

Hygiene habits and infection risks of hairdressers and beauty salons employees during applications in different anatomic regions

 Suna Aydin¹,  Aziz Aksoy²,  Hacer Ceylan³

¹Clinic of Cardiovascular Surgery, Elazig Fethi Sekin City Hospital, Elazig, Turkey

²Department of Bioengineering, Malatya Turgut Ozal University, Malatya, Turkey

³Department of Nutrition and Dietetic, Van Caldiran District State Hospital, Van, Turkey

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Abstract

Aim: This study; Providing personal care services to the anatomical parts of the body, it offers important information about the risks of hygiene and contamination in hairdressers and beauty salons both for employees and those receiving service.

Material and Methods: This descriptive study was planned; It consists of 60(46F+14M) volunteers. 26 hairdressers and beauty salons in Diyarbakir city center and its related districts. Data; It was obtained with questionnaire forms composed of 84 questions. The statistical analyses were performed using SPSS 17.0 Statistics Software.

Results: Of the participants, he did not know that 73%(44) was vaccinated against hepatitis B, 15%(9) was not vaccinated, while others did not. The majority of the participants had sufficient knowledge about the transmission of hair-breaking disease. It was observed that 20%-30% of the participants did not have sufficient information about the transmission routes of diseases such as Hepatitis B, C, HIV. Participants; 38.3%(23) of them wash their hands after each customer, 50%(30) of them use separate towels for each customer, 51.7%(31) when cutting hair, 41.7%(25) continuous apron while waxing 63.3%(38) stated that they wear gloves continuously for each customer. Only those using UV for sterilization of instruments were found to be 26.7%(16). Participants generally used to disinfect the bottom by using disinfectants rather than sterilization.

Conclusion: Participants' wearing aprons, gloves and protectors, washing their hands after each customer, their efforts to protect from infectious diseases, their knowledge of sterilization techniques were not sufficient for all service locations. It is obvious that poor infection control procedures and hygienic practices, including cleaning and disinfection, will present a risk of infection among customers. Infection risks for places that provide personal care are not well defined. Specific infection control practices should be performed by environmental health physicians.

Keywords: Beauty salons; hairdressers; infected; manicure; skincare

INTRODUCTION

There is very limited data on the risks of infection related to the care services in beauty and hairdressing salons. Hepatitis B, C, HIV, fungus, and influenza, etc., diseases can be quite high in hairdressers. Infection agents; infected people's body fluids, dried blood drops, needles, dishwashing surfaces, injectors, shaving blades can survive for a long time (1,2). Fungal infections in the skin, such as hair and nail attachments, are also common in every part of the world. Hairdressing and Beauty Center; it involves any treatment on a person's head, face or hair, including hair styling. Among these transactions; cutting, coloring, curl, straightening with heat or loosening chemicals, blow-drying, lengthening, scalp treatments or hair treatments (3). Although the risk of contamination in

hairstyling is low, procedures that require the use of a razor carry a higher risk of contamination. Open wounds may pose a greater risk for the entry of microorganisms. Since manicure and pedicure involve various procedures such as cutting the skin or nail slots (eponychium) and rubbing the skin (dermis), the risk of infection may increase in the case of an open wound. Waxing processes can also cause the integrity of the skin to deteriorate. In similar cases increases the risk of mucocele disease (3).

Tattooing procedures can disrupt the integrity of the dermis. Microorganisms enter the impaired dermis and can cause infections. All skin penetration equipment must be sterile before use and must be cleaned or sterilized before reuse. If a device that does not penetrate the dermis accidentally enters the dermis or becomes contaminated

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Corresponding Author: Suna Aydin, Clinic of Cardiovascular Surgery, Elazig Fethi Sekin City Hospital, Elazig, Turkey

E-mail: cerrah52@hotmail.com

with blood or body fluids, it must be cleaned or sterilized before being reused or discarded (4).

Epilation; unwanted body hair from the entire skin surface is the process of removal. If the epidermis layer is damaged during epilation, microorganisms enter these areas and bacterial, fungal, viral infections may occur (4). Makeup application procedures are used to apply products such as face sponges, cotton balls, tissues, applicators and brushes, such as lipstick, mascara, eyeshadow and foundation. Makeup application may cause pathogenic microorganisms to enter open space and infection through impaired skin or mucosal structures (5). To reduce the risk of infection, disposable neck towels should be used in each customer and all equipment should be cleaned or disinfected after use. Sterilization is a process used to destroy all microorganisms. To sterilize instruments, they must be sterilized under controlled conditions. The owner or employee of a beauty treatment business must absolutely sterilize the instruments that will be used for the second time (4,5).

Hairdressers and beauty salons can create the potential for serious infections both for their customers and for themselves during their service. Instruments can become contaminated with infected blood or other body fluids, and viruses such as hepatitis B, hepatitis C, HIV, and COVID-19 may become possible (6,7,8). By vaccinating employees and following appropriate infection prevention procedures, infectious disease transmission can be eliminated or minimized (9). Employees need to understand the differences between cleaning, disinfection and sterilization. It is very important for employees need to know when a product should be sterilized before use and when it should simply be disinfected. The person at risk; it can be itself as a customer or service provider. Especially recently, COVID-19, which has a high risk of transmission and covers hairdressers and beauty salons as the biggest risk area; clear all known personal protection and hygiene measures from the beginning (10). Now hairdressers should adopt these rules for themselves and create new protection methods for the new COVID-19.

In this study, especially for those working in hairdressers and beauty salons and service areas; Data on diseases and contamination risks, knowledge levels and protection skills of employees, which carry risk factors in the services provided to the anatomical regions of the body, have been revealed.

MATERIAL and METHODS

Research Type, Place and Time

This descriptive type of planned study; It was held between 15 May and 30 August 2019 to determine the level of knowledge about hygiene and infectious diseases of employees working in hairdressers and beauty salons serving in the central and districts of Diyarbakır.

Research Universe and Sampling

The universe of the study consisted of 60 employees, 46 women and 14 men working in the hairdressers and beauty salons operators and manicurists in the Diyarbakır

city center and central district, 46 women and 14 men who are members of the shop.

Data Collection and Data Collection Tools

A questionnaire was used for employees, it included 84 questions. While there were 16 questions about demographic data, there were 68 questions (29 hygiene and 39 infectious diseases) about hygiene and infectious diseases. In the prepared questionnaire; age, gender, educational status, professional experience, marital status, sterilization type, frequency and hygiene questions (frequency of handwashing, what he uses for washing hands, towel washing, towel change), information about transmission ways of ringworm and fungus, HBV, HCV and HIV questions such as the condition (transmission routes etc.) are included. Questionnaire questions were answered through face-to-face interviews with employees.

Beauty centers and hairdressers are also given many care services to the anatomical region of the body, such as body and skin care, makeup, manicure, pedicure, hair care, haircut, hand foot and nail care, waxing. These anatomical region are the head and neck areas, pelvic areas, hands, face and ear areas, feet and legs areas.

Evaluation of the Data

The statistical analyses were performed using SPSS Statistics for Windows, Version 17.0 (SPSS, Inc., Chicago, IL, USA). While evaluating the data frequencies were calculated by chi-square tests and the data were expressed in numbers and percentages.

RESULTS

Table 1. Demographic Data of the Participants

Feature	n	%
Gender		
Women	46	76.7
Men	14	23.3
Total	60	100.0
Marital status		
Single	36	60.0
Married	24	40.0
Total	60	100.0
Education status		
Secondary School	14	23.3
High School	35	58.3
University	10	16.7
Master	1	1.7
Total	60	100.0
Workplace		
Hairdresser	40	66.7
Beauty salon	20	33.3
Total	60	100.0
Working year		
Between 0-1 years	5	8.3
Between 1-5 years	22	36.7
Between 5-15 years	26	43.3
15 and over	7	11.7
Total	60	100.0
Status in the workplace		
Owner of the workplace	26	43.3
Craftsman	24	40.0
Headworker	7	11.7
Apprentice	3	5.0
Total	60	100.0

For the study; In total, there are 60 employees, including 66.7%(40) hairdressers and 33.3%(20) beauty salons in 26 workplaces. Participants serving in hairdressers and beauty salons; 76.6%(46) were women and 23.3%(14) were men. The highest rate of 60 participants was 23.3%(14) secondary school, 58.3%(35) high school, 16.7%(10) university, and the lowest rate of 1.7%(1) master graduates. The highest rate of working year in the profession is 43.3%(26) between 5-15 years, 36.7%(22) between 1-5 years, 11.7%(7) is working at 15 years and above, the lowest is 8.3%(5) it was observed that they worked between 0-1 years (Table 1).

Employees' monthly income 23.3%(14) 0-2000 TL, 36.7%(22) 2000-3000 TL, 30%(18) 3000-4000 TL, 10%(6) It was seen that he earned 4000 TL and above. While 31.7%(19) of the participants stated that they smoke, 68.3%(41) stated that they did not smoke. While those who performed regular health checks at least every 6 months were 16.7%(10), 83.3%(50) stated that they did not have regular porter health checks (Table 1).

It has been stated that 73%(44) of the employees are vaccinated against hepatitis B, 15%(9) are not vaccinated and the rest do not know if they are vaccinated. It was

observed that they did not know 48.3%(29) of the virus in which ways they were transmitted, and 23.3%(14) of them were transmitted by blood transfusion. For protection, 36.7%(22) stated that they were only vaccinated, 28.3%(17) both were vaccinated and used gloves, and 18.3%(11) did nothing. As a way of transmission of HIV disease; 18.3%(11) of them are transmitted both sexually and via blood, 16.7(10) only by sexual contact, 20%(12) did not know, 45%(27) It states that they can be transmitted both blood and sexually. Participants said that they did not do anything 15%(9) to avoid disease and that they avoided contact in bleeding 45%(27). When we look at the table, it is seen that between 20% and 30% of employees do not have sufficient information about the ways of protection and transmission of diseases for both diseases. Comparing the state of knowing the transmission ways of gender and Hepatitis B virus disease, the year of professional work and knowing the ways of transmission and protection from HIV, and knowing how to get education and knowing about HIV disease; There was a significant relationship between these parameters (p<0.05) (Table 2).

Feature	n	%	P1	P2	P3	P4
Hepatitis B vaccine status						
Vaccinated	44	73.3				
Unvaccinated	9	15.0	0.284	0.525	0.489	0.068
Unknowing	7	11.7				
Total	60	100.0				
In what ways is hepatitis B transmitted?						
Pass from mother to baby + By blood transfusion	2	3.3				
With unprotected sex + By blood transfusion	10	16.7				
With unprotected sex + Tattoo or body piercing	3	5.0				
Tattoo or body piercing + By blood transfusion	2	3.3	0.032	0.957	0.105	0.241
By blood transfusion	14	23.3				
Unknowing	29	48.3				
Total	60	100.0				
What are you doing to protect against hepatitis B?						
Nothing	11	18.3				
Vaccinated	22	36.7				
Vaccinated + Using gloves	17	28.3	0.159	0.523	0.522	0.688
Using gloves	3	5.0				
Washing hands	7	11.7				
Total	60	100.0				
When is the HIV virus transmitted?						
Sexual contact with the HIV carrier	10	16.7				
Sexual contact with the HIV carrier + Blood of an HIV positive individual	11	18.3				
Unknowing	12	20.0	0.700	0.543	0.004	0.118
With all of the above	27	45.0				
Total	60	100.0				
What are you doing to protect against HIV?						
Nothing	9	15.0				
Using gloves + Avoiding contact with blood	4	6.7				
Avoiding contact with blood	27	45.0	0.133	0.721	0.019	0.008
Washing hands	5	8.3				
With all of the above	15	25.0				
Total	60	100.0				

P₁: Comparison with gender ; P₂: Comparison with Educational Status; P₃: Comparison with professional working year; P₄: Comparison with the status of receiving vocational training

When the handwashing status of the participants is examined, 38.3%(23) after each customer, 23.3%(14) before and after each customer, 21.7%(13) when the work is done, 16.7%(10) they stated that they washed one in several customers. As hand washing material; 51.7%(31) liquid soap, 6.7%(4) anti-bacterial gel, 5%(3) liquid soap and antibacterial gel, 3.3%(2) stated that they use liquid and solid soap and 33.3%(20) of them use all of them. To the question of why he did not use a personal protector; Since 30%(18) prevented comfortable working, 8.3%(5)

were not in the workplace, 61.7%(37) stated as other reasons. Those who use personal protection; 21.7%(13) aprons, 10%(6) gloves and aprons, 5%(3) gloves, 5%(3) gloves and masks, 5%(3) masks and aprons, 5%(3) not using any, 45%(27) stated that they use all of them. Gender was compared with wearing apron while cutting hair and waxing. Educational status, professional working year, professional training status and wearing apron while epilating were compared. There was a significant relationship between these parameters ($p < 0.05$) (Table 3).

Table 3. Apron and glove usage data while serving customers

Feature	n	%	P1	P2	P3	P4
Using apron when cutting hair						
Always wearing	31	51.7				
Sometimes wearers	4	6.7				
Never wearing	25	41.7	0.001	0.432	0.122	0.205
Total	60	100.0				
Using apron while waxing						
Always wearing	25	41.7				
Sometimes wearers	3	5.0	0.020	0.398	0.640	0.652
Never wearing	32	53.3				
Total	60	100.0				
Using apron while epilating						
Always wearing	16	26.7				
Sometimes wearers	3	5.0	0.501	0.001	0.010	0.028
Never wearing	41	68.3				
Total	60	100.0				
Using gloves while working						
Always Using	22	36.7				
Separate for each customer	38	63.3	0.068	0.181	0.764	0.280
Total	60	100.0				
Type of gloves used						
Disposable non-sterile	30	49.9				
Sterile gloves	12	19.9	0.247	0.395	0.121	0.490
Other (Both)	18	30.0				
Total	60	100.0				

P₁: Comparison with gender ; P₂: Comparison with Educational Status; P₃: Comparison with professional working year; P₄: Comparison with the status of receiving vocational training

When the aprons of the service providers are examined; While hair cutting, 51.7%(31) stated that they were continuous, 6.7%(4) sometimes, and 41.7%(25) never wear. Wearing apron while waxing; 41.7%(25) stated that they never wore them continuously, 5%(3) sometimes, 53.3%(32). While the participants are epilating; It was observed that 68.3%(41) wore no aprons, only 26.7%(16) out of 60 participants wore aprons. While working, 36.7%(22) stated that they did not use gloves and 63.3%(38) stated that they used separate gloves for each customer. Besides, 49.9%(30) generally preferred single-use gloves, 19.9%(12) sterile gloves, 30%(18) gave the other answer. Gender and diseased skin, the situation of serving the customer, and the situation of burns in the customer while waxing were compared. Education level and the situation of serving customers with diseased skin were compared. A significant relationship was observed between these parameters ($p < 0.05$) (Table 3).

When the intervention forms of bleeding occurring during service were questioned, it was observed that 51.7%(31)

dry cotton presses, 16.7%(10) tincture diodes, 21.6%(13) alcohol and cologne were applied. It has been observed that customers are not too shy about whether to serve while having scalp disease. The results showed that; It was observed that 56.7%(34) provided service, while 43.3%(26) did not provide service. When the customer with rashes and itching arrived, they stated that they served 35%(21) and 58.3%(35) gloves (Table 4).

It was observed that 20%(12) of the customers had burns while serving the wax and 60%(36) of the burned cream was applied while intervening, 11.6%(7) applied cold, 28.3%(17) did nothing.

Considering the frequency of sterilization at the workplace, 76.7%(46) stated that they performed sterilization every day, 15%(9) every week, 8.3%(5) every 3-4 days. For sterilization, 26.7%(16) of the participants used ultraviolet rays, 18.3%(11) alcohol, 15%(9) dry air sterilization, 11.7%(7) alcohol and disinfectant, 13.4%(8) stated that they used all of them.

Table 4. Employee response approach to accidents						
Feature	n	%	P1	P2	P3	P4
How do you intervene against incision bleeding that occurs while working?						
Dry cotton pressing	31	51.7				
Dry cotton pressing + alcohol riding	6	10				
Tincture diode riding	10	16.7	0.087	0.671	0.197	0.578
Alcohol riding + cologne riding	13	21.6				
Total	60	100.0				
Do you serve when there is a disease in scalp?						
Serving with gloves	34	56.7				
Unserviceable	26	43.3	0.029	0.000	0.887	0.187
Total	60	100.0				
How would you approach the customer with the rash and itching?						
Not serving	21	35.0				
Serving with gloves	35	58.3	0.847	0.484	0.112	0.929
Other	4	6.7				
Total	60	100.0				
Did the customer have burns in the process of your wax?						
Yes	12	20.0				
No	48	80.0	0.033	0.323	0.177	0.740
Total	60	100.0				
How do you interfere with burns in the wax formed in the customer?						
Burning cream	36	60.0				
Cold application	7	11.6	0.512	0.081	0.738	0.841
Nothing	17	28.3				
Total	60	100.0				
P ₁ : Comparison with gender ; P ₂ : Comparison with Educational Status; P ₃ : Comparison with professional working year; P ₄ : Comparison with the status of receiving vocational training						

Table 5. Employees' approach to the hair breakage customer and the level of knowledge about the hair breakage						
Feature	n	%	P1	P2	P3	P4
Is hair breakage contagious?						
Transmitted	41	68.3				
Not infected	7	11.7	0.066	0.361	0.001	0.007
Unknowing	12	20.0				
Total	60	100.0				
Is there a hair breakage treatment?						
Transmitted	39	65.0				
Not infected	8	13.3	0.173	0.252	0.417	0.068
Unknowing	13	21.7				
Total	60	100.0				
What are the symptoms of hair breakage?						
Scalp crusting or hair loss	17	28.3				
Scalp crusting or hair loss + hair loss over time	5	8.3				
Hair loss over time	2	3.3	0.012	0.432	0.000	0.008
All of these	36	60.0				
Total	60	100.0				
How is the hair breaker transmitted?						
Direct contact with the rash area	37	61.7				
Direct contact with the rash area + Direct contact with the rash area	7	11.7				
Direct contact with the rash area	1	1.7	0.112	0.590	0.016	0.041
Unknowing	15	25.0				
Total	60	100.0				
What are you doing to protect your hair from hair breakage?						
Doing nothing	5	8.3				
Always wearing gloves	21	35.0				
Always wearing gloves + using gloves only at the customer who is hair breakage	1	1.7	0.114	0.456	0.029	0.013
using gloves only at the customer who is hair breakage	29	48.3				
Does not serve the customer who is hair breakage	4	6.7				
Total	60	100.0				
P ₁ : Comparison with gender ; P ₂ : Comparison with Educational Status; P ₃ : Comparison with professional working year; P ₄ : Comparison with the status of receiving vocational training						

Generally, in salon cleaning; 30%(18) disinfectants, 3.3%(2) solvents and disinfectants, 3.4%(2) sweep, 63.3%(38) stated that they use all of them. Considering the frequency of cleaning of the tools, it was seen that 61.7%(37) of them responded after each customer, 23.3%(14) after every 2-3 customers, 15%(9) at the end of the day. For towel use, 50%(30) are separate towels for each customer, 36.7%(22) are disposable paper towels, 8.3%(5) are separate and disposable paper towels for each customer, 5%(3) of them were found to give the answer that they used a towel in 2-3 customers. In the answers given to the question about how often they wash the towels; 93.3%(56) stated that they use disposable towels.

In our other findings that we could not give as a table; Is there a risk of infectious disease related to your work? They answered the question as 75%(45) yes, 15%(9) no, 10%(6) do not know. Are diseases such as hepatitis B, C, HIV, Influenza, Fungus, hair-breaking etc., transmitted? to the question; Most of the participants said that they are transmitted. Knowing the symptoms of gender and hair breakage was compared. There was a significant relationship between the year of vocational work, the status of training about the profession, the transmission of hair-breaking disease, the symptoms and the protection parameters related to this disease ($p < 0.05$) (Table 5).

They stated that the majority of the participants had sufficient information on the transmission of hair-breaking disease, 48.3%(29) did not provide any services without gloves, and 35%(21) did not see any risk because they were constantly wearing gloves.

DISCUSSION

This work; offers important information about hygiene and contamination risks in hairdressers and beauty salons that provide personal care services to the anatomical parts of the body. Hairdressing and beauty centers, besides hair styling, include care services for almost a large part of the anatomical region of the body. It includes hair cutting, coloring, styling, curling, straightening with heat or loosening chemicals, blow-drying, lengthening, scalp treatments or hair treatments. The risk of contamination is low in hair styling. However, the use of a razor carries the risk of both cutting and deforming the skin of the customer. Thus, open wounds or deformations can allow the entry of microorganisms. Sekula et al. (2002) analyzed the instruments collected from the salons for the presence of bacteria and fungi in an environmental research study consisting of four salons providing personal services. Results of all devices in three of the four halls were contaminated with bacteria and fungi (12). In the studies carried out; It has been reported that 38% of the hairdressers and beauty salons use ultraviolet light as sterilization techniques. In other participants, stated that they used some traditional methods of boiling and burning. Studies have shown that; In many countries, sterilization methods are required by law. However, the service sector cannot fully implement these methods (13,14). It has been associated with bacterial infection (eg skin infections

caused by *Serratia marcescens*) and viral infections (for example, hepatitis B, Hepatitis C) in hairdressers using razor blades (15).

Mycobacterium species are the most common microorganisms referred to by pedicure-related infections. Some pedicure tools should be properly cleaned after each use. If sterilization is not performed with appropriate disinfection, the risk of transmission may increase (16,17). Shaving the legs before pedicure has been identified as an important risk factor (16). Case reports indicate possible risks to wax-related infections among diabetic individuals (17) or patients taking certain medications (18). Other studies have shown that insufficient disinfection of hairdressing equipment leads to cross-contamination with methicillin-resistant *Staphylococcus aureus* positive patients and negative patients (19). Huijsdens et al. (2008) reported the infection outbreak of methicillin-resistant *Staphylococcus aureus* in two customers from a saloon serving in the Netherlands (20).

A doctor who treated the skin infection case followed 48 of 106 patients who received pedicures in a controlled manner related to the cases coming from a local health department. He found that shaving the legs of the patient the night or morning before a pedicure was significantly related to the occurrence of infection (21). In our study, it was determined that those who provide services related to pedicure do not use sterilization methods related to the state of washing manicure and pedicure containers. It was observed that they were cleaned with alcohol, water and disinfectant, which were not very sufficient in general. As a result, it is determined that approximately 5% of employees do not use any personal protectors.

Waxing procedures have also been associated with bacterial and viral infections (18,19,21). Using molten wax and applying moisturizers twice between multiple customers have been seen as important risk factors (20,21). Dendle et al. (2007), in their study, described a young woman who applied to the emergency room two weeks after receiving the waxing procedure. It was understood that this woman was exposed to *Streptococcus pyogenes* and *Herpes simplex* infections that threaten her life. In the study, it was stated that the use of gloves was insufficient as a reason for this and that the servant could not wash their hands (17). In our study, it was found that employees' wearing protective clothing such as aprons, gloves, etc. and their washing habits after each customer were not sufficient for all service places.

There is little scientific evidence about infections caused by manicure services. Although little information is given about individual cases, researchers may use skin irritant adhesives and nail files to irritate the skin (22), and damage to eponychium and lanula may increase the risk of infection by creating a microbial growth environment (23-24). Sniezek et al. (2003) described three rapidly growing mycobacterium (rgm) infections among three women who received pedicures before the infection appeared (27). In

a study, the samples of sticks collected from randomly selected nail instruments in the four salons serving were analyzed in terms of the presence of bacteria, fungi and yeast. Three of these four salons, some of the *Pseudomonas* strains of all their devices, *Rhizopus* and contaminant *Candida albicans*, *Bacillus aeruginosa* and *Bacillus sp.* have shown that they are infected with their microorganisms.

Three of the eight equipment instruments from the fourth hall were positive for bacteria, yeast and fungi. The researcher used all of these four halls with different disinfection solutions, including an unlabeled blue liquid, benzyl ammonium chloride and 99% isopropyl alcohol.

Due to the presence of these pathogens, it has been concluded that the existing disinfection techniques used in each salon are insufficient to prevent health risks among customers (24). The conclusion to be drawn here is that any disinfectant other than sterilization was not sufficient if the care tools such as existing manicure, pedicure etc. were contaminated. In our study, it was observed that disinfectants were used more frequently than sterilization. Researchers have reported that the use of gloves is inconsistent in caregivers, only 35% wear gloves before doing a manicure. In our study, when examining the use of apron gloves while serving, 36.7%(22) stated that they did not use gloves and aprons while working.

The knowledge of the employees about disinfection and sterilization techniques was not sufficient. Participants stated that 26.7%(16) of them use ultraviolet rays for sterilization, 18.3%(11) of alcohol, 15%(9) of dry air sterilization, 11.7%(7) of alcohol and disinfectant, 13.4% of them all. Proper sterilization will be effective in removing many viral and bacterial pathogens. For this, even over-the-counter sterilization cabinets can sterilize equipment in the best way. Infection risks for places that provide personal care are not well defined. Specific infection control practices should be performed by environmental health physicians. These practices will be applications that will minimize public health risks in places providing personal care.

Although studies are inadequate, poor infection control procedures and hygiene practices, including cleaning and disinfection, increase the risk of infection among customers.

CONCLUSION

As a result; It is seen that the risk of infection is increasing day by day. Finally, among the risk factors, a new generation virus (10) such as COVID-19 caused all hairdressers and care centers to close. With this infectious disease, the importance of hygiene and protection from infectious diseases has increased significantly. The most important agenda item of these centers, which has provided care services to all the anatomical parts of the body in the Hairdresser and Beauty centers with the limited research conducted so far, is of course how to protect the health of the service provider and the service.

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REFERENCES

1. Lee WM. Hepatitis B virus infection. N Engl J Med 1997;337:1733-45.
2. Aksoy A, Ozdarendeli A. Genotyping of hepatitis B virus by restriction enzyme analysis. Mikrobiyol Bul 2006;40:215-23.
3. Marco M. The hepatitis report. Epidemiology, modes of transmission and risk factors for hepatitis C virus. The Body 2000;9-14.
4. Şahin NH, Bilgiç D, Esen Ü, et al. Bayan kuaförü çalışanlarının hepatit B'ye ilişkin bilgi ve uygulamalarının belirlenmesi. TAF Prev Med Bull 2009;8:147-54.
5. Özaras F. Kuaför çalışanlarının hijyen, kan yoluyla bulaşan hastalıklar ve onikomikozis yönünden incelenmesi. (Yüksek Lisans Tezi). Düzce Üniversitesi, Sağlık Bilimleri Enstitüsü 2011.
6. Villar LM, De Paula VS, De Almeida AJ, et al. Knowledge and prevalence of viral hepatitis among beauticians. Journal Of Medical Virology 2014;86:1515-21.
7. Cruz HM, Barbosa JR, Baima Colares JK, et al. Cross-sectional study to determine viral hepatitis Knowledge in different urban populations in Brazil. World J Hepatol 2018;10:867-76. <https://www.tn.gov/commerce/news/2020/3/17/covid-19-guidelines-for-cosmetology-and-barber-licensees.html> access date 01.05.2020
8. Ataei B, Shirani K. Evaluation of knowledge and practice of hairdressers in men's beauty salons in Isfahan about hepatitis B, hepatitis C, and AIDS in 2010 and 2011. Advanced Biomedical Research 2012;1:75.
9. Yan Y, Chen H, Chen L, et al. Consensus of Chinese experts on protection of skin and mucous membrane barrier for health-care workers fighting against coronavirus disease 2019. Dermatol Ther 2020;13:e13310.
10. Aguilar Rubido JC. On the future of therapeutic vaccination in chronic hepatitis B. Future Sci OA 2019;5:FSO426.
11. Sekula SA, Havel J, Otilar LJ. Nail salons can be risky business. Arch Dermatol 2002;138:414-5.
12. Rideout K. Comparison of guidelines and regulatory frameworks for personal services establishments. 2010. Vancouver, bc: national collaborating centre for environmental health. available from: <http://www.ncceh.ca/sites/default/files/ps> access date 01.05.2020
13. National collaborating centre for environmental health. Infections associated with personal service

- establishments: aesthetics. 2011. Vancouver, bc: national collaborating centre for environmental health; http://www.ncceh.ca/sites/default/files/pse_infections_aesthetics_dec_2011_0.pdf access date 01.05.2020
14. Winthrop KL, Abrams M, Yakrus M, et al. An outbreak of mycobacterial furunculosis associated with footbaths at a nail salon. *N Engl J Med* 2002;346:1366-71.
 15. Stout JE, Gadkowski LB, Rath S, et al. Pedicure-associated rapidly growing mycobacterial infection: an endemic disease. *Clin Infect Dis* 2011;53:787-92.
 16. Dendle C, Mulvey S, Pyrlis F, et al. Severe complications of a "Brazilian" bikini wax. *Clin Infect Dis* 2007;45:e29-31.
 17. Woollons A, Price ML. Roaccutane and wax epilation: a cautionary tale. *Br J Dermatol* 1997;137:839-40.
 18. Ruddy M, Cummins M, Drabu Y. Hospital hairdresser as a potential source of cross-infection with mrsa. *J Hosp Infect* 2001;49:225-7.
 19. Huijsdens XW, Janssen M, Renders NH, et al. Methicillinresistant *Staphylococcus aureus* in a beauty salon, the netherlands. *Emerg Infect Dis* 2018;14(11):1797-9.
 20. Watts RW, Dall RA. An outbreak of *Pseudomonas folliculitis* in women after leg waxing. *Med J Aust* 1986;144:163-4.
 21. Aluja Jaramillo F, Quiasúa Mejía DC, Martínez Ordúz HM, et al. Nail unit ultrasound: a complete guide of the nail diseases. *J Ultrasound* 2017;20:181-92.
 22. De Souza BA, Shibu MM. Infectious and respiratory hazards of nail sculpture. *Plast Reconstr Surg* 2004;114:1004.
 23. Sekula SA, Havel J, Otilar LJ. Nail salons can be risky business. *Arch Dermatol* 2002;138:414-5.
 24. Johnson IL, Dwyer JJ, Rusen ID, et al. Survey of infection control procedures at manicure and pedicure establishments in North York. *Can J Public Health* 2001;92:134-7.
 25. Dahdah MJ, Scher RK, Dahdah MJ, et al. Nail diseases related to nail cosmetics. *Dermatol Clin* 2006;24:233-9.
 26. Sniezek PJ, Graham BS, Busch HB, et al. Rapidly growing mycobacterial infections after pedicures. *Arch Dermatol* 2003;139:629-34.
 27. Korsaga-Somé N, Andonaba JB, Ouédraogo MS, et al. Manicure and pedicure in the city of Ouagadougou (Burkina Faso): practices and risks. *Pan Afr Med J* 2016;24:109.