (27.5)
A person can get HIV from hugging and handshaking with an HIV-infected person	160 (87.9)	22 (12.1)
A person can get HIV from sharing toilets and bathrooms with an HIV-infected person	130 (71.4)	52 (28.6)
A person can get HIV from mosquito bites	138 (75.8)	44 (24.2)
HIV can be transmitted through sharing utensils and food with an infected person	147 (80.8)	35 (19.2)
The risk of HIV transmission can be reduced by having sex with only one uninfected partner who has no other partners	151 (83.0)	31 (17.0)
Attitude domain questions	Positive attitude N (%)	Negative attitude N (%)
Most people with HIV/AIDS only have themselves to blame	85 (46.7)	97 (53.3)
When admitted to the hospital, HIV-positive patients should not be put in rooms with other patients	109 (59.9)	73 (40.1)
Patients with HIV/AIDS have the right to the same quality of care as any other patient	172 (94.5)	10 (5.5)
Most PLWHA do not care if they infect others	114 (62.6)	68 (37.4)
People get infected with HIV because they engage in irresponsible behaviors	58 (31.9)	124 (68.1)
Women living with HIV should be allowed to have children if they wish	144 (79.1)	38 (20.9)
You will encourage people to get tested and counseled for HIV/AIDS if needed	171 (94.0)	11 (6.0)
If I know that my friend has an HIV infection, I will end the relationship	161 (88.5)	21 (11.5)
Would you mind buying food items from a food seller who has been diagnosed with HIV?	106 (58.2)	76 (41.8)
You will refer people for voluntary counseling and testing, even if these services are not available at your workplace	158 (86.8)	24 (13.2)
I believe that sex workers, youths, and other key population groups are responsible for spreading HIV	135 (74.2)	47 (25.8)
Health facilities should not refuse to care for a patient just because they are HIV positive	168 (92.3)	14 (7.7)
Do you think that children living with HIV should be able to attend school with children who are HIV negative?	138 (75.8)	44 (24.2)
Practice domain questions	Good level of practice N (%)	Poor level of practice N (%)
Will you treat a patient who is HIV positive?	161 (88.5)	21 (11.5)
It's quite likely that I'll catch HIV while working through clinical practice	91 (50.0)	91 (50.0)
You always practice universal blood and body fluid precautions at your workplace	152 (83.5)	30 (16.5)
Gloves and gowns are required for any contact with patients with HIV/AIDS	121 (66.5)	61 (33.5)
Double gloving is only recommended during some exposure-prone procedures such as orthopedic operations, gynecological operations, or when attending major trauma incident patients	138 (75.8)	44 (24.5)
You will treat blood spills on floors or other surfaces with a disinfectant before cleaning up	148 (81.3)	34 (18.7)
To prevent accidental injury, all used needles should be recapped immediately after use on patients with HIV/AIDS	76 (41.8)	106 (58.2)
You're familiar with PEP and willing to use it at work	143 (78.6)	39 (21.4)

PEP=Postexposure prophylaxis, PLWHA=People living with HIV/AIDS

score of 2 and maximum score of 9 and median score of 6. A good level of practice was shown in 100 participants (54.9%). Discriminatory practice was present in 106 participants (58.2%) who incorrectly believed that to prevent accidental injury, all used needles should be recapped immediately after use on patients with HIV/AIDS. Half of the participants (50%) thought that they would eventually catch HIV while

working in clinical practice [Table 2]. In addition, 33.5% of the participants exhibited discriminatory behavior by emphasizing that any contact with HIV/AIDS patients required the use of gloves and gowns. Twenty-one participants (11.5%) were not willing to treat an HIV-positive patient. The majority of HCWs (94.5%) agreed with the statement: "PLWHA have the same rights and quality of care as all patients" and 92.3%

Table 3: Differences in the knowledge, attitude, and practice mean scores of healthcare workers at PHC centers in Medinah by sociodemographic and work related characteristics

Characteristics	Knowledge score		Attitude score		Practice score	
	Mean±SD	P-value	Mean±SD	P-value	Mean±SD	P-value
Gender						
Male	11.2±2.2	0.005*	9.35±1.7	0.01*	6.46±1.3	0.701
Female	10.2±2.4		8.53±2.2		6.40±1.4	
Age						
>30	10.9±2.4	0.196	8.97±2.0	0.083	6.5±1.2	0.080
≤30	10.5±2.3		9.06±1.9		6.2±1.5	
Marital status						
Married	11.0±2.2	0.069	8.97±2.0	0.698	6.6±1.2	0.010*
Unmarried	10.2±2.6		9.10±2.0		6.0±1.6	
Nationality						
Saudi	10.7±2.3	0.942	8.93±2.0	0.270	6.35±1.4	0.040*
Non-Saudi	10.8±2.5		9.35±1.8		6.82±1.1	
Professions						
Doctors	11.5±2.0	<0.001*	9.3±1.7	0.021*	6.5±1.2	0.097
Nurses	9.4±2.5		8.6±2.4		6.2±1.6	
Others	9.1±2.0		7.9±2.2		5.9±1.2	
Current position						
Governmental	11.0±2.2	0.021*	9.05±2.0	0.045*	6.53±1.2	0.078
Private	9.5±2.8		8.73±2.1		5.88±1.7	
Experience providing care to PLWHA						
Yes	10.9±2.4	0.570	9.23±2.0	0.294	6.5±1.4	0.370
No	10.7±2.3		8.89±2.0		6.3±1.2	
Received in-service-training to PLWHA						
Yes	11.3±2.1	0.006*	9.2±1.8	0.153	6.6±1.3	0.038*
no	10.3±2.5		8.8±2.1		6.2±1.4	
Working experience (years)						
>5	11.0±2.5	0.205	9.06±2.0	0.690	6.5±1.3	0.407
≤5	10.5±2.2		8.94±1.9		6.3±1.4	

*Significant. SD=Standard deviation, PLWHA=People living with HIV/AIDS

agreed with the statement: "Healthcare facilities should not refuse to treat PLWHA."

Factors relating to sociodemographic and KAP in the bivariate analysis are shown in Table 3. The total knowledge score was significantly higher in males (11.2 ± 2.2) than females (10.2 ± 2.4) ($P = 0.005$). There was an association between knowledge score and occupations ($P < 0.001$); on *post hoc*, doctors (11.5 ± 2.0) scored higher on knowledge than nurses (9.4 ± 2.5) ($P < 0.001$) and others (9.1 ± 2.0) ($P < 0.001$). HCWs in the governmental sector had significantly higher knowledge (11 ± 2.2) than those who worked in the private sector (9.5 ± 2.5) ($P = 0.021$). HCWs who had had in-service training had significantly higher knowledge (11.3 ± 2.1) than those who had not (10.3 ± 2.5) ($P = 0.006$).

Regarding attitude, the total score was significantly higher in males (9.35 ± 1.7) compared to females (8.53 ± 2.2) ($P = 0.010$). There was a significant association between attitude score and professions ($P = 0.008$); on *post hoc*, doctors (6.5 ± 1.2)

scored higher than nurses (5.9 ± 1.2) ($P < 0.001$). HCWs in the governmental sector had significantly higher attitudes (9.05 ± 2.0) than those in the private sector (8.73 ± 2.1) ($P = 0.045$).

Furthermore, there was a significant positive correlation between knowledge and attitude ($r = 0.511$) ($P = 0.010$).

In addition, married subjects scored higher (6.6 ± 1.2) in practice compared to the unmarried (6 ± 1.6) ($P = 0.010$). The practice score was significantly higher in non-Saudis (6.8 ± 1.1) compared to Saudis (6.35 ± 1.4) ($P = 0.040$). HCWs who had had in-service training on PLWHA scored significantly higher in practice (6.6 ± 1.4) than those who had not received any training (6.2 ± 1.3) ($P = 0.038$). Moreover, there was a significant correlation between knowledge and practice scores ($r = 0.247$) ($P < 0.001$).

In multiple linear regression analysis [Table 4], factors that independently predicted knowledge score were as follows: being a doctor compared to nurses ($P < 0.001$),

Table 4: Linear regression analysis models: Predictors of knowledge, attitude, and practice scores of healthcare workers at PHC centers in Medinah

Variables	Beta coefficient	95% CI for Beta	P-value
Knowledge as dependent variable			
Doctors	2.2	1.57–2.83	<0.001
Nurses (reference)			
In-service training	1.0	0.46–1.66	0.001
Male	0.94	0.33–1.55	0.002
Female (reference)			
Attitude as dependent variable			
Doctors	0.87	0.27–1.47	0.005
Nurses (reference)			
Female	0.80	0.20–1.37	0.008
Male (reference)			
Practice as dependent variable			
Knowledge	0.13	0.04–0.21	0.002
Married	0.47	0.03–0.90	0.035
Unmarried (reference)			

CI=Confidence interval

in-service training on PLWHA ($P < 0.001$), and male gender ($P = 0.002$). This model explained 27% of the variability of knowledge. Attitude was predicted by being female ($P = 0.008$) and being a doctor ($P = 0.005$). The model explained 26% of the variability of attitude. Practice was predicted by knowledge score ($P < 0.001$) and being married ($P = 0.035$). This model explained 11% of the variability of practice. Total models were significant, and there were no multicollinearities ($P < 0.050$).

Discussion

The purpose of this study was to assess the level of stigmatization and discrimination against PLWHA by HCWs.

In this study, 68 participants (37.4%) of the healthcare employees were not knowledgeable in HIV-related topics. Doctors, men, and those who had had training scored higher in knowledge in this sample. The differences in knowledge may be due to experience or training.

With respect to professions, doctors' average knowledge score exceeded that of nurses and others. Furthermore, HCWs who had had in-service training to care for HIV patients had considerably higher scores in knowledge than those who had not. It was found that the lack of training was an important contributing factor to stigmatization and discrimination.^[5,17]

Many HCWs (57.7%) believed that HIV was difficult to remove with a disinfectant in the environment. A similar study supports this assumption.^[18] Another statement that was answered incorrectly was: "a person can be infected with HIV from the transfusion of un-screened blood and blood products." Even though HCWs have a low overall risk of HIV infection and transmission, about 41.8% of the respondents underestimated their risks in this study. Compared to the transmission of viruses like hepatitis B, evidence of occupationally acquired HIV infection is low. According to some studies,^[18,19] lower levels of stigmatization were linked to less job experience, past interaction with PLWHA, and having received HIV-related training.

This study found that there was a significant positive correlation between KAP scores. That means the more HIV/AIDS information a healthcare provider has, the more favorable and positive their attitude and hence less stigmatizing behavior toward PLWHA. This result is in line with the research conducted in Saudi Arabia,^[11] which concluded that poor knowledge of a HCW regarding HIV transmission mode results in poor attitude and practice, creating a need for further training and education. Another study found that knowledge about AIDS had the strongest relative influence in stigma and discrimination. That is, the more knowledgeable the respondents were, the greater their tolerance.^[14]

The majority of HCWs agreed with the statements: "PLWHA have the same rights and quality of care as all patients" and "Healthcare facilities should not refuse to treat PLWHA." These findings are consistent with previous research.^[20] This was encouraging since Saudi Arabian policy forbids healthcare practitioners from refusing to treat HIV patients. In fact, refusing to provide care to HIV-positive individuals is against the law.^[21]

Moreover, half of those surveyed believed "that persons become infected with HIV as a result of irresponsible behavior." About 74.2% felt that HIV was transmitted by sex workers, the youth, and other population groups. Respondents in this survey were perhaps overestimating the risk of infection at the workplace, as they mistakenly assumed that "an injury caused by an HIV-infected needle would almost surely lead to infection." Despite the fact that the overall risk of acquiring HIV infection from a needle stick injury with an HIV-contaminated needle is as low as 0.3%.^[22]

It has long been known that the society in Saudi Arabia faces a significant struggle in tolerating the few PLWHA. This may be due to the conservative Islamic society in which there are hardly any open discussions about sex. As a result, everyone infected with HIV/AIDS is thought

to have contracted the disease as a result of sexual misconduct, which is censured by this community.^[9,23]

Receiving in-service training was a predictive factor for higher score in the knowledge domain ($P = 006$). A HCW with good knowledge is likely to have had training for HIV. On the other hand, there is a widespread misperception among untrained people that having HIV is frequently linked to immoral sexual conduct. A viewpoint supported by data from studies done in the Middle East and Africa.^[4,8,24]

The widespread idea is that HIV is mainly transmitted by sexual activity or by needle sharing with infected persons. Accordingly, PLWHA are very likely to be stigmatized. Around 45% of health workers have harsh judgmental attitudes and blame PLWHA for their problem.

Females demonstrated a more positive attitude toward PLWHA than males in multivariate analysis ($P = 0.008$). The reason for this may be because women tend to be caring, and more capable of empathy toward others.

Stigmatizing behavior and discriminatory acts might be due to the low incidence of the disease in Saudi Arabia, where there are 1.5 newly confirmed HIV infections per 100,000/year in nationals compared to 1.2/10,000 in non-Saudis. However, anti-discrimination awareness initiatives and campaigns are now being proposed in Saudi Arabia.^[25]

Furthermore, a public relations effort has been launched in Saudi Arabia: the “Zero New Infections, Zero Deaths and Zero Stigma and Discrimination.”^[25]

This study has been one of the first attempts to assess the level of stigmatization and discrimination against PLWHA among primary HCWs in Medina. These findings highlight the potential usefulness of ongoing training and educational prospects for primary HCWs. A limitation of this study is that it was conducted in one city in Saudi Arabia, which may limit its generalizability to cover entire Saudi Arabia. Moreover, a pilot study needs to be done.

Although this study focuses on HCWs, it would be interesting to assess the prejudice encountered by patients. Further studies need to be carried out at all levels of healthcare settings.

Conclusion

This study found that being a doctor, male gender, and in-service training were predictors for the knowledge score. Female gender and being a doctor were predictors for attitude. Knowledgeable and married participants

were predictors for practice. Stigma was presented in 24.2%–68.17% of the participants. Discriminatory practice act was presented in 11.5%–50%. The findings will be of interest to leaders in the Ministry of Health. It highlights the potential usefulness of ongoing training programs and empowerment of this vulnerable group for their rights to cure in a nonstigmatizing and nondiscriminatory environment.

Acknowledgment

We would like to express our sincere gratitude to Dr. Zailatul H.M. Yadzir in the Department of Disease Control Division, sector of HIV/STI/HepC, Ministry of Health, for his valuable and constructive suggestion during the planning and development of the instruments in the tables of this research paper.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Joint United Nations Programme on HIV/AIDS. Report on the Global AIDS Epidemic. Geneva: Joint United Nations Programme on HIV/AIDS; 2008. Available from: https://www.unaids.org/en/resources/documents/2008/20081107_jc1510_2008globalreport_en.pdf. [Last accessed on 2022 Mar 31].
2. Centers for Disease Control and Prevention. HIV Stigma and Discrimination. Available from: <https://www.cdc.gov/hiv/basics/hiv-stigma/index.html>. [Last accessed on 2022 Mar 31].
3. Bonda V, Chaseb E, Aggleton P. Stigma, HIV/AIDS and prevention of mother-to-child transmission in Zambia. *Eval Program Plann* 2002;25:347-56.
4. Banteyerga H, Kidanu A, Abebe F, Alemayehu M, Fiseha B, Asazeneu A, *et al.* Perceived stigmatization and discrimination by health care providers toward persons with HIV/AIDS. *IntraHealth* 2005;88, 44-50.
5. Feyissa GT, Abebe L, Girma E, Woldie M. Stigma and discrimination against people living with HIV by healthcare providers, Southwest Ethiopia. *BMC Public Health* 2012;12:522.
6. Tavakoli F, Karamouzian M, Rafiei-Rad AA, Iranpour A, Farrokhnia M, Noroozi M, *et al.* HIV-related stigma among healthcare providers in different healthcare settings: A cross-sectional study in Kerman, Iran. *Int J Health Policy Manag* 2020;9:163-9.
7. Zarei N, Joulaei H, Darabi E, Fararouei M. Stigmatized attitude of healthcare providers: A barrier for delivering health services to HIV positive patients. *Int J Community Based Nurs Midwifery* 2015;3:292-300.
8. Visser MJ, Makin JD, Vandormael A, Sikkema KJ, Forsyth BW. HIV/AIDS stigma in a South African community. *AIDS Care* 2009;21:197-206.
9. Abdelmoneim I, Khan MY, Daffalla A, Al-Ghamdi S, Al-Gamal M. Knowledge and attitudes towards AIDS among Saudi and non-Saudi bus drivers. *East Mediterr Health J* 2002;8:716-24.
10. Kim JY. HIV/AIDS in the Eastern Mediterranean: A false immunity? *East Mediterr Health J* 2002;8:684-8.
11. Memish ZA, Filemban SM, Bamgboye A, Al Hakeem RF, Elrashied SM, Al-Tawfiq JA. Knowledge and attitudes of doctors

- toward people living With HIV/AIDS in Saudi Arabia. *J Acquir Immune Defic Syndr* 2015;69:61-7.
12. Dahiru T, Aliyu A, Kene TS. Statistics in medical research: Misuse of sampling and sample size determination. *Ann Afr Med* 2006;5:158-61.
 13. Pourhoseingholi MA, Vahedi M, Rahimzadeh M. Sample size calculation in medical studies. *Gastroenterol Hepatol Bed Bench* 2013;6:14-7.
 14. Badahdah A, Sayem N, Foote CE. Development of a Yemeni AIDS stigma scale. *AIDS Care* 2009;21:754-9.
 15. Sannathimmappa M, Nambiar V. HIV/AIDS and its prevention: A cross-sectional study to evaluate knowledge, awareness, and attitude among medical students. *Int J Med Res Health Sci* 2019;8:110-6.
 16. Joint United Nations Programme on HIV/AIDS. Report on the Global AIDS Epidemic. Geneva: Joint United Nations Programme on HIV/AIDS; 2010. Available form: https://www.unaids.org/globalreport/Global_report.htm. [Last accessed on 2022 Apr 02].
 17. Famoroti TO, Fernandes L, Chima SC. Stigmatization of People Living with HIV/AIDS by Healthcare Workers at a Tertiary Hospital in KwaZulu-Natal, South Africa: A Cross-Sectional Descriptive Study. *Human Rights and Medical Law Conference*; 2013. Available from: <http://www.biomedcentral.com/1472-6939/14/S1/S6>. [Last accessed on 2022 Mar 30].
 18. Hani Z, Yadzir M, Ramly M, Suleiman A. HIV-related knowledge, attitude and practice among healthcare workers in governmental healthcare facilities in Malaysia. *Prim Heal Care* 2021;11:372.
 19. Lanka S, Gunathilake M, Manathunge A. Stigma among Healthcare Workers against People Living with HIV in Sri Lanka; 2013. p. 39-40.
 20. Nyblade L, MacQuarrie K, Phillip F, Kwesigabo G, Mbwambo J, Ndega J, *et al.* Measuring HIV Stigma: Results of a Field Test in Tanzania. Available form: <https://www.icrw.org/wp-content/uploads/2016/10/Working-Report-Measuring-HIV-Stigma-Results-of-a-Field-Test-in-Tanzania.pdf>. [Last accessed on 2022 Feb 21].
 21. Ministry of Health. Riyadh: Implementing Regulations of the Acquired Immunodeficiency Syndrome (AIDS) Prevention Law Regulation. Available from: <https://www.moh.gov.sa/en/Ministry/Rules/Documents/Implementing-Regulations-of-Aids-Prevention-Law.pdf>. [Last accessed on 2022 Mar 31].
 22. Al-salihiy SR, Enad OM. Knowledge and attitude of health care workers in Baquba Teaching Hospital toward HIV/AIDS infection. *Iraqi J Public Heal* 2017;1:42-6.
 23. Badahdah A. Saudi attitudes towards people living with HIV/AIDS. *Int J STD AIDS* 2005;16:837-8.
 24. Monjok E, Smesny A, Essien EJ. HIV/AIDS-related stigma and discrimination in Nigeria: Review of research studies and future directions for prevention strategies. *Afr J Reprod Health* 2009;13:21-35.
 25. UNAIDS. Geneva: Global Aids Response Progress Report Country Progress Report 2015. Kingdom of Saudi Arabia Ministry of Health. Available form: https://www.unaids.org/sites/default/files/country/documents/SAU_narrative_report_2015.pdf. [Last accessed on 2022 Mar 31].