

Comparison of knowledge, attitude, and practice of healthcare staff toward sexually transmitted infections in Markazi Province, Iran

Iman Navidi¹, Fatemeh Hadavand^{2,3}, Akram Ahmadlo¹

¹Arak University of Medical Sciences, Markazi, Iran

²Department of Epidemiology, School of Public Health and Safety, Shahid Beheshti University of Medical Sciences, Tehran, Iran

³Cancer Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Abstract

Introduction: Sexually transmitted infections (STIs) incidence, as most common acute diseases in the world, has been increasing. We investigated knowledge, attitude, and practice (KAP) of healthcare staff, including physicians and healthcare providers, such as health professionals and midwives.

Material and methods: In this cross sectional study, self-made questionnaire was applied. Data collection was performed between September and November 2019. Participants were selected using stratified random sampling method, and 226 healthcare staff were included in the study. Mann-Whitney and Kruskal-Wallis tests were used to compare median and interquartile range (IQR) score of KAP among participants. KAPs were classified into poor, moderate, and desirable. Data were analyzed in SPSS version 21.

Results: Total median (interquartile range) score of KAP was 14 (4), 29 (8), 30 (9), respectively. Knowledge score of health professionals were low (52%), midwives and physicians scored average (74% and 75%, respectively). Most health professionals, midwives, and physicians scored moderate on attitudes (61%, 78%, and 80%, respectively). The results indicated that 60% of midwives performed well, with 46% of health professionals and 45% of physicians having mediocre performance.

Conclusions: In this study, health professionals performed well, but their level of knowledge was low. This means that they perform well according to their duties, but did not have enough knowledge. Therefore, they need more training to improve the quality of their services.

HIV AIDS Rev 2022; 21, 2: 155-163

DOI: <https://doi.org/10.5114/hivar.2022.115540>

Key words: STIs, knowledge, attitude, practice, healthcare staff.

Introduction

Sexually transmitted infections (STIs) are known as the most common acute diseases in the world [1]. Among sexually transmitted infections, *Chlamydia trachomatis* (chlamydia), *Neisseria gonorrhoeae* (gonorrhea), *Trichomonas vaginalis* (tri-

chomoniasis), and *Treponema pallidum* subspecies *pallidum* (syphilis) are the curable ones [1, 2].

In recent years, the United States have experienced an increase of STIs incidence. Between 2013 and 2017, studies have shown a 67% increase in gonorrhea and a 35% increase in chlamydia [3, 4]. According to World Health Organiza-

Address for correspondence: Fatemeh Hadavand, Department of Epidemiology, School of Public Health and Safety, Shahid Beheshti University of Medical Sciences, Daneshjoo Blvd, Evin Ave, Tehran, Iran, e-mail: fatemeh.hadavand70@gmail.com

Article history:
Received: 02.02.2021
Received in revised form: 11.05.2021
Accepted: 17.05.2021
Available online: 13.04.2022



tion (WHO) reports, more than 1 million STIs cases are detected every day. Globally, more than 500 million people are living with genital HSV (herpes) infection and 240 million are living with chronic hepatitis B, both of which can be prevented by vaccination. In 2016, there were one million pregnant women with syphilis [5]. Although, the incidence and prevalence of the four sexually transmitted infections are lower in Europe than in other regions, a significant burden of these diseases can be observed in Europe, most of which is related to chlamydia [1, 6].

Sexually transmitted infections mainly affect sexual and reproductive health [7]. These infections spread mainly through unprotected sexual relationships. They can also be transmitted during pregnancy and childbirth, and through infected blood or blood products [8], which cause fetal and infant death, infertility, increased risk of human immunodeficiency virus (HIV) transmission, and psychological and social consequences [9]. STIs are often accompanied by unpleasant consequences, including stigma, stereotyping, vulnerability, and shame, and are associated with gender-based violence [10]. The notion of a reduced risk of HIV infection during antiretroviral therapy (ART) and pre-exposure prophylaxis (PrEP) is associated with reduced condom use and increased transmission of other STIs [11].

STIs, except HIV, impose a high burden of mortality and morbidity in developed and developing countries. The World Health Organization's Global Strategy for the prevention and control of STIs was presented in May 2006. Adoption and implementation of a global strategy followed by member countries of the World Health Assembly provide a good base to achieve the millennium development goals. These goals include programs and measures to prevent and control sexually transmitted diseases [12], safe and effective vaccination against hepatitis B virus (HBV) and human papilloma virus (HPV), which cause major consequences in the global health [7].

In Iran, religious beliefs and social structure lead to non-reporting of symptoms of sexually transmitted infections [13], but it can be estimated that the prevalence of sexually transmitted infections in Iran is widespread (gonorrhea: 4.1% and chlamydia: 20%) [14-16]. Knowledge and practice of healthcare providers about syndromic management of STIs were insufficient [17-19], since a person's knowledge of a disease positively affects attitudes toward prevention, and thus changes practice [20]. Therefore, physicians and health staff's awareness, due to their important role in the prevention and treatment of STIs, can be the basis of proper health practice. It is necessary to know the basic status of knowledge, attitude, and practice (KAP) in a target population. In Iran, no studies have been conducted to examine knowledge, attitudes, and practices of physicians and healthcare providers about sexually transmitted infections. Therefore, the main aim of this study was to assess KAP on STIs among health service providers in Markazi Province.

Material and methods

This cross sectional study was conducted between September and November, 2019. Prior to commencing the study, ethical clearance was sought from the Markazi University of Medical Sciences. In order to evaluate scores of knowledge, attitude, and practice related to STIs in health-care staff (physicians, health professionals, and midwives) in the Markazi University of Medical Sciences, a 32-item self-made KAP questionnaire as a research tool has been developed. In order to assess content validity, a panel of professionals in the field of STIs examined the questionnaire. After receiving opinions of professionals on each of the questions, the questions that did not obtain validity score according to standards were removed. To evaluate reliability, pre-test was completed with 30 individuals, and Cronbach's α was estimated as 0.8.

The questionnaire consisted of four parts. In the first part of questionnaire, participants were asked to provide information about demographic variables (6 items), such as gender, age, and education. The second, third, and fourth parts assessed participants degree of knowledge (12 items), attitudes (10 items), and practices (10 items). Negative questions were re-coded before data analysis, so that a higher value represented a stronger endorsement of the construct measured by each scale. The questions evaluating knowledge, attitude, and practice sections had the highest scores of 24, 50, and 40, respectively, and the lowest scores of 0, 10, and 10, respectively. Knowledge, attitude, and performance scores were divided into three levels (knowledge scores: 0-12 = 'poor', 13-18 = 'average' and 19-24 = 'desirable'; attitude scores: 10-25 = 'poor', 26-40 = 'average', and 41-50 = 'desirable'; performance scores: 10-20 = 'poor', 20-30 = 'moderate', and 30-40 = 'favorable').

Study population and sampling

Initially, Cochran's formula was used to calculate sample size. The size of statistical population was 567 and $Z = 1.96$, $p = 50\%$, $d = 0.05$; therefore the sample size was calculated as 229. For this cross-sectional study, participants were selected using a stratified sampling method. In this way, a list of each category was prepared, each person was coded, and then, individuals were selected using a random number table in Excel. Accordingly, 40 physicians, 99 health professionals, and 87 midwives working in health centers of the Central University of Medical Sciences were enrolled, and finally, 226 participants were investigated.

Having at least one year of experience in health centers under the health deputy of Markazi University of Medical Sciences was considered as a criterion for inclusion in the study, and change of workplace from health deputy to other deputies was considered as an exclusion criterion. All participants have signed an informed consent at the beginning of the study. Ethics approval of this article has been granted by the Research Committee of Markazi University of Medical Sciences (No., IRARAKMU. REC. 1398. 114).

Statistical analysis

Survey answers were collected from 226 participants in Excel. Normality of qualitative data was assessed with Kolmogorov-Smirnov and Shapiro-Wilk tests. Knowledge, attitude, and practice were not normally distributed, so Mann-Whitney test, Kruskal-Wallis, Dunnett's multiple comparison, and Bonferroni correction were all used to compare median and interquartile range (IQR) score of knowledge, attitude, and practice among participants. A significance level of 0.05 was considered. Data were analyzed in SPSS software version 21.

Results

In this study, within 3 months, 217 women and 9 men in the age range of 20 to 43 years were investigated.

The results showed that most of the participants were women (96%) and majority of them were within the age range of 20 to 30 years (94 individuals, 41%), 69% of the participants were married, and 43% were health professionals. Most of the respondents had not passed a course related to STIs (46%). The mean age of the participants was 33 years, with a standard deviation of 7 (Table 1).

To evaluate the score of knowledge, attitude, and practice across various levels of demographic variables, Kruskal-Wallis test and Mann-Whitney test were applied.

According to the results shown in Table 2, the use of Kruskal-Wallis and Mann-Whitney tests indicated that there was a difference in knowledge among physicians, midwives, and health professionals. As expected, health professionals had lower median score than midwives and physicians: 12 (4), 15 (3), 15 (3), $p < 0.001$, respectively. There was no significant difference in gender, between men and women ($p = 0.42$).

As can be seen in Table 3, physicians and midwives attained further median (IQR) attitude comparing to health professionals: 30 (5), 30 (8) vs. 27 (8), $p = 0.025$, $p = 0.007$, respectively.

Individuals aged 30 to 40 years had higher median (IQR) practice score than those aged 20 to 30 years: 32 (7) vs. 29 (11), $p = 0.02$. Also, midwives had better median practice score compared to health professionals: 32 (6) vs. 29 (10), $p = 0.002$. Among individuals with less than 5 years of work experience and those who had 10 to 20 years of work experience, there was a significant difference in median practice score: 29 (10) vs. 31 (9), $p = 0.04$ (Table 4).

Approximately, 61% (140) of the participants' knowledge score was within moderate range. The attitude of 71% of the respondents was moderate, and the practice of 47% was favorable. Practice total median score was 30 (Table 5).

Table 6 shows that only 8% and 12% of the participants performed well in counseling patients and advising them to get tested for HIV. There was a negative attitude towards prevention and treatment. The use of national guidelines was low, but overall performance was good.

Table 1. Basic characteristic of study participants

Variable	n (%)
Gender	
Female	217 (96.0)
Male	9 (4.0)
Age group (years)	
20-30	94 (41.0)
30-40	85 (38.0)
40-50	47 (21.0)
Marital status	
Single	70 (31.0)
Married	156 (69.0)
Education	
Associate degree	83 (37.0)
Bachelor's degree (BS)	104 (46.0)
Master's degree (MSc)	5 (2.0)
Doctor of philosophy (PhD)	34 (15.0)
Job	
Physician	40 (18.0)
Midwife	87 (38.0)
Health professional	99 (44.0)
Latest training course	
One year ago	47 (21.0)
Two years ago	33 (15.0)
3-5 years ago	41 (18.0)
Has not passed a course	105 (46.0)
Work experience	
Less than 5 years	85 (38.0)
5-10 years	43 (19.0)
10-20 years	63 (28.0)
20-30 years	35 (15.0)

Discussion

Previous studies in Iran did not examine knowledge, attitude, and practice of physicians and healthcare providers. Therefore, this paper aimed to demonstrate KAP score toward STIs, to physicians and healthcare providers.

In this study, the median knowledge score was the same among different age groups, and there was no difference between married and single people. Also, the median knowledge score between participants with different work experience was the same, and difference between the times of last training sessions was not seen. This may be due to the fact that the concepts taught have not been changed in different years. In the present study, there was no difference between men and women toward knowledge, and attitude and median score of knowledge was intermediate. This was probably because all of the participants had access to the same

Table 2. Knowledge median and interquartile range (IQR) score ($N = 226$)

Variable	<i>n</i>	Knowledge, median (IQR)	<i>p</i> -value	Pair-wise comparison	<i>p</i> -value
Gender					
Female	217	14 (5)		0.420	
Male	9	14 (3)			
Age group** (years)					
20-30	94	14 (5)	0.856		
30-40	85	14 (5)			
40-50	47	14 (2)			
Marital status*					
Single	70	14 (4)	0.059		
Married	156	14 (4)			
Education**					
Associate degree (AD)	83	13 (5)	0.001	AD vs. BS	0.004
Bachelor's degree (BS)	104	14 (3)		AD vs. MSc	1.00
				BS vs. MSc	0.426
Master's degree (MSc)	5	11 (4)		BS vs. PH.D.	1.00
				MSc vs. PH.D.	0.422
Doctor of philosophy (PhD)	34	14 (3)		PH.D. vs. AD	0.048
Occupation**					
Physician	40	15 (3)	> 0.001	Physician vs. midwife	1.00
Midwife	87	15 (3)		Midwife vs. healthcare provider	< 0.001
Health professional	99	12 (4)		Health professional vs. physician	< 0.001
Latest training course**					
One year ago	47	14 (5)	0.371		
Two years ago	33	14 (3)			
3-5 years ago	41	14 (4)			
Has not passed a course	105	14 (4)			
Work experience**					
Less than 5 years	85	14 (5)	0.380		
5-10 years	43	14 (3)			
10-20 years	63	14 (3)			
20-30 years	35	14 (4)			

*Mann-Whitney test, **Kruskal-Wallis test

instructions and had received the same training. According to the results of studies conducted in Pakistan and Namibia, the knowledge of general practitioners was 55.3% and 56.5%, respectively [17, 18], which were less than in our study. In South Ethiopia, clinicians' knowledge about STIs was meager (27.2%). Clinicians who worked in health centers were more aware of urinary tract secretions than those working in hospitals [19]. In Kabul, most healthcare providers were informed of HIV and hepatitis [21].

In this study, knowledge scores in different groups of education and occupation were not the same. In this regard, attitude and practice were different in occupational groups. This

may be due to differences in the extent, to which physicians, healthcare providers, and midwives intervene in the treatment and guidance of people with sexually transmitted infections. Basically, the midwife is more in touch with these people. In a study in Iran, researchers said getting help from infected people was effective in educational programs [22].

The results of an educational intervention in India showed that knowledge and attitude of students and healthcare providers were improved after the intervention [23]. Theories suggest that knowledge depends on belief and attitude, and that behavior change depends on learners' readiness and willingness [24]. More training sessions are not

Table 3. Attitude median and interquartile range (IQR) score ($N = 226$)

Variable	<i>n</i>	Attitude, median (IQR)	<i>p</i> -value	Pair-wise comparison	<i>p</i> -value
Gender*					
Female	217	29 (8)	0.539		
Male	9	30 (16)			
Age group** (years)					
20-30	94	29 (9)	0.666		
30-40	85	29 (6)			
40-50	47	29 (10)			
Marital status*					
Single	70	28 (10)	0.506		
Married	156	29 (7)			
Education**					
Associate degree	83	28 (10)	0.413		
Bachelor's degree (BS)	104	29 (7)			
Master's degree (MSc)	5	32 (18)			
Doctor of philosophy (PH.D.)	34	30 (4)			
Occupation**					
Physician	40	30 (5)	0.002	Physician vs. healthcare provider	0.025
Midwife	87	30 (8)		Midwife vs. physician	1.00
Health professional	99	27 (8)		Health professional vs. midwife	0.007
Latest training course**					
One year ago	47	31 (9)	0.148		
Two years ago	33	26 (15)			
3-5 years ago	41	30 (9)			
Has not passed a course	105	29 (5)			
Work experience**					
Less than 5 years	85	29 (8)	0.076		
5-10 years	43	31 (11)			
10-20 years	63	29 (6)			
20-30 years	35	27 (11)			

*Mann-Whitney test, **Kruskal-Wallis test

necessarily associated with increased level of knowledge. Shorter and fewer meetings are more effective [25]. Even with the help of a short-term and occasional periodic training strategy, refreshing their information even at lunch helps to improve service delivery [26]. In our study, physicians and midwives had better knowledge toward STIs than health professionals. In line with our study, Machowska's study revealed the same finding about HIV [23] that it can be due to more training of physicians [27].

General adherence to national management of STIs was poor in our study. Physicians and healthcare providers, in particular midwives, had to be trained, but most of them did not receive enough training. Our finding about adherence to national guideline was different from Ethiopia and Namibia [18, 19]. In South Africa, general knowledge of STIs in doc-

tors and nurses from public and private clinics was not optimal, and the use of national STIs management guidelines by them was low [26]. Mtengezo *et al.* reported that there was no difference between nursing students and healthcare providers in terms of knowledge of infectious diseases, such as HIV/AIDS, but attitude of health staff toward healthcare providers and students was negative [28].

In the present study, attitude toward STIs was more in the desired range (71%). In a study conducted on students as future healthcare providers in Malaysia, attitude about protective effect of condom on sexually transmitted diseases was 41.7%, and they disagreed that multiple partners have no role in transmitting the disease [29]. The attitude of medical students is potentially important because it can lead to social stigma, social exclusion and avoidance of nec-

Table 4. Practice median and interquartile range (IQR) score ($N = 226$)

Variable	<i>n</i>	Practice, median (IQR)	<i>p</i> -value	Pair-wise comparison	<i>p</i> -value
Gender*					
Female	217	30 (9)	0.033		
Male	9	20 (11)			
Age group** (years)					
20-30	94	29 (11)	0.024	20-30 vs. 40-50	1.00
30-40	85	32 (7)		30-40 vs. 20-30	0.020
40-50	47	30 (10)		40-50 vs. 30-40	0.526
Marital status*					
Single	70	28 (10)	0.033		
Married	156	31 (9)			
Education**					
Associate degree	83	31 (10)	0.300		
Bachelor's degree (BS)	104	30 (8)			
Master's degree (MSc)	5	26 (9)			
Doctor of philosophy (PhD)	34	29 (13)			
Occupation**					
Physician	40	29 (12)	0.003	Physician vs. midwife	0.925
Midwife	87	32 (6)		Midwife vs. healthcare provider	0.002
Health professional	99	29 (10)		Health professional vs. physician	0.301
Latest training course**					
One year ago	47	31 (13)	0.297		
Two years ago	33	29 (7)			
3-5 years ago	41	31 (8)			
Has not passed a course	105	30 (9)			
Work experience**					
Less than 5 years	85	29 (10)	0.026	Less than 5 years vs. 5-10 years	0.130
				Less than 5 years vs. 10-20 years	0.041
				Less than 5 years vs. 20-30 years	0.806
5-10 years	43	31 (9)		5-10 years vs. 20-30 years	1.00
10-20 years	63	31 (9)		10-20 years vs. 5-10 years	1.00
20-30 years	35	31 (11)		20-30 years vs. 10-20 years	1.00

*Mann-Whitney test, **Kruskal-Wallis test

Table 5. Total score of knowledge, attitude, and practice toward STIs in Markazi physicians and healthcare providers

Variable	Weak, <i>n</i> (%)	Moderate, <i>n</i> (%)	Optimal, <i>n</i> (%)	Median (IQR)
Knowledge	74 (32.0)	140 (61.0)	12 (5.0)	14 (4)
Attitude	64 (28.0)	161 (71.0)	1 (0.0)	29 (8)
Practice	25 (11.1)	93 (41.0)	108 (47.0)	30 (9)

essary care, negligence and evasion of people living with a disease, such as HIV/AIDS, leading to discrimination in treatment of people living with HIV/AIDS. Moreover, it

imposes additional costs on patient and health system. This negative attitude, in addition to discrimination and imposing additional costs, can lead to a further spread of the virus, and avoid proper care for patients and their families [30, 31].

As studies show, medical students have a low negative attitude towards sexually transmitted diseases, such as AIDS, and their education increases their experience and improves their attitude [32-35] that it can affect the practice. In our study, total practice was optimal and it seems that midwives had a better practice. Midwives perform better than general practitioners and health professionals because of the specialized courses they take during their educations, and dealing

Table 6. Knowledge, attitude, and practice toward STIs in Markazi physicians and healthcare providers

Questions (n = 32)		No. (%) of correct answers
Knowledge		
1.	In the epidemiological treatment approach, treatment is performed after receiving laboratory results and confirming the diagnosis.	73 (32.0)
2.	The most challenging part of clinical management of patients with sexually transmitted infections is disease prevention counseling.	20 (8.0)
3.	HIV testing is recommended for all people with sexually transmitted diseases.	28 (12.0)
4.	The first step in a patient's history is to express empathy.	73 (32.0)
5.	Closed-ended questions should be used in the history of sexually transmitted infections.	132 (58.0)
6.	In the case of genital ulcers, if only blisters are observed, the next step is to treat herpes.	96 (42.0)
7.	The most common organism that produces non-gonococcal urethritis is Trichomonas.	60 (26.0)
8.	Abnormal vaginal discharge is characterized by changes in discharge in terms of amount, odor, and color.	7 (3.1)
9.	Sensitivity to cervical movements indicates cervicitis.	59 (26.0)
10.	The causative agent of cervicitis is usually Trichomonas vaginalis.	86 (38.1)
11.	PH-determining strips can be used to diagnose vaginitis.	31 (13.0)
12.	Prominent, painless, solitary, and hard sores are symptoms of syphilis.	35 (15.0)
Attitude		
13.	Sexually transmitted diseases are specific to unrestrained people.	108 (47.0)
14.	Despite the symptoms of a sexually transmitted disease, everyone should seek treatment with no fear.	–
15.	One of the problems of sexually transmitted infections is rejection from society.	52 (23.0)
16.	In Candida vaginitis, treatment of the spouse does not matter.	50 (22.0)
17.	Prevention and treatment of human papilloma virus is very important because it can affect areas other than the anal-genital area, such as the patient's mouth and throat.	12 (5.0)
18.	Treatment of genital warts is not very important because it has no effect on the normal course of disease recurrence.	136 (60.0)
19.	People with Trichomonas vaginalis are more likely to get HIV.	58 (25.0)
20.	Pap smears can detect all cases of sexually transmitted infections.	85 (37.0)
21.	If someone is infected with human papilloma virus, they must have had sex outside the family.	75 (33.0)
22.	Sexually transmitted infections are so dangerous that if left untreated, they can lead to disability or death.	43 (19.0)
Practice		
23.	I use the national guide to STIs management.	65 (28.0)
24.	At the first visit, I get a history from the patient in accordance with the national guide to the care and treatment of sexually transmitted infections.	86 (38.1)
25.	If women complain of vaginal itching and burning, I will do a vaginal examination.	99 (43.0)
26.	If the patient complains of vaginal discharge or dysuria, I will perform a speculum examination and a two-handed examination.	79 (34.0)
27.	If there is a complain of supra pubic pain, I will perform a gynecological examination.	54 (23.0)
28.	If women with genital ulcers come to me, I will refer them to a gynecologist immediately and without any action.	36 (15.0)
29.	If a teenage girl comes in with a sexually transmitted infection, I will screen her for other sexually transmitted infections.	101 (44.0)
30.	I also ask questions about the history of pregnancy and childbirth in taking the history of women with symptoms of sexually transmitted infections.	109 (48.0)
31.	I give condoms to people at risk to prevent the spread of sexually transmitted infections.	159 (70.0)
32.	I do not take any other action for patients who do not want to have a vaginal examination.	108 (47.0)

more with patients with genital diseases in their workplace. In the present study, there was a significant difference in terms of practice between married and single people, and married employees had a better practice. As other studies have shown, married medical students perform better [28, 35, 36]. This may be due to their direct involvement in sexual activity, and thus, they better understand the consequences of not following health tips during sex, which can lead to their better practice comparing to single people. In a study from Malaysia Health and Medical University, although students' knowledge about sexually transmitted diseases (STDs) was high, significant predictors of knowledge and warning behaviors of sexually active students indicated that their practice was not at the desired level [29]. In a study in Iran, researchers stated that although knowledge of educated people about HIV and TB (tuberculosis) is higher, their practice is similar to people with different levels of education. High knowledge and positive attitude do not necessarily lead to behavior change, and comprehensive training programs are required [22]. Having a high knowledge does not guarantee midwives and doctors better practice comparing to health professionals. This shows that more training alone is not accompanied by better practice; thus, training must be effective.

This study was performed among health workers. Despite their lack of knowledge, their attitude and practice were at a good level. Among the professionals surveyed in this study, midwives were more knowledgeable than others and were more proficient in following the protocols. However, they were weaker in the counseling process. Providing help on prevention and use of condoms, HIV testing, etc., were done in less detail. This weakness indicates the need for more training in order to have better interaction and more effective communication with patients.

Limitations

The present study was the first survey on knowledge, attitude, and practice of health staff (health professionals and midwives) and physicians that was conducted in Markazi Province. The study was conducted among all groups of service providers, including physicians, midwives, and health professionals, and we used a self-made questionnaire according to the protocol for the prevention and treatment of sexually transmitted infections. One of the limitations of the study was the fear of healthcare providers about the impact of their low scores on their rights and benefits. Another weakness was non-segregating the questionnaires of midwives, doctors, and health professionals, as in the healthcare system, most of the actions related to people who refer with complaints related to diseases and sexually transmitted infections are among the responsibilities of a midwife. Another weakness of the study was lack of focus on a specific sexually transmitted infection.

Conclusions

The results of the study showed a moderate level of knowledge among the subjects. In this study, employees' practice

score was higher than their knowledge score. This is because they try to do their tasks routinely without realizing its' importance, and having enough knowledge about it. Therefore, considering the importance of education and its' impact on people's practice, this study also emphasizes the provision of continuous health education to improve knowledge and increase positive attitude in healthcare providers. Assessing knowledge, attitude, and practice of health staff is the first step to provide optimal services to patients. The findings of this study help health policy-makers to improve measures and interventions related to improving knowledge, attitude, and practice of health staff.

Acknowledgment

We thank all the staff of the Markazi University of Medical Sciences who helped us implementing this project as well as all the participants in the research.

Funding source

The Arak University of Medical Sciences, Markazi, Iran.

Conflicts of interest

The authors declare no conflict of interest.

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