



Evaluation of Knowledge, Attitude and Behavior of Beauty Salon Workers Towards AIDS in Songhor

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Abstract

Background & Aims: Iran is one of three countries with two-thirds of new infection AIDS in 2018, reaching 11,000 new infections. Therefore, measuring the awareness and subsequent health behaviors of high-risk groups is essential.

Materials and Methods: A total of 150 beauty salon workers (BSWs) in Songhor, Kermanshah were randomly selected to participate in this study. The research tool was a researcher-made questionnaire in four sections (individual questions, knowledge, attitude and practice). Data were analyzed by descriptive and analytical statistics in SPSS 20.

Results: Regarding marital status 80% were married with age distribution of 16-25 (4%), 26-35 (56%) and 36-50 (40%), educational status 48% diploma and 68% of job experience of 1-10 years. Seventy-six percent of BSWs do tattoos for clients, 33% never used disposable razors and 28% disinfected the equipment incorrect. Their knowledge on HIV transmission methods was desirable, however was no significant correlation between knowledge, attitude and practice (KAP) ($P > 0.05$).

Conclusion: Health centers staff played a major role in the training of hairdressers, and in Iran, television and radio is facing serious restrictions on AIDS training and transmission and prevention methods. There is a need for training programs to improve the health behaviors of this high risk group.

Keywords: Beauty, Acquired immunodeficiency syndrome, Behavior

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1. Introduction

Acquired immune deficiency syndrome (AIDS) is a worldwide epidemic caused by retrovirus human immuno-deficiency virus (HIV) from the lentivirus family, which is one of the occupational hazards in high-risk jobs. It affects all systems of the body and makes the organs vulnerable to opportunistic infections, weight loss and eventually death [1].

AIDS is a disease that affects not only physical health but also mental and social conditions of patients, due to negative attitudes of society, discrimination and stigma especially in developing countries. There is not up to now vaccine for this disease, and prevention is the most important way to deal with HIV epidemic in the world [2].

Some countries have succeeded in curbing this epidemic, but in developing countries, the spread of this epidemic continues. AIDS is a hidden epidemic in the Middle East.

Despite the global decrease in the incidence of HIV, the rate of HIV infection is increasing in Iran. In 2019, it is estimated that 59 000 people in Iran are infected with

HIV, and each year there are about 4100 new cases and 2500 AIDS-related deaths in Iran [3].

For this reason, in recent years, Iran has begun pilot studies, policies and processes to educate and giving knowledge of key populations.

While there have been 2100-6000 (average 3500 cases) deaths, and 31 000 to 1 100 000 people (average 60 000 cases) people living with AIDS [4].

One of the most important barriers to AIDS prevention is the lack of knowledge about different aspects of the disease. Knowledge of AIDS and its transmission ways is an essential step in prevention [5]. Therefore, assessing the knowledge, attitude and behavior of at-risk groups is essential in all societies. Unless we are fully aware of the current state of knowledge and belief, we cannot plan effectively to raise knowledge [6].

There have been numerous reports of the transmission of the disease through the common use of razors, hair removers and tattooing from different countries around the world [6-8]. Barbershops is one of the public places where attention is paid to the issues of personal hygiene, because failure to comply with the above mentioned



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health standards leads to the spread of various diseases, including infectious diseases [9].

In Iran, the number of known cases of the AIDS is increasing. A variety of factors, such as age, work experience, marital status, education, attending workshop, affect the knowledge, attitude and practice (KAP) of barbershops about AIDS [10,11].

Many studies emphasize the importance of adhering to infection control standard such as proper hand washing, gloves use, disposable razors, disinfection and sterilization of equipment used in barbershops before and after use for each client as well as proper disposal of related waste has been emphasized [12,13]. In the study of Ayano Wakjira, the KAP of hairdressers regarding the methods of transmission and prevention of AIDS in southern Ethiopia were evaluated and only 34.5% of them knew that they could be exposed to HIV transmission [14].

In the study of Abdelrahim et al in Egypt, the level of KAP among hairdressers and their clients regarding AIDS was investigated. The findings showed that the majority of hairdressers and their customers had little information about this disease and the prevalence of AIDS among the participants was 8.6%. The majority of the studied hairdressers and their clients had a low level of knowledge, while more than three quarters of hairdressers suffered from AIDS [15]. In the study of Nozari et al, the level of knowledge was good in 4% of barbers, and 69% of barbers had a positive attitude. 51.5% and 5.48% of hairdressers had good and average performance, respectively [16]. Given the importance of the role of beauty salon workers (BSWs) in the transmission of infection diseases, especially AIDS, this study was conducted to determine the KAP of BSW in Songor, so that, based on the results of the study, necessary educational programs can be prepared, developed and implemented by relevant authorities.

2. Materials and Methods

This KAP study was conducted on BSW in Songhor, Kermanshah province, Iran, in five districts in 2019. The target population in this study was male and female. There are 150 barbers that officially working in the barber syndica. In this study, using Morgan table, sample size in the population with known volume and error of 0.05 was 148 samples [17] out of which 150 final samples were selected. Samples were randomly selected from 5 areas of north, south, east, west and center (each area: 30 samples). The research tool was a researcher-made questionnaire that was arranged in four sections: individual questions (age, gender, marital status, education, duration of working, year, number of children and income), knowledge (17 question), attitude (20 question) and practice (19 question) about AIDS and was completed by interview and observation. In the knowledge and practice section, each correct answer received one score

and a false score of zero. In the attitude section, which was adjusted based on the Likert scale, the scores ranged from 5 for "strongly agree" to 1 for "strongly disagree". Therefore, knowledge and practice scores ranged from zero to 17, and attitudes ranged from 20 to 100. Also, two questions were asked about how to obtain the necessary educational information about AIDS and the last time they attended educational sessions on AIDS. Content validity was used to determine the validity of the questionnaire. The content of the questionnaire was studied and evaluated by five professors of Kermanshah University of Medical Sciences, their corrective comments were applied and a comprehensible questionnaire was developed for the target population. The coefficients for each question ranged from 0.8 to 1. The reliability of the questionnaire was confirmed in a pilot study by distributing the questionnaire to 25% of eligible individuals and determining Cronbach's alpha (85%). Data were analyzed by descriptive and analytical statistics in SPSS 20 software to achieve the research objectives. Data normality was analyzed using Kolmogorov-Smirnov test. Following the ethics approved by the Research Ethical Committee of Kermanshah University of Medical Sciences, all respondents were given general explanations regarding the research objectives, how to fill out the questionnaire and confidentiality of information. All samples were included in the study voluntarily and purposely satisfaction was obtained orally.

The criteria for entering the study were over 15 years of age, living in the city of Songhor, and the ability to understand and answer the questions in the questionnaire. People who were not willing to cooperate and participate in the study were excluded from the current study.

3. Results

3.1. Demographic Characteristics of Respondents

According to the findings, 34.66% of participants were female. In 2017, minimum, maximum and mean of income of men were 1 100 000, 2 000 000 and $1\,577\,800 \pm 290\,000$ Toman, respectively; and women's income was minimum 50 000, maximum 2 000 000 with average 604.170 ± 476.501 Toman. It seems that samples have reported their income less than the real amount due to the fear of taxes and subsequent consequences. Mann-Whitney U test shown mean difference within number of children and average income in men and women were not significant ($P > 0.05$) and significant ($P < 0.05$), respectively. Other demographic characteristics are shown in Table 1.

In general, the mean score of this section in men and women was 14.75 ± 2.38 and 16.11 ± 0.92 , respectively. The results showed that in women 85.4% had high knowledge and 14.6% had moderate level of knowledge. In men, this rate was 88.8% and 11.2%, respectively. The people's knowledge about Mode of transmission of

HIV was at a medium to high level. Table 2 shows the knowledge of the participants according to demographic variables.

Eighty-eight percent of participants said that the HIV virus is not transmitted through eating to infected person. In addition, 87.3% of the samples excluded AIDS transmission through food, 55.3% by sneezing and coughing and 83.3% by kissing, hugging and shaking hands with infected persons. 97.33% confirmed the HIV transmission by needles, syringes, tattoos and piercing equipment. 92% of the respondents considered the appearance of people wrong and even healthy and regular people may be HIV carriers but 8% disagreed. Sixty-four percent of people said the HIV virus not

transmitted through cosmetics, but 35.4% of participants said it was possible. 20.66% of samples responded to the question “Does AIDS have a cure?” Responded affirmatively, and 63.33% stated that AIDS had no cure/treatment. 69.4% stated that there is a vaccine to prevent HIV infection and 12.2% reported no awareness. Since tattooing is now common in barbershops, samples were asked, “Is the barbershop a proper place for tattooing and piercing?” of which 85.3% gave a negative answer. The most reliable method of disinfecting non-metallic devices was 87.2% savlon, 4.3% hydrogen peroxide, and 1.2% microtone. In response to the question “The safest method of disinfecting metal tools” 79.6% chose heat, 12.2% chemicals and 2% ultraviolet radiation. Finally,

Table 1. Demographic characteristics of participants (n=150)

Variable		Men		Women		P value ^a
		Number	Percent	Number	Percent	
Age	16-25	2	3.8	5	5.1	0.123
	26-35	22	42.3	57	58.1	
	36-50	28	53.8	36	36.7	
	>50	0	0	0	0	
Education	Preliminary	11	21.1	40	40.8	0.595
	Diploma	29	55.7	46	46.9	
	Licentiate and above	12	23.07	12	12.2	
Marital status	Single	4	7.69	16	16.32	0.023
	Married	46	88.4	74	75.5	
	Divorced/separated	2	3.84	8	8.16	
Job experience	1-5	12	23.07	36	36.7	0.651
	6-10	17	32.6	33	33.6	
	>10	23	44.2	29	29.5	

^a Mann-Whitney U test.

Table 2. Level of the knowledge, attitude and practice on AIDS in respondents (n=150)

Variable		Knowledge	Attitude	Practice	P value		
					Knowledge	Attitude	Practice
Gender	Men	16.11±0.92	70.44±6.8	17.66±1.41	0.102	0.021	0.047
	Women	14.75±2.38	64.95±6.16	15.95±2.42			
Age, year	16-25	14±1.41	61.5±3.53	16.5±0.7	0.15	0.316	0.468
	26-35	15.35±2.42	65.17±7.65	15.89±2.64			
	36-50	14.6±2.03	67.45±4.69	16.7±1.99			
Education	Preliminary	14.2±3.2	63.63±5.31	16.26±2.66	0.286	0.048	0.85
	Diploma	15.66±1.12	66.41±6.82	16.12±2.17			
	Licentiate and above	14.85±1.34	70.57±6.82	16.71±2.42			
Marital status	Single	14.72±2.19	65.72±6.58	16.45±1.96	0.617	0.905	0.761
	Married	15.07±2.28	66±6.64	16.2±2.48			
	Divorced/separated	16.11±1.8	64.38±5.12	17.1±3.4			
Job experience	1-5	15.23±2.43	65.11±6.08	16.41±2.23	0.323	0.734	0.424
	6-10	14.64±2.28	65.82±7.35	15.88±2.68			
	>10	15.12±2.09	66.93±6.45	16.5±2.22			

a question was asked about the source of information about AIDS. The results of this subject are presented in Figure 1. According to Kruskal-Wallis test, there was no significant difference between the knowledge and health source information ($P>0.05$). Seventy-three percent of responders identified public toilets and baths as a source of AIDS transmission.

Attitude score was 65.94 ± 6.56 , respectively. 68% depending on the nature of their job, believed that always are exposed to HIV virus and 14% disagree. Due to the importance of disinfecting tools in the workplace, BSW attitudes in this regard were questioned; 48 percent believed that the prices of disinfectants were expensive and they can't afford to buy them. Also, 83.7% of study participants stated that needed training to perform proper disinfection and sterilization of tools. However, 96% of people found it necessary to disinfect the equipment for each customer according to a specific plan, and only 2% disagreed. Also, 98% believed that adherence to health principles would attract customers and improve business. 32% believed that using a disposable razor increased the cost and was not cost effective, while 68 percent disagreed. 35% only IV drug users are responsible for HIV transmission in Iran. 126 samples viewed AIDS as a public health problem. one sixth believed that sympathy should be given to the infected person with AIDS. 86% believed they did not like the food cooked by the person with AIDS.

In general, mean practice score was 14.26 ± 2.26 , minimum of 8 and maximum of 19. According to the study, 100% of men and women had a valid health card and 100% of men and 88.9% of women had a health education certificate. Regarding disinfection of tools and equipment, 88% people responded that they disinfect for each new customer. Hairdressers' answers to the question about the disinfection of the tools showed that 48.9% of them used alcohol, 6.4% heat, 19% chlorine and 25% other methods (soap, shampoo, etc). Regarding the sterilization, it was found that 65% of samples used flame heat, 14% boiling water, 7% dry heat, and 4.7% ultraviolet irradiation. However, 9.3% of them did not sterilize the equipment. A review of clause 13 of the barbershops' Law in Iran, found that 70% of participants followed this law. According to the findings, 55.6% always and 11.1% sometimes used disposable razors for each customer and

33.3% never used them. Looking at the performance of hairdressers, it was found that 73% of them wash their hands after each customer, 82.3% always use disposable gloves, 73.2% always use aprons and 52.5% refused to accept person with infections in the face or head. Also, correct disinfection of metal and non-metallic devices was performed in 73.3% and 86% of cases, respectively. 58.5% of people always disinfected the seat cushion for each customer, and 51.4% used clean paper under multiple-use apron. 76% of samples used eyebrows, lips and body tattoos for their clients. Pearson correlation test showed a significant correlation between attitude and performance of samples ($P<0.05$). But Spearman test results showed no significant correlation between knowledge with attitude and with practice ($P>0.05$).

4. Discussion

Studies so far have reported the risk of transmission of AIDS in hairdressers [18]. The current research has evaluated barbers' knowledge, attitude and practices regarding HIV/AIDS and provides an outline for further studies. The results show razor sharing, shave and tattooing from barbers has been identified as a risk factor for HIV spread in barbershops in Iran. This result is line with researches in Oman [19], Lome Togo [20] and Pakistan [21]. The results showed that mere knowledge will not increase attitude and practice because facilities and environmental conditions affect performance. Rather, the structure of one's beliefs must be deeply and scientifically grounded to practice properly. The data collected from this study is crucial for identifying the high-risk health behaviors of hairdressers in relation to AIDS in west of Iran. The incidence of HIV is unfortunately increasing in some countries, especially in Central Asia, such as Iran. Also, the age of HIV infection in the Middle East has also dropped. Continuous data collection on this key population is essential, these data increase the basic need for public intervention programs in a country such as Iran with the emergence of HIV epidemics and limited education on HIV. Lack of knowledge of unproven ways such as insect bites, kissing, regular contact or the use of common items such as clothing, towels or swimming in public pools can cause anxiety in daily affairs and social interactions. Paying attention to these issues in education will make the community far from irrelevant [22]. It is necessary to develop guidelines for the hairdressers to apply more precision. In general, in the present study, the level of knowledge of hairdressers about AIDS transmission and its prevention is desirable, which is in line with the results of the Gholamrezaee Sarvelat et al [23] and Khani-Jeihouni [8] study but contradicts the results of the Dehghani et al [24]. In other studies, similar results have been reported with the findings of the present study [25,26]. The difference in results may be due to differences in measuring tool, sample size

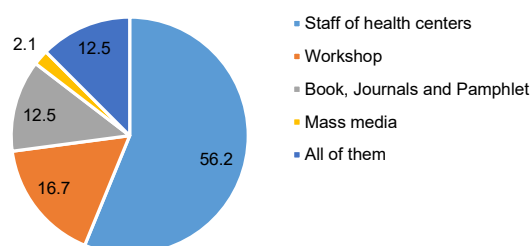


Figure 1. The source of information about AIDS

and the society condition. Despite their high level of awareness, their performance was moderately low. About 60% of the participants disinfected the devices for each customer. Formulate specific guidelines for infection control and how to disinfect and sterilize equipment used in barbershops, along with regularizing instructions from both careful attentions by them in monitoring is required by authorities. According to the results of the study, it was found that despite the Ministry of Health banning tattoos in hairdressers, as well as the hairdressers being aware of the risk of this work, this is still done in the hairdressers because it is profitable. The study by Oliveira et al in Sao Paulo, Brazil, on infectious disease control, found that compliance with occupational and safety standards was inadequate, which is in line with the current study [27]. In this study, health care personnel had the highest role in educating people and the mass media had the least importance. This may be because in Iran, for many years AIDS has been recognized as a taboo, and the mass media have been making public awareness of the many restrictions on providing explicit and transparent training on AIDS transmission and prevention. But is clear that, the mass media, especially radio and television in Iran, should be more transparent and less restrictive in trying to inform the public about this untreatable infection disease. On the other hand, television and radio, due to the availability of the general public, especially the youth, can have a significant impact on knowledge creation and consequently on the positive attitude and correct practice through educational programs, especially in crowded hours of the day. It seems that should suppress this disease is be expire in Iran and basic measures must be taken. Books and magazines on the principles of AIDS control by the government can also be provided to hairdressers, and by encouraging trade unions and the media to encourage hairdressers to further read books and magazines to improve hairdressers' health behaviors. The results of study Tabeshian [28] are in line with the present study. In their study, hairdressers found the role of radio and television in the dissemination of health activities unacceptable and received most of their information from health care workers. In this regard, 54% of Damghan hairdressers declare their main source of health information is health workers [29]. Obviously, choosing the right educational method, tools and media will have a great impact on the health information about AIDS prevention and will increase the correct behavior. it seems that in addition to the role of health professionals, teaching proper health behaviors in hairdressing schools can have beneficial effects. In this study, all barbers were randomly selected. All questionnaires were completed by face-to-face interview by experts referring to the barbershops, and ambiguous questions were clarified for participants. So we did not have a missing data. The data from this study can be very helpful in providing

health policy makers and government officials with valuable information. The special public health course, where hairdressing-related training is provided by environmental health experts, is critical to the health of those in the profession and the community. Lack of proper supervision by the authorities does not allow the hairdressers to attend these courses. Thirty-seven percent of participants reported the last session of their training session on infectious diseases a year earlier and earlier.

5. Conclusion

High percentage of men and women barbers engage in high-risk behaviors including tattooing, piercing, use the common razor; and need training on disinfection and sterilization of devices, which is of particular concern for transmission of AIDS to the community. Therefore, it is necessary to design, develop and implement targeted training programs for this high-risk group in society.

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Authors' Contribution

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Funding acquisition: Kermanshah university of medical sciences.

Investigation: Bahare Gholami.

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Competing Interests

There are no conflicts of interest.

Ethical Approval

This study was approved by Kermanshah University of Medical Sciences ethical committee (Ethical Code: IR.KUMS.REC.1397.713).

References

1. Baral R, Thapa U, Khatiwada D. Quality of life among people living with human immunodeficiency virus and acquired immune deficiency syndrome in a anti-retroviral therapy clinic. *J Nepal Health Res Counc.* 2019;16(41):405-9.
2. Sisay T, Verma D, Berhane N, Tsegaw M. Vaccine development strategies, progresses and challenges for human immunodeficiency virus (HIV): a review. *Int J Biotechnol.* 2018;7(1):8-16. doi: [10.18488/journal.57.2018.71.8.16](https://doi.org/10.18488/journal.57.2018.71.8.16).
3. SeyedAlinaghi S, Taj L, Mazaheri-Tehrani E, Ahsani-Nasab S, Abedinzadeh N, McFarland W, et al. HIV in Iran: onset, responses, and future directions. *AIDS.* 2021;35(4):529-42. doi: [10.1097/qad.0000000000002757](https://doi.org/10.1097/qad.0000000000002757).
4. World Health Organization (WHO). UNAIDS data 2018. 2019. <https://www.unaids.org/en/resources/documents/2019/2019->

UNAIDS-data.

5. Mandiwa C, Namondwe B. Uptake and correlates of HIV testing among men in Malawi: evidence from a national population-based household survey. *BMC Health Serv Res.* 2019;19(1):203. doi: [10.1186/s12913-019-4031-3](https://doi.org/10.1186/s12913-019-4031-3).
6. Almasi A, Dargahi A, Mohammadi M, Asadi F, Poursadeghiyan M, Mohammadi S, et al. Knowledge, attitude and performance of barbers about personal health and occupational health. *Arch Hyg Sci.* 2017;6(1):75-80.
7. Jemmott LS, Jemmott JB, Lanier Y, Thompson C, Baker JL. Development of a barbershop-based HIV/STI risk reduction intervention for young heterosexual African American men. *Health Promot Pract.* 2017;18(1):110-8. doi: [10.1177/1524839916662601](https://doi.org/10.1177/1524839916662601).
8. Khani-Jeihouni A, Ranjbari S, Khiyali Z, Moradi Z, Motamedi MJ. Evaluation of the factors associated with AIDS prevention performance among male barbers based on the health belief model in Fasa. *J Educ Community Health.* 2017;3(4):59-65. doi: [10.21859/jech.3.4.59](https://doi.org/10.21859/jech.3.4.59).
9. Qadar LT, Shabbir O, Asghar SA. An uprising threat in the Pakistani society-the HIV outbreak. *J Pak Med Assoc.* 2019;69(4):606.
10. Kay ES, Lacombe-Duncan A, Pinto RM. Predicting retention in HIV primary care: is there a missed visits continuum based on patient characteristics? *AIDS Behav.* 2019;23(9):2542-8. doi: [10.1007/s10461-019-02508-6](https://doi.org/10.1007/s10461-019-02508-6).
11. Ghayomzadeh M, Etesami MS, Earnest CP, Rezaei S, Navalta JW, Taj L, et al. Effect of a short-term lifestyle modification program on quality of life, anthropometric characteristics and CD4+T cell count of HIV infected patients in Tehran/Iran: a randomized controlled trial. *Explore (NY).* 2019;15(4):308-15. doi: [10.1016/j.explore.2019.01.004](https://doi.org/10.1016/j.explore.2019.01.004).
12. Gardner AJ, Fisher M, Tribit GK, Little CE, Lucas ED, Lowe MT. Research brief: assessing readiness for barbershop-based HIV prevention programs among rural African American barbershop patrons. *Fam Community Health.* 2022;45(2):103-7. doi: [10.1097/fch.0000000000000320](https://doi.org/10.1097/fch.0000000000000320).
13. Vasylyev M, Skrzat-Klapaczyńska A, Bernardino JJ, Săndulescu O, Gilles C, Libois A, et al. Unified European support framework to sustain the HIV cascade of care for people living with HIV including in displaced populations of war-struck Ukraine. *Lancet HIV.* 2022;9(6):e438-e48. doi: [10.1016/s2352-3018\(22\)00125-4](https://doi.org/10.1016/s2352-3018(22)00125-4).
14. Ayano Wakjira B. Assessment on knowledge, attitude and practice with regard to the transmission and prevention of HIV/AIDS among barbers and beauty salon workers in Hossana town, South Ethiopia. *J Clin Diagn Res.* 2017;5(1):136. doi: [10.4172/2376-0311.1000136](https://doi.org/10.4172/2376-0311.1000136).
15. Abdelrahim S, Mohamed M, Ahmed S, Zakria M. Seroprevalence, knowledge, attitude and practices among barbers and their customers regarding HCV and HBV in Assiut district, Egypt. *IOSR J Nurs Health Sci.* 2015;4(3):19-30. doi: [10.9790/1959-04311930](https://doi.org/10.9790/1959-04311930).
16. Nozari M, Samaei MR, Shirdarreh MR. The study of Knowledge, attitude and, performance of male barbershops of Shiraz in relation to infection transmission. *Pars J Med Sci.* 2014;12(3):39-48. [Persian].
17. Gerald E, Obianuju A, Chukwunonso N. Strategic agility and performance of small and medium enterprises in the phase of COVID-19 pandemic. *International Journal of Financial, Accounting, and Management.* 2020;2(1):41-50. doi: [10.35912/ijfam.v2i1.163](https://doi.org/10.35912/ijfam.v2i1.163).
18. Kerkez M, Sohbət R, Okuyan CB. Evaluation of AIDS and hepatitis-B knowledge and job satisfaction among hairdressers and barbers in Turkey. *Acta Sci Health Sci.* 2022;44(1):e56401. doi: [10.4025/actascihealthsci.v44i1.56401](https://doi.org/10.4025/actascihealthsci.v44i1.56401).
19. Al-Busafi SA, Al-Harhi R, Al-Naamani K, Al-Zuhaibi H, Priest P. Risk factors for hepatitis B virus Transmission in Oman. *Oman Med J.* 2021;36(4):e287. doi: [10.5001/omj.2021.99](https://doi.org/10.5001/omj.2021.99).
20. Teclessou JN, Saka B, Sabli AE, Akakpo AS, Mouhari-Touré A, Kombate K, et al. [Knowledge attitudes and practices of hairdressing salon staff on HIV infection in Lome Togo]. *Pan Afr Med J.* 2019;32:217. doi: [10.11604/pamj.2019.32.217.16421](https://doi.org/10.11604/pamj.2019.32.217.16421).
21. Samo AA, Laghari ZA, Baig NM, Khoso GM. Prevalence and risk factors associated with hepatitis B and C in Nawabshah, Sindh, Pakistan. *Am J Trop Med Hyg.* 2020;104(3):1101-5. doi: [10.4269/ajtmh.20-1228](https://doi.org/10.4269/ajtmh.20-1228).
22. Pires CAA, Noronha MAN, Monteiro J, da Costa A, de Castro Abreu Júnior JM. Kaposi's sarcoma in persons living with HIV/AIDS: a case series in a tertiary referral hospital. *An Bras Dermatol.* 2018;93(4):524-8. doi: [10.1590/abd1806-4841.20186978](https://doi.org/10.1590/abd1806-4841.20186978).
23. Gholamrezaee Sarvelat Z, Sharifirad G, Babakhani MH, Zamanian H, Mohebi S. Effect of educational intervention based on the health belief model on the improvement of the health performance of female hairdressers in Qom, Iran. *Arch Hyg Sci.* 2020;9(2):109-20. doi: [10.29252/ArchHygSci.9.2.109](https://doi.org/10.29252/ArchHygSci.9.2.109).
24. Dehghani S, Hashemiazizli H, Habibi-Fathabadi B, Hosseini A, Balvardi M. Evaluation of health performance of women's and men's hairdresser shops in Baft city according to health indicators and infection transmission in 2019. *J Environ Sci Stud.* 2021;6(4):4353-9. [Persian].
25. Hassan AT, Adam AG, Abdallah H. Hepatitis b prevalence and associated factors among hairdressers at Khartoum State, Sudan, 2021. *Sch J Appl Med Sci.* 2022;10(1):130-7. doi: [10.36347/sjams.2022.v10i01.022](https://doi.org/10.36347/sjams.2022.v10i01.022).
26. Avwioro G, Egwunyenga A, Adjekuko C, Mgbere O, Odibo E, Iyiola S, et al. Commercial sex work during novel coronavirus (SARS-CoV-2) era in the Niger delta region: relationships between knowledge, preventive practice, and transmission potential. *Int J Womens Health.* 2021;13:509-23. doi: [10.2147/ijwh.s303565](https://doi.org/10.2147/ijwh.s303565).
27. de Oliveira AC, Focaccia R. Survey of hepatitis B and C infection control: procedures at manicure and pedicure facilities in São Paulo, Brazil. *Braz J Infect Dis.* 2010;14(5):502-7. doi: [10.1590/s1413-86702010000500013](https://doi.org/10.1590/s1413-86702010000500013).
28. Tabeshian A. Evaluation of health education on awareness, attitude and operation of Najafabad health care staffs on the prevention of hepatitis B. *Paramedical Sciences and Military Health.* 2017;11(4):23-9. [Persian].
29. Ghanepour MR, Hamed V, Parimi F. KAP study of woman hairdressers about hygiene and infectious diseases in Damghan city. *J Health.* 2010;1(3):23-30. [Persian].