

# Assessment of knowledge, attitude and practice of health care workers towards Hepatitis B in Kabul, Afghanistan

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## Research Article

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# Abstract

**Background:** Hepatitis B virus (HBV) infection is a major public health problem worldwide. Health care workers are at high risk of obtaining HBV infection due to direct interaction with HBV-infected blood and body fluids in their workplace.

**Objective:** The purpose of this research was to assess KAP of Health care workers towards Hepatitis B infection in Kabul.

**Methods:** this cross-sectional study was conducted between November, 2018 and January; 2019 among 502 health care workers using simple random sampling method. The tool for data collection was a self-administered structured questionnaire. The collected data were analyzed using SPSS 16.00.

**Results:** The overall knowledge, attitude and practice score of HCWs were 86.58%, 34.73% and 61.22% respectively. Most of participants correctly identified HBV transmissions. Health care workers with higher education level, showed good knowledge than those with low educational level ( $p < 0.0001$ ). The majority of the participants had a poor attitude towards HBV prevention (53.98%). only 77.45% of participants had been screened for HBV and 56.37% of participants had been vaccinated against HBV, only 5.17% had completed three doses of vaccine.

**Conclusion:** The finding of our study shows that health care workers in Kabul, are at higher risk of acquiring HBV infection due to low vaccination coverage and poor preventive practice. We recommend that free and compulsory vaccination, awareness and encouraging programs should be provided for all health care workers in order to increase favorable attitude and effective preventive measures for HBV infections.

## Introduction

Hepatitis B virus (HBV) infection is a well-recognized public health problem across the globe, which causes significant mortality and morbidity [1], approximately 2 billion people are reported to be infected with HBV worldwide, of whom 248 million have chronic infection [2]. HBV infection can cause a wide range of manifestations including acute or chronic hepatitis, liver cirrhosis and hepatocellular carcinoma (HCC) [3- 5].

Health care workers have been recognized as a high risk group for acquiring HBV infection due to job-related exposure and direct contact with HBV-infected blood and body fluids in their workplace. The incidence of this infection among HCWs has been reported at 4 times higher than within the general population [6- 12]

According to estimates from The World Health Organization (WHO), of 35 million HCWs worldwide, nearly 2 million are infected with HBV in their workplace as a result of accidental injuries [9– 11].. This HWC occupational exposure risk to HBV infection is more prevalent in developing countries due to high prevalence of HBV among general population and poor condition of health care settings [13– 15]..

The most efficient approaches for prevention and control of hepatitis B virus infection are pre-exposure vaccination, improvement of health education of both infected and uninfected high-risk groups, implementation of standard precautions such as regular personal hygiene; use of protective barriers like gloves, proper sterilization of medical equipment and proper disposal of sharps, body fluids, and other clinical wastes

in health care institutions [9]. Additionally, Post-exposure prophylaxis with HBV vaccine and/or hepatitis B immunoglobulin (HBIG) can be used within 24 hours of exposure to stop infection [6, 16].

Administration of Hepatitis B vaccine is the mainstay of HBV prevention and has been reported very effective and safe and provides lifetime protection [17]. Therefore, as part of work-related protection measures, it has been suggested that all health care workers should receive the vaccination against HBV infection. In spite of this recommendation, vaccination coverage among health care workers, particularly in developing countries has been very poor and remains a challenge for the countries or the people with hepatitis B. According to reports by WHO, HBV vaccination coverage is only 18–39 % in low- and middle-income countries (LMIC) while it has been reported 67–79 % in high-income countries [17, 18].

Limited information regarding the magnitude of HBV has been available in Afghanistan. In some studies, the prevalence of HBV in Afghanistan was reported 3.4% [19] among adult population in Jalalabad city, 1.53% in obstetric population in Kabul hospitals, 6.54% in female sex workers (FSWs) [19], 6.15% among injectable drug users and 3.9% in blood donors [19]. No data is available about the prevalence, vaccination status, knowledge, and attitude of HCWs regarding hepatitis B virus infection in Afghanistan. On the other hand, well trained health care workers with good knowledge of HBV infection, play a significant role in implementation of HBV control and prevention programs and lack of knowledge and negative attitudes among HCWs have been suggested as obstacles for providing health education and management of HBV infections. High incidence of IV drug use, sexual activities, unsafe blood transfusion were found as the major risk factors for HBV transmission in Afghanistan [20]. The aim of this study was to assess the level of knowledge, attitude and practice of HCWs toward hepatitis B infection in Afghanistan.

## Method

### Study site and population

This institutional based cross-sectional study was conducted between November, 2018 and January; 2019 to evaluate the knowledge, attitude and practice of health care workers towards hepatitis B infection. The study was carried out in 12 public and private hospitals located in 4 different parts of Kabul city (south, east, west and north) among HCWs comprising of doctors, nurses, midwives, medical laboratory technologists, dentists and anesthetist working in the public and private hospitals during the study period. Kabul is the capital and the largest city of Afghanistan, with a population of about seven million. Five hundred and two participants were selected using simple random sampling technique to select eligible study participants.

### Data collection

The tool for data collection was a self-administered structured written questionnaire. The questionnaire contained 24 questions aiming to assess awareness, attitudes and practice of health care workers towards HBV infection. The questionnaire had four parts: in the first part questions regarding socio-demographic features of HCWs (age, sex, profession, qualification) were included, the second category of question (12 questions) aimed to assess knowledge of HCWs towards transmission and prevention of HBV infection, the

third category (6 questions) dealt with assessing attitudes towards the disease and prevention and the fourth part (6 questions) included questions regarding practice towards HBV prevention.

## Statistical analysis

Data were entered and analyzed using SPSS version 16.0 software. Percentages and mean  $\pm$  standard deviation for variables were used to analyze the findings of the study. Participants who answered 70% of knowledge questions correctly, were considered to have good knowledge, and those with less than 70% of correct answer, was said to have poor knowledge. Participants with 70% of correct responses to attitude questions, was regarded to have positive attitude and those with less than 70% of correct answers in attitude items, was stated to have negative attitude. If participants scored at least 70% in practice question, was stated to have good practice and participants with less than 70% score in practice questions, was said to have malpractice.

## Result

600 questionnaires were distributed, from which 502 (response rate: 83.6%) were returned and analyzed. Table 1 shows the overall characteristics of the study participants. of the total HWCs 257 (51.19%) were females, and 245 (48.8%) were male. mean  $\pm$  SD age were  $38.5 \pm 19.5$  years (range 19 to 58 years).

Out of the HWCs, 109 (21.71%) were medical doctors (MD), 107 (21.31%) were Midwives, 103 (20.51%) were nurses, 92 (18.37%) were medical laboratory technologists, 78 (15.53%) were dentists and 13 (2.58) were anesthetist.

The majority of the participants 247 (49.20%) were between 18–24 years with 152 (30.27%) participants aged between 25–29 years. Two hundred and twenty-three (44.42%) of participants had a bachelor degree and higher qualification.

<b>Table 1: characteristics of the study participants</b>	
Variables	N (%)
<b>Gender</b>	
Male	245 (48.8)
Female	257 (51.19)
<b>Age</b>	
18-24	247 (49.20)
25-29	152 (30.27)
30-34	40 (7.96)
35-39	36 (7.17)
> 40	27 (5.37)
<b>Education level</b>	
Master's degree	20(3.98)
Bachelor degree	203 (40.43)
Certification degree	279 (55.57)
<b>Professions</b>	
Medical doctors (MD)	109 (21.71)
Midwives	107 (21.31)
Nurses	103 (20.51)
Lab technologists	92 (18.37)
Dentists	78 (15.53)
Anesthetist	13 (2.58)

## Level of knowledge on HBV:

The overall knowledge of HCWs were 86.58%, and 92.23% of participants had good knowledge of HBV. Most of participants correctly identified that HBV can be transmitted by unsterilized syringe, needles and surgical instruments (92.43%), contaminated blood and body fluids (94.42%), contact with open wound/cut (94.22%), unsafe sex (89.64%) and mother to child (88.44%). 90.80% of participants knew the existence of HBV vaccine and that HBV can be prevented by vaccine. Up to 96.26% of midwives, 94.11% of Medical laboratory technologists, 91.74% of medical doctors correctly identified unsafe sex as the route of HBV transmission while this knowledge was in lowest level among anesthetist (76.92%), nurses (82.52, and dentists (83.78%). Only 69.23% of anesthetists, 86.48% of dentists selected infected syringes, needles and surgical instruments as a method of HBV transmission. Up to 76.92% of anesthetist, 86.48% of dentists correctly responded that HBV can be transmitted by contaminated blood and body fluids. the knowledge of HWCs are summarized in table 2.

Only 56.77% of the total participants were of aware of post exposure prophylaxis for HBV, this knowledge was in highest level among dentists (88.44%) and in lowest level among medical laboratory technologists (46.73%). Up to 82.86% of participants stated that HBV can be treated. This knowledge was in highest level among dentists (91.02%) and the lowest among midwives (73.83%). Up to 79.88% of the participants responded that HBV cannot spread by casual contact such as hand shacking. This knowledge was in highest level among dentists and lowest level among midwives (77.57%). Up to 88.24% of participants responded that HBV can cause liver cancer as shown in table 2.

Out of the 12 questions regarding knowledge level, doctors got the highest number of correct answers (87.46%), followed by midwives (87.07%), while anesthetist responded the lowest number of correct answers (77.56%). By profession, 97.20% of Midwives, 96.12% of nurses, 90.83% of doctors had good knowledge of HBV infections. While 15.38% of anesthetists, 12.82% of dentists, and 10.86% of medical laboratory technologists showed poor knowledge of HBV as shown in table 2.

Health care workers with higher education level, showed good knowledge than those with low educational level ( $p < 0.0001$ ). the women showed good level of knowledge compared to men as shown in Table 5 in multivariable analysis ( $p = 0.022$ ).

The level of knowledge was also different according to age, 97.5% of participants in the age group of 30–34, compared to 92.76% in the age group of 25–29 and 92.30% in the age group of 18–24 year showed good knowledge of HBV as shown in table 3 in multivariable analysis.

Table 2: Percentage of participants with correct responses to knowledge questions by profession							
Knowledge questions	MD (n=109) % of correct answer	Midwives (n=107) % of correct answer	Nurses (n=103) % of correct answer	Medical Lab Technologists (n=92) % of correct answer	Dentists (n=78) % of correct answer	Anesthetist (n=13) % of correct answer	total (n=502) % of correct answer
HBV causes liver cancer	92 (84.40)	96 (89.71)	95 (92.23)	80 (86.95)	68 (87.17)	12 (92.30)	443 (88.24)
HBV carriers can transmit the infection	92 (84.40)	97 (90.65)	85 (82.52)	79 (85.86)	66 (84.61)	11 (84.61)	443 (85.65)
HBV spread by casual contact such as hand shaking	90 (82.56)	83 (77.57)	82 (79.61)	73 (79.34)	62 (79.48)	11 (84.61)	443 (79.88)
HBV spread by contact with open wounds/cut?	100 (91.74)	104 (97.19)	100 (97.08)	85 (92.39)	72 (92.30)	12 (92.30)	443 (94.22)
HBV can be transmitted by contaminated blood and body fluids	105 (96.33)	104 (97.19)	100 (97.08)	85 (92.39)	70 (89.74)	10 (76.92)	443 (94.42)
HBV can be transmitted by unsterilized syringes, needles and surgical instruments	104 (95.41)	100 (93.45)	97 (94.17)	84 (91.30)	70 (89.74)	9 (69.23)	443 (92.43)
Hepatitis B transmitted by unsafe sex	100 (91.74)	103 (96.26)	85 (82.52)	85 (92.39)	67 (85.89)	10 (76.92)	443 (89.64)
Hepatitis B transmitted from mother to child	98 (89.90)	102 (95.32)	88 (85.43)	82 (89.13)	65 (83.33)	9 (69.23)	443 (88.44)
Vaccine can prevent hepatitis B infection	104 (95.41)	100 (93.45)	96 (93.20)	86 (93.47)	67 (85.89)	8 (61.53)	443 (91.83)
Do you think HBV has laboratory test?	99 (90.82)	92 (85.98)	92 (89.32)	75 (81.52)	69 (88.46)	11 (84.61)	443 (87.25)
HBV has post exposure prophylaxis	63 (57.79)	58 (54.20)	61 (59.22)	43 (46.73)	52 (66.66)	8 (61.53)	443 (56.77)
Hepatitis B can be cured/treated	97 (88.99)	79 (73.83)	80 (77.66)	79 (85.86)	71 (91.02)	10 (76.92)	443 (82.86)

#### Attitudes towards HBV infection and risk perception:

The majority of the participants had a poor attitude towards HBV prevention (53.98%). According to professions, medical doctors had the lowest favorable attitude (38.53%), followed by nurses (41.74%), midwives (46.72%) and medical laboratory technologists (51.08%), while anesthetists showed the highest level of favorable attitude (61.53%). The attitudes of Health care workers towards HBV infection are summarized in Table 4.

Regarding the concerns of HWCs while working with HBV, 56.37% of HWCs were concerned of being infected with HBV. Among them, dentists showed the highest level of concerns (69.23 %), followed by anesthetists (61.53%) while medical doctors (45.87%) followed by medical laboratory technologists (52.17 %) showed the lowest level of concerns in this regard.

Up to 69.72% of HWCs showed a positive attitude towards safety and efficiency of HBV vaccine. This was the highest among Midwives (83.17%), followed by medical laboratory technologists (82.60%) and the lowest among Nurses (34.95%).

Only 37.45% of participants considered it as a waste of time to change gloves during tests and blood collection, this believe was very common among dentists (57.69%) followed by anesthetists (46.15%) and Nurses (37.86%), and was the lowest among Medical laboratory technologists (27.17%).

Up to 80.47% of HWCs agreed that, patients should be tested for HBV infection, before providing health care to them. This belief was in highest level among midwives (86.91%), followed by medical laboratory technologists (83.69%), and in lowest level among anesthetist (53.84%).

Up to 56.37% of the participants stated that they are not contented to look after HBV patients. Among HWCs, Medical doctors had the highest discomfort (67.88%) to take care of HBV infected people, followed by nurses (66.99%), while this was in lowest among anesthetists (38.46%) followed by midwives (42.99%). Up to 76.49% of HWCs believed that considering the guidelines for infection control, will keep them safe from HBV infection at work. this believe was most common among midwives (84.11%) and least common among anesthetists (30.76%).

Health care workers who were well educated, showed favorable attitude than those with low educational level ( $p < 0.0001$ ). The level of attitude between both sex was different such that men had more positive attitude than women ( $p = 0.18$ ). The level of attitude was also different according to age, 66.66% of participants in the age group of 35–39, compared to 52.5% in the age group of 30–39 and 47.36% in the age group of 25–29 and 43.31% in the age group of 18–24 year showed favorable attitude towards HBV prevention, as shown in table 3 in multivariable analysis



Table 3: Multivariable analysis of poor knowledge and attitudes towards hepatitis B prevention among HWCs						
variables	knowledge		P value	Attitude		P value
profession	GOOD	POOR		Favorable	Not	
Medical Doctors	99 (90.83)	10 (9.18)	0.001922	42 (38.53)	67 (61.46)	0.0484
Medical Lab Technologists	82 (89.13)	10 (10.86)		47 (51.08)	64 (69.56)	
Midwives	104 (97.20)	3 (2.80)		50 (46.72)	57 (53.27)	
Nurses	99 (96.12)	4 (3.88)		43 (41.74)	60 (58.25)	
Dentists	68 (87.17)	10 (12.82)		41 (52.56)	37 (47.43)	
Anesthesia	11 (84.61)	2 (15.38)		8 (61.53)	5 (38.46)	
OVERALL	463 (92.23)	39 (7.76)		231 (46.01)	271 (53.98)	
sex						
MALE	223 (91.02)	22 (8.97)	0.022069	121 (49.38)	124 (50.61)	0.1838
FEMALE	244 (94.94)	13 (5.05)		121 (47.08)	136 (52.91)	
age						
18-24	228 (92.30)	19 (7.69)	0.035495	107 (43.31)	140 (56.68)	0.1684
25-29	139 (91.44)	13 (8.55)		72 (47.36)	80 (52.63)	
30-34	39 (97.5)	1 (2.5)		21 (52.5)	19 (47.5)	
35-39	36 (100)	0		24 (66.66)	12 (33.33)	
>40	26 (96.29)	1 (3.70)		18 (66.66)	9 (33.33)	

## Practices of Health care workers towards HBV prevention

Among participants of this study, 77.45% had been screened for HBV, among them, only 30.37% of anesthetists were screened for HBV, while this was in highest level among nurses (90.29%). Table 5 shows the summary of health care worker's practice towards HBV prevention.

Only 56.37% of participants had been vaccinated against HBV, out of them only 5.17% had completed three doses of vaccine, while 45.61% had received two doses of HBV vaccine. According to profession, 10.28% of midwives, 8.1% of stemmatologists, and 7.69% of anesthetists had completed the three doses of HBV vaccine, while no pharmacist had completed this and 0.97% of nurses had received the three doses of HBV vaccine.

Up to 79.08% of participants stated that they always changed their gloves for each patient during blood taking. This practice was the highest among MLTs (86.27%) followed by nurses (82.52%) and in lowest level among anesthetists (53.84%).

Regarding the history of accidental exposure, 80.7 % of participants reported needle prick injury in the past, this was in highest rate among midwives (85.98%) and in lowest level among stemmatologists (51.35%). Only 69.12% of participants stated that they report needle stick injury.

Table 4: Percentage of Health care workers who responded correctly to the attitude questions							
Knowledge questions	MD (n=109) % of correct answer	Midwives (n=107) % of correct answer	Nurses (n=103) % of correct answer	Medical Lab Technologists (n=92) % of correct answer	Dentists (n=78) % of correct answer	Anesthetist (n=13) % of correct answer	total (n=502) % of correct answer
I have no concern of being infected with HBV	50 (45.87)	65 (60.74)	58 (56.31)	48 (52.17)	54 (69.23)	8 (61.53)	283 (56.37)
Hepatitis B vaccine is safe and effective	87 (79.81)	89 (83.17)	36 (34.95)	76 (82.60)	53 (67.94)	7 (53.84)	350 (69.72)
Changing of gloves during blood collection and tests is waste of time	38 (34.86)	35 (32.71)	39 (37.86)	25 (27.17)	45 (57.69)	6 (46.15)	188 (37.45)
All patients should be tested for HBV before they receive health care	91 (83.48)	93 (86.91)	76 (73.78)	77 (83.69)	60 (76.92)	7 (53.84)	404 (80.47)
I do not feel comfortable to take care of people with HBV	74 (67.88)	46 (42.99)	69 (66.99)	50 (54.34)	37 (47.43)	5 (38.46)	283 (56.37)
Following infection control guidelines will protect from being infected with HBV at work?	90 (82.56)	90 (84.11)	70 (67.96)	74 (80.43)	56 (71.79)	4 (30.76)	384 (76.49)

## Discussion

Hepatitis B virus (HBV) infection one of the major public health problems worldwide [1] with approximately 2 billion infections, of whom 257 million have chronic infection [2]. HBV infection can cause a wide range of manifestations including acute or chronic hepatitis, liver cirrhosis and hepatocellular carcinoma (HCC) [3-5]. The purpose of this study was to assess knowledge, attitude and practice of HWCs towards HBV infection,

Table 5: Percentage of Health care workers who responded correctly to the practice questions							
Practice questions	Profession						
	MD (n=109) % of correct answer	Midwives (n=107) % of correct answer	Nurses (n=103) % of correct answer	Medical Lab Technologists (n=92) % of correct answer	Dentists (n=78) % of correct answer	Anesthetist (n=13) % of correct answer	total (n=502) % of correct answer
Have you ever screened for hepatitis B?	82 (75.22)	88 (82.24)	93 (90.29)	74 (80.43)	48 (61.53)	4 (30.76)	389 (77.49)
Have you got vaccinated against HBV?	74 (67.88)	67 (74.61)	51 (49.51)	43 (46.73)	47 (56.41)	4 (30.76)	283 (56.37)
How many doses of HBV vaccine did you receive?							
Three doses	7 (6.422)	11 (7.28)	1 (0.970)	3 (3.260)	11 (3.846)	1 (7.692)	26 (5.179)
I always change gloves for each patient during blood taking	89 (81.65)	88 (89.24)	85 (82.52)	73 (79.34)	78 (70.51)	7 (53.84)	397 (79.08)
Have you ever had a needle prick injury?	87 (79.81)	92 (87.98)	88 (85.43)	66 (71.73)	92 (76.92)	9 (69.23)	402 (80.07)
I always report for needle stick injury	75 (68.80)	76 (75.02)	76 (73.78)	65 (70.65)	106 (57.69)	10 (76.92)	347 (69.12)

HBV vaccine perception and uptake in Kabul, Afghanistan.

The result of our study showed that the overall knowledge of HCWs about HBV was 86.58%, which is almost similar to studies in Nigeria (86.3%) [21], and higher than studies in Ethiopia (73.1%) [22].

Regarding mode of transmissions for HBV, most of the participants correctly selected infected syringe, needles and surgical instruments (92.43%), contaminated blood and body fluids (94.42%), contact with open wound/cut (94.22%), unsafe sex (89.64%) and mother to child (89.64%) as methods of HBV transmission.

Which is almost similar to a Study in Ethiopia [22] in which, the majority of the HWCs (92.9%) selected infected blood and approximately 88% selected vaginal and amniotic fluids as means of virus transmission. While in Nigeria, more than 80% of participants stated percutaneous injury, mucous membrane contact with blood and contact of abraded skin with potentially infected tissue as routes of HBV transmission [23].

Regarding the awareness about HBV vaccine, 69.23% of HWCs acknowledged that HBV vaccine is safe and effective, which is much lower than results from other similar studies. 86.3% of participants in Kuwait and 93 % in Cameroon, 94% in Nigeria and 94% in Ethiopia felt that receiving vaccine is necessary and it should be compulsory [22, 24, 25].

The majority of the participants had a poor attitude towards HBV prevention (53.98%), and only 56.37% of HWCs were concerned of being infected with HBV. Which is different from other similar studies. 91.3% of participants in Ethiopia [22], 80.5% of respondents in Kuwait [24], Ninety-six percent of participants in Cameroon [25], believed that their job put them at risk of HBV infection and 92.7% of respondents in Nigeria perceived themselves to be more at risk of HBV infection as compared to the general population [21].

Only 73.38% of HWCs agreed that all patients should be tested for HBV before they receive health care. This believe was in highest level among medical laboratory technologists (88.23%), followed by midwives (86.91%) and in lowest level among anesthetist (53.84%). Up to 79.08% of participants stated that they always changed their gloves for each patient during blood taking. This practice was the highest among MLTs (86.27%) and in lowest level among anesthetists (53.84%).

Regarding history of accidental exposure, 80.7 % of participants reported needle prick injury in the past, which is much higher level than similar studies, In Ethiopia [22] 49.2% of study participants have been exposed to risky conditions for HBV infection.

In this study we found that only 56.37% of participants had got vaccinated against HBV. Which is higher than study results from Japan (48.2%) [26] and Nigeria (40.3%) [21]. From those health care workers who had got vaccinated, only 5.17% had completed three doses of vaccine. This is much lower level of complete vaccination when compared with other studies. However, Nigeria, 56.0% of respondents that have been vaccinated against HBV infection had the recommended three doses of the vaccine [21]

## Conclusions

The result of our study revealed that overall knowledge regarding HBV, its mode of transmission and prevention was high (86.58%). The level of knowledge among participants with higher education level was significantly higher compared to participant with lower education level (those without a bachelor degree). By profession, medical doctors showed better knowledge compared to other professionals and women showed better level of knowledge than men.

The results of this study revealed that, the majority of health care workers had a poor attitude towards HBV prevention. there was association between attitude and health care professions, medical doctors had the lowest favorable attitude followed by nurses, midwives. The findings of our study revealed that, practical measures towards hepatitis B prevention among health care workers in Kabul was inadequate, the coverage of

vaccination was very low and only 5.17% of participants had completed the three dose of vaccine. To solve this problem, health care professional should be encouraged to receive hepatitis B vaccine and complete the required doses of vaccine, and free vaccine should be provided for all health care workers and vaccination against hepatitis B should be compulsory among health care professionals. Besides, awareness programs should be implemented to increase the importance of preventive measures and practices among health care workers and improve favorable attitude among them.

## Declarations

## Author contributions:

RR conceived and designed the study and wrote the manuscript. SHM performed the statistical analysis and wrote the manuscript.

## Funding

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## Ethical approval Ethical

Ethics approval and consent to participate this study was approved by the Research Committee of Medicine faculty of Kateb University with approval numbers: FoP:16, 15/ 8/ 2018. Privacy and confidentiality were maintained throughout the study period; each questionnaire was filled out without any personal identification.

## Competing Interests

None declared.

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