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HIV and hepatitis B prevention practices among female hairdressers in Shahr-E Andisheh, Iran, 2020

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Abstract

Background: Female hairdressers are at risk of transmitting bloodborne pathogens such as human immunodeficiency virus (HIV) and hepatitis B virus due to their use of sharp instruments. The aim of this study was to survey female hairdressers' knowledge, attitudes, and practices (KAP) regarding HIV and hepatitis B prevention.

Methods: This cross-sectional study assessed KAP concerning HIV and hepatitis B prevention among 77 licensed female hairdressers in Andisheh city, Iran, using a census method that included all hairdressers in the city. Data on knowledge, attitude, and performance were collected using a validated questionnaire and analyzed with descriptive statistics, Pearson's correlation coefficient, and Jonckheere-Terpstra tests. A significance level of 0.05 was considered.

Results: Participants (Mean age 36.14 ± 8.82 years; mean work experience 9.66 ± 8.34 years) demonstrated relatively good knowledge (54.5%), favorable attitudes (58.4%), and good performance (62.3%). However, knowledge gaps existed regarding disinfectants. Negative attitudes toward disposable items due to customer satisfaction and cost, as well as misconceptions about salon suitability for tattooing, were observed. Significant positive correlations were found between age and both attitude and knowledge, and between work experience and all three KAP domains. Attitude and performance were also positively correlated. Education level showed no significant association with KAP.

Conclusion: While female hairdressers in Andisheh city possess relatively good baseline KAP, specific weaknesses in knowledge about disinfectants and negative attitudes toward crucial preventive measures, such as the use of disposable items and the discouragement of tattooing, necessitate targeted interventions. Educational programs emphasizing proper disinfection, addressing misconceptions about disposables, and discouraging high-risk procedures are recommended to further enhance preventive behaviors in this occupational group.

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Highlights

What is current knowledge?

While there is a growing body of literature on health practices among high-risk populations, limited studies have focused specifically on female hairdressers in urban settings, and even fewer have examined their preventive practices concerning these diseases.

What is new here?

This study provides novel insights into the prevention practices related to human immunodeficiency virus and hepatitis B among female hairdressers in Tehran, shedding light on their knowledge, attitudes, and behaviors. By focusing on this under-researched group, the study identifies gaps in prevention efforts and highlights the need for tailored health education programs for occupational groups at risk of bloodborne diseases in similar urban environments.

Introduction

Infectious diseases such as acquired immunodeficiency syndrome (AIDS) and hepatitis B remain significant global health challenges. According to the World Health Organization (WHO), in 2020, an estimated 38 million people worldwide were living with human immunodeficiency virus (HIV), the virus that causes AIDS (1). Additionally, it is estimated that more than 240 million people are affected by chronic hepatitis B (2). Globally, there were more than 3.0 million new infections with hepatitis B virus (HBV) and hepatitis C virus (HCV), and more than 1.1 million deaths due to these viruses in 2019 (3). Hepatitis B can lead to severe complications, such as cirrhosis and liver cancer (4). HBV-related cirrhosis resulted in an estimated 331,000 deaths in 2019, and the number of deaths from HBV-related liver cancer in 2019 was estimated at 192,000, representing an increase from 156,000 in 2010 (5).

The knowledge and awareness of barbers and hairdressers regarding HIV and hepatitis B and C are crucial, as unsafe practices can facilitate the transmission of bloodborne infections (6). Studies show considerable variation in hairdressers' awareness and preventive practices across different settings. For instance, in Tehran, most hairdressers demonstrated only moderate knowledge and attitudes toward workplace health risks, with inconsistent adherence to hygiene protocols (7). Additionally, studies in Baft city indicated that a significant number of hairdressers lacked sufficient practice regarding the use of disposable hygiene tools (8). This raises concerns about public health, as hairdressers are known for having direct and frequent contact with blood and body fluids.

Internationally, research in various countries has highlighted similar issues. A study in Fiji found that most hairdressers were unaware of proper hygiene practices to prevent viral diseases (9). Similarly, a study conducted in Pakistan indicated that beauty salon and hairdresser workers had poor knowledge and engaged in unsafe practices (10). A study in Italy revealed that, although the level of awareness among hairdressers about HIV, hepatitis, and the risk of transmission was good, some unsafe practices persisted that may lead to infections due to bloodborne viruses (11).

The role of hairdressers in the potential transmission of bloodborne pathogens such as human immunodeficiency virus and hepatitis B virus has gained increasing attention due to the nature of their work, which involves the use of sharp instruments and potential contact with blood.

These gaps in knowledge and attitudes, particularly in workplaces such as women's hair salons, require special attention. With this in mind, the present study was conducted to assess the level of knowledge, attitudes, and practices regarding preventive behaviors against acquired immunodeficiency syndrome and hepatitis B in women's hair salons in Andisheh city.

Methods

Procedure

This study was cross-sectional, employing a descriptive-analytical approach. The study population consisted of all hairdressers in Andisheh phase 1. Since there were 77 licensed women's hairdressers in the city, all were included in the study through a complete census. The study was approved by the Ethics Committee of Golestan University of Medical Sciences under the approval number IR.GOUMS.REC.1399.414.

Measures

The instrument used in this study was the Knowledge, Attitude, and Performance Questionnaire, which has been utilized in the studies of Sadeghi et al. (12) and Honarvar (13), with confirmed validity and reliability. To measure performance, the questionnaire included 12 questions on a scale ranging from 'not at all' to 'always,' with scores assigned from 0 to 4, respectively. The total score range was 0 - 48, and for analysis, the scores were categorized into three levels: Weak, moderate, and strong. A score of 0 - 16 was considered poor performance, 17 - 33 was considered average performance, and 34 or higher was considered strong performance.

The attitude assessment section consisted of 13 questions using a 5-point Likert scale, ranging from 'strongly disagree' to 'strongly agree,' with scores assigned from 0 to 4, respectively. The possible score range was 0 - 52. For analysis, the scores were categorized into three levels: A score of 0 - 17 was considered an undesirable attitude, 18 - 35 was considered a semi-desirable attitude, and 36 - 52 was considered a desirable attitude.

The awareness section of the questionnaire consisted of 13 questions with yes/no/don't know answer options. 'Yes' answers were scored as 1, while 'no' and 'don't know' answers were scored as 0. The possible score range for each individual was between 0 and 13. For analysis, the scores were categorized into three levels: A score of 0 - 4 was considered poor awareness, 5 - 9 was considered moderate awareness, and 10 - 13 was considered good awareness. The questionnaire also included individual variables such as age, education level, work experience, and more.

Analysis

The collected data were entered into SPSS version 16 for analysis. Descriptive statistics (Mean, standard deviation, percentage, and frequency) were used to summarize the data. To assess the relationships between variables, Pearson's correlation coefficient was applied to examine the associations between attitude and awareness, attitude and performance, and awareness and performance. Education level was treated as an ordinal variable, and the Jonckheere-Terpstra test was also applied to assess trends across education levels. A significance level of 0.05 was considered.

Results

The mean age of the participants was 36.14 ± 8.82 years, with an age range of 21 to 55 years. Their mean work experience was 9.66 ± 8.34 years. Regarding education level, the results showed that 12 participants (15.6%) had less than a high school diploma, 42 participants (54.5%) had a high school diploma, and 23 participants (29.9%) had a university degree.

The average knowledge score was 9.65 ± 2.53 out of a possible 13. Overall, the hairdressers' knowledge level was relatively good. Their weakest area of knowledge was regarding disinfectants and the proper disinfection of hairdressing tools (Table 1).

The average attitude score was 38.00 ± 5.71 out of a possible 52. Regarding attitude, the results showed that 47 participants (61%) believed that using disposable items, such as razors, does not satisfy customers. Additionally, 44 participants (57.2%) felt that disinfecting sharp items like razors and scissors is time-consuming, and using disposable razors increases costs, making it financially unfeasible for them. Furthermore, 49 participants (63.7%) considered barbershops to be suitable places for tattooing (Table 2).

The average performance score was 36.59 ± 8.42 out of 48. The most practiced measure was using disposable razors, which was implemented 68.8% of the time, while the least common practice was cleaning the hair washing area after each client, at 28.6% (Table 3).

The Jonckheere-Terpstra test results indicated no significant differences between the education level of the participants and their knowledge ($P = 0.725$), attitude ($P = 0.128$), or performance ($P = 0.076$, Table 4).

However, from a ranking perspective, 54.5% of participants demonstrated good knowledge, 58.4% had a favorable attitude, and 62.3% exhibited good performance (Table 5).

The results of the Pearson correlation coefficient test showed a significant correlation between age and both attitude ($R = 0.535$, $P < 0.01$) and knowledge ($R = 0.407$, $P < 0.01$) among the participants (Table 6). Additionally, there was a significant correlation between attitude and performance ($R = 0.244$, $P < 0.05$). However, no significant correlation was found between knowledge and either attitude or performance ($P > 0.05$). Furthermore, work experience was significantly correlated with knowledge ($R = 0.512$, $P < 0.01$), attitude ($R = 0.520$, $P < 0.01$), and performance ($R = 0.279$, $P < 0.05$, Table 6).

Table 1. Frequency distribution of participants' knowledge

Item	Yes		No / I don't know	
	N	%	N	%
A person's appearance is not a reliable indicator of their risk of having HIV or hepatitis B.	63	81.8	14	18.2
HIV and hepatitis can be transmitted from seemingly healthy but infected individuals to others.	62	80.5	15	19.5
Sharp instruments used in hair salons can transmit infections to clients if not properly disinfected before and after each use.	74	96.1	3	3.9
Personal sharps in salons must be cleaned, sterilized, or disinfected before and after each use.	73	94.8	4	5.2
Following hygiene practices and using personal items (Scissors, tweezers, manicure, and pedicure tools) in salons reduce the risk of infection transmission.	69	89.6	8	10.4
An alcohol lamp alone is not effective for disinfecting sharp tools in a hair salon.	57	74	20	26
The best way to use a razor in a barbershop is to use a disposable one.	71	92.2	6	7.8
A hair salon is not a suitable place for getting a tattoo.	42	54.5	35	45.5
A hair salon is not a suitable place for treating skin lesions.	41	53.5	36	46.5
All hairdressers must complete the full hepatitis B vaccination course.	66	85.7	11	14.3
Microtone, Savlon, and 3% hydrogen peroxide belong to the group of mild antiseptics.	42	54.5	35	45.5
Sodium hypochlorite 10%, 70% alcohol, and Betadine are all intermediate-level disinfectants.	42	54.5	35	45.5
Glutaraldehyde 2% and hydrogen peroxide 6% are strong disinfectants and can have sterilizing properties under certain conditions.	41	53.5	36	46.5

Table 2. Frequency distribution of participants' attitudes

Item	Completely agree		Agree		Undecided		Disagree		Completely disagree	
	N	%	N	%	N	%	N	%	N	%
A hair salon is not an appropriate place for getting a tattoo.	6	7.7	21	27.3	1	1.3	20	26	29	37.7
A hair salon is not a suitable place for skin lesion removal.	8	10.4	16	20.8	1	1.3	24	31.2	28	36.4
I'm worried that I might contract hepatitis B.	2	2.6	3	3.9	3	3.9	36	33.8	43	55.8
I'm worried that I might contract HIV.	2	2.6	3	3.9	3	3.9	30	39	39	50.6
Hepatitis B can be life-threatening.	4	5.2	3	3.9	6	7.8	30	39	34	44.2
HIV can be life-threatening.	5	6.5	2	2.6	4	5.2	31	40.3	35	45.5
Failure to follow hygiene standards in a hair salon can lead to the transmission of hepatitis B and HIV to customers.	1	1.3	3	3.9	33	42.9	40	51.9	0	0
Avoiding shared equipment, such as razors, can help prevent the transmission of hepatitis B and HIV to customers.	0	0	2	2.6	3	3.9	27	35.1	45	58.4
Using disposable items, such as razors, enhances customer satisfaction.	1	1.3	5	6.5	24	31.2	47	61	0	0
Hepatitis B and HIV transmission are not linked to salon hygiene standards.	13	16.9	8	10.4	9	11.7	22	28.6	25	32.5
Disinfecting razors and scissors is time-consuming.	22	28.6	22	28.6	8	10.4	10	13	15	19.5
Using disposable razors is costly and not cost-effective.	24	31.2	20	26	8	10.4	13	16.9	12	15.6
Maintaining hygiene attracts customers and boosts business.	1	1.3	1	1.3	24	31.2	51	66.2	0	0

Table 3. Frequency distribution of the performance of studied individuals

Item	Never		Seldom		Sometimes		Often		Always	
	N	%	N	%	N	%	N	%	N	%
1. Before and after contacting each client, or if there is a break during the appointment-such as answering the phone-we thoroughly wash our hands with water and sanitizer.	8	10.4	17	22.1	16	20.8	10	13	26	33.8
2. I thoroughly clean all combs and brushes before reusing them. If they fall on the floor, I wash them with hot water and detergent, dry them, and disinfect them if necessary.	0	0	9	11.7	26	33.8	17	22.1	25	32.5
3. I thoroughly clean the scissors before reusing them. I wash them with hot water and detergent, dry them, and disinfect them if necessary.	1	1.3	7	9.1	22	28.6	17	22.1	30	39
4. Before reusing the electric hair trimmer, I replace the blades with new ones if possible, disposing of the used blades in a sharp's container. I then thoroughly clean the rest of the device with a cloth dampened with alcohol, water, and detergent.	0	0	6	7.8	20	26	14	18.2	37	48.1
5. Any equipment stained with blood or visible bodily fluids is thoroughly cleaned before reuse. It is then washed with hot water and detergent, dried, and autoclaved if possible. If autoclaving is not an option, the equipment is disinfected with an appropriate disinfectant.	0	0	2	2.6	16	20.8	19	24.7	40	51.9
6. I use a new disposable razor for each client.	0	0	2	2.6	10	13	12	15.6	53	68.8
7. I wash all used towels with hot water and detergent or have them dry-cleaned, then prepare them hygienically for the next customer. Whenever possible, I use a separate towel for each client.	0	0	4	5.2	13	16.9	30	39	30	39
8. I clean the hair washing area after each client and, if necessary, wash it with hot water and detergent.	0	0	9	11.7	22	26.8	24	31.2	22	28.6
9. I use a disposable ribbon, clean towels, or paper under my reusable capes.	0	0	5	6.5	17	22.1	20	26	35	45.5
10. will not apply makeup to any client with an infection or open lesions on the face or head and will postpone the service until they have fully recovered.	3	3.9	1	1.3	18	23.4	18	23.4	37	48.1
11. If I need to apply makeup to areas suspected of infection or where there is a risk of bleeding, I use sterile disposable gloves and disinfected equipment.	0	0	2	2.6	15	19.5	24	31.2	36	46.8
12. If I have a wound or scratch with discharge on my hands, I will avoid contact with the client until it heals whenever possible. Otherwise, I will wear sterile disposable gloves.	0	0	3	3.9	18	23.4	18	23.4	43	55.8

Table 4. Knowledge, attitude, and practice scores by education level among female hairdressers

Education level	Knowledge		Attitude		Practice	
	(Mean±SD)	Median	(Mean±SD)	Median	(Mean±SD)	Median
ess than a high school diploma (n=12)	9.16±2.36	9.50	38.91±5.01	38.00	34.75±6.44	36.00
High school diploma (n=42)	9.71±2.20	9.50	37.81±6.10	38.00	37.07±8.91	36.50
University degree (n=23)	9.78±3.19	11.00	37.73±5.50	37.00	36.26±8,26	35.00
Total	9.64±2.53	10.00	38.00±5.71	38.00	36.46±8.32	36.00

Table 5. Frequency distribution of knowledge, attitude, and performance ratings

Variables	Weak		Moderate		Strong	
	N	%	N	%	N	%
Knowledge	1	1.3	34	44.2	42	54.5
Attitude	0	0	32	41.6	45	58.4
Performance	1	1.3	28	36.4	48	62.3

Table 6. Results of pearson correlation of selected studied variables

Variables	Age	Work history	Knowledge	Attitude	Performance
Age	1	0.820**	0.407**	0.535**	0.197
Work history	0.820**	1	0.512**	0.520**	0.279*
Knowledge	0.407**	0.512**	1	0.212	0.168
Attitude	0.535**	0.520**	0.212	1	0.244*
Performance	0.197	0.279*	0.168	0.244*	1

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Discussion

Hair salons can be a potential source of transmission for acquired immunodeficiency syndrome (AIDS) and hepatitis B, and maintaining proper hygiene standards is crucial in preventing the spread of these diseases. This study aimed to assess the awareness, attitudes, and practices of hair salons in Andisheh city, phase 1, Tehran, concerning AIDS and hepatitis B.

The average knowledge score in this study (9.65 ± 2.53 out of 13) indicates that most participants possessed a relatively good understanding of human immunodeficiency virus (HIV) and hepatitis B prevention, although notable gaps remain. The similarity between our findings and those of Honarvar et al. (13), who reported a mean score of 9.77 ± 3.36 using the same instrument, suggests that the general level of knowledge among Iranian hairdressers has remained fairly stable across regions and over time. However, the moderate performance of a substantial proportion of participants highlights the need for ongoing educational initiatives and refresher training, as knowledge alone forms the foundation for - but does not guarantee - safe practices.

Compared with the study by Nozari et al. (14), in which 71% of participants demonstrated good knowledge, the slightly lower proportion seen in the present study may reflect contextual differences, such as variations in public health education programs, enforcement of occupational health regulations, or access to training resources. Differences in measurement tools and local health promotion efforts could also contribute to these discrepancies. These findings underscore the importance of continuous professional education and standardized training materials across provinces to ensure consistent infection control awareness within the beauty industry.

In this study, more than half of the participants believed that hair salons were appropriate places for tattooing and skin lesion removal. This misconception reflects limited awareness of infection control regulations and the health risks associated with invasive cosmetic procedures. In comparison, Honarvar et al. (13) reported an even higher prevalence (93%) of this belief among hairstylists in Shiraz, indicating that such attitudes are widespread within the profession. Economic motivation likely plays a major role, as services such as tattooing and lesion removal can provide additional income in a competitive beauty market. Moreover, the normalization of these practices within informal salon settings may reduce the perceived risk among workers and clients alike. However, performing invasive procedures outside of licensed medical facilities significantly increases the risk of transmitting bloodborne infections such as HIV and hepatitis B. These findings underscore the need for regulatory oversight, professional training, and public education to clearly differentiate between cosmetic and medical procedures and to prevent high-risk practices in unregulated environments.

In this study, 58.4% of participants demonstrated a favorable attitude toward preventive measures, with none expressing an unfavorable attitude. While attitude alone may not directly predict behavior, it provides an important foundation for the adoption of health-promoting practices. The positive and significant correlation observed between attitude and performance suggests that hairdressers who recognize the importance of infection control are more likely to engage in safe practices, such as proper disinfection and the use of disposable tools. This finding highlights the role of attitudes as a motivational factor that can enhance adherence to preventive measures. Similar patterns have been reported in other studies. Fallah-Ebrahimpour et al. observed that 66.1% of hairdressers in Gonbad held a positive attitude toward AIDS prevention, with a significant correlation between attitude and practice (15). Likewise, Nozari et al. reported that 96% of male hairdressers in Shiraz demonstrated a favorable attitude toward preventing hepatitis B and AIDS, consistent with our findings (14). These comparisons indicate that favorable attitudes toward infection control are generally common among hairdressers, but the translation of attitude into consistent preventive behavior may vary depending on contextual factors such as training, supervision, and perceived barriers. Therefore, interventions aiming to improve infection control should not only enhance knowledge but also reinforce positive attitudes to facilitate sustainable behavioral change.

More than half of the participants in this study perceived disinfecting hairdressing equipment as time-consuming and considered disposable razors costly. These perceptions represent significant barriers to adopting safe and effective infection control practices. According to the Health Belief Model, high levels of perceived barriers can hinder the translation of knowledge and favorable attitudes into preventive behavior (16). Addressing these barriers through targeted education, practical demonstrations, and interventions that reduce cost or time constraints could enhance compliance with recommended practices. Differences in perceived barriers across studies may reflect variations in study populations, local regulations, access to training, or the availability of hygiene resources. For example, Khani Jihouni et al. (17) reported fewer perceived barriers among their participants, suggesting that contextual factors, such as workplace support or prior training, can influence the degree to which barriers are felt. These findings highlight the importance of tailoring interventions to local circumstances to effectively promote safe practices in hair salons.

Another key finding of this study was the positive and significant correlation between work experience and participants' knowledge, attitudes, and practices. This suggests that as hairdressers gain more experience, they acquire greater awareness of infection control measures, develop more favorable attitudes toward preventive behaviors, and are more likely to implement safe practices. Increased exposure to occupational risks and repeated engagement with hygiene protocols may contribute to this improvement over time. These results are consistent with the findings of Khani-Jeihouni (17) and underscore the importance of integrating structured training and mentorship for less-experienced hairdressers to accelerate the adoption of effective preventive behaviors.

Conclusion

The findings of this study highlight the varying levels of knowledge, attitudes, and practices among female hairdressers in Andisheh city regarding AIDS and hepatitis B prevention. While the majority demonstrated good awareness and a favorable attitude toward hygiene practices, gaps remain in critical areas, such as proper disinfection techniques and misconceptions about the appropriateness of performing procedures like tattooing and skin lesion removal in salons. Although many hairdressers adhered to hygiene protocols, some practices - such as routine disinfection of workstations and cleaning hair-washing areas - were less consistently followed. Additionally, financial concerns and customer satisfaction perceptions posed challenges in implementing disposable tools and strict hygiene measures. The study underscores the need for targeted educational programs and stricter enforcement of health regulations in salons. Regular training sessions, easy access to appropriate disinfectants, and greater awareness campaigns can further improve compliance with preventive behaviors. Given the significant public health implications, future research should explore more comprehensive interventions and policies to ensure safer salon environments and reduce the transmission risks of infectious diseases.

Study strengths

One of the strengths of this study is its comprehensive approach, as it included all licensed female hairdressers in Andisheh phase 1, ensuring a complete census and minimizing selection bias. Additionally, the use of a validated and reliable questionnaire allowed for accurate measurement of knowledge, attitude, and performance, making the findings more robust and comparable to previous studies. The study also benefited from a systematic data collection process and statistical analysis, which provided meaningful insights into the relationships between various factors such as age, work experience, and awareness levels.

Study limitations

However, the study had some limitations, including its cross-sectional design, which prevents the establishment of causal relationships between variables. Furthermore, self-reported data may have introduced response bias, as participants might have provided socially desirable answers rather than reflecting their actual practices. Another limitation is that the study focused only on female hairdressers in a specific geographic area, which restricts the generalizability of the findings to other regions or to male hairdressers. Additionally, the study did not assess external factors such as access to hygiene training programs or workplace policies that could influence hygiene practices. Despite these limitations, the study provides valuable insights into the knowledge, attitudes, and practices of hairdressers regarding AIDS and hepatitis B prevention, highlighting areas for improvement in public health interventions.

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Ethical statement

The Institutional Review Board of Golestan University of Medical Sciences approved the study protocol (IR.GOUMS.REC.1399.414). Informed consent was obtained from all participants prior to the interview. Participants were assured that their responses would be kept confidential.

Conflicts of interest

The authors declare no conflict of interest.

Author contributions

A. Z.: Conceptualization, Study design, and Drafting of the manuscript; H. S.: Data gathering and Data entry; A. C.: Study design, Data analysis, Interpretation of data, and Revision of the manuscript.

Data availability statement

The dataset is available upon request from the corresponding author.

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