Original Article

Biosafety in beauty centers: knowledge and practices in a state capital in Northeast Brazil

Biossegurança em serviço de embelezamento: conhecimento e práticas em uma capital do nordeste brasileiro

Bioseguridad en los centros de embellecimento: conocimientos y prácticas en una capital del nordeste brasileño

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ABSTRACT

Objective: To assess the knowledge and biosafety procedures of professionals of the beauty segment.
Methods: Descriptive study, of survey type, where 238 professionals of the beauty segment, randomly selected among establishments registered at the relevant regulatory bodies of the city of São Luís, Maranhão, were interviewed between August 2014 and 2015. Qualitative variables were expressed as absolute and relative frequencies, and quantitative variables were expressed as mean and standard deviation.
Results: 62.6% of the interviwed professionals reported having had contact with blood from customers when they were not wearing gloves; 74.4% said they washed their hands before and after each service, and only 16.8% of the respondents reported reusing non-sterilizable materials. None of them was able to inform the correct number of sets of tools needed , and 32.8% of the respondents did not use Personal Protective Equipment during their work activities.
Conclusions: The most frequently reported diseases associated with the risk of infection and transmission in the work activities were viral hepatitis, HIV and fungi. Regarding the biosafety procedures adopted, autoclave is the least used method for sterilizing devices.
Keywords: Beauty and aesthetics centers. Exposure to biological agents. Prevention of diseases.

RESUMO

Objetivo: Avaliar o conhecimento e as práticas de biossegurança adotadas por profissionais do segmento da beleza.
Métodos: Pesquisa descritiva do tipo survey. Foram entrevistados 238 profissionais de serviços de embelezamento entre agosto de 2014 e 2015. As variáveis foram apresentadas por meio de frequências absolutas e relativas, bem como média e desvio padrão.
Resultados: 62,6% dos profissionais tiveram contato com sangue de clientes sem uso de luvas; instrumentais para o atendimento e 32,8% dos entrevistados não utilizaram equipamentos de proteção individual durante suas atividades laborais.
Conclusões: As doenças mais citadas quanto ao risco de contágio e de transmissão na prática laboral foram as hepatites virais, HIV e fungos. Quanto aos procedimentos de biossegurança adotados, o autoclave é o equipamento menos usado na esterilização dos instrumentos.
Palavras-chave: Centros de embelezamento e estética. Exposição a agentes biológicos. Prevenção de doenças.

RESUMEN

Objetivo: Evaluar el conocimiento y las prácticas de bioseguridad adoptadas por profesionales del segmento del embellecimiento.
Métodos: Investigación descriptiva del tipo encuesta. Fueron entrevistados 238 profesionales de embellecimiento entre agosto de 2014 y 2015. Las variables fueron presentadas por medio de frecuencias absolutas y relativas, así como media y desviación estándar.
Resultados: 62,6% de los profesionales tuvieron contacto con sangre de clientes sin el uso de guantes; el 74,4% higienizaban las manos entre los atendimientos, el 16,8% reutilizaban materiales desechables. Ningún profesional informó la cantidad adecuada de instrumentos y el 32,8% de los entrevistados no utilizaban equipos de protección individual durante sus actividades laborales.
Conclusiones: Las enfermedades más citadas con respecto al riesgo de contagio y de transmisión en la práctica laboral fueron las hepatitis virales, el VIH y los hongos. Acerca de los procedimientos de bioseguridad adoptados, el autoclave fue el aparato menos utilizado en la esterilización de los instrumentos.
Palabras clave: Centros de belleza y estética. Exposición a agentes biológicos. Prevención de enfermedades.

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INTRODUCTION

Physical appearance has always been important for humans[1]. In recent decades, there has being a wide impact of the market of beauty and aesthetics, through the use of image and style patterns, on men and women of different social classes and age ranges[2].

The activities performed by professionals of the beauty segment pose risks of accidental exposure to blood borne pathogens, such as hepatitis B virus (HBV), hepatitis C virus (HCV) and the Human Immunodeficiency Virus (HIV)[3], and bacterial and fungal infections[4]. Undeniably, many professionals revealed ignorance of and poor adherence to biosafety measures, like Personal Protection Equipment (PPE), proper reprocessing techniques, disposal of single-use materials and hand hygiene[5].

Data reveal the lack of knowledge of professionals of the beauty and aesthetic segment regarding biosafety measures related to the risk of contamination and transmission of infectious diseases during their work activities[6-7]. In Italy and Turkey, hepatitis B and C were considered occupational hazards for barbers and hairdressers manicurists/ pedicurists[2]. In Brazil, a survey in São Paulo found that manicurists were not aware of the modes of transmission of HBV (72%) and HCV (85%)[8].

From the 1990's on, there has been an increased availability of procedures performed in traditional beauty care segments[9], that involve the manipulation of nails and surrounding tissue on the hands and feet of customers to remove the eponychium (cuticle), with the use of pliers, by manicurists and pedicurists[7] as well as other more invasive procedures, such as tattoos and body piercing[10]. Despite the increased adherence of the population to beauty and aesthetic procedures, there are few records of infections in this segment due to underreporting and to the lack of studies on the knowledge of and adherence to biosafety recommendations by professionals of the beauty segment[2,11].

Since professionals and users of these services are a high-risk group for infectious diseases due to their significant exposure to infectious microorganisms, access to information on adherence to biosafety recommendations is particularly important. Therefore, this study was based on the following guiding question: What is the level of knowledge of and adherence to biosafety procedures of professionals of the beauty segment in the city of São Luis, in the Brazilian Northeast? In order to answer this question, the present study aimed to assess the knowledge and biosafety practices used by professionals of the beauty segment in the city of São Luis, (MA).

METHODOLOGY

Descriptive study that uses a survey methodology aimed to identify views and attitudes and describe the characteristics of the study group. Field research was conducted in from August 2014 to August 2015, in beauty and aesthetic services in the city of São Luis, capital of the state of Maranhão. The study population consisted of manicurists/pedicurists, tattoo artists and piercers.

The accurate number of professionals working in the beauty segment in São Luís is unknown because several establishments (shops/salons/studios) that provide beauty services were not registered at the relevant regulatory bodies of the city, despite the fact this is a mandatory requirement for their operation. Sample size was calculated based on a list containing the names and addresses of beauty and aesthetic services provided by the Superintendency of Sanitary and Epidemiological Surveillance (SVEs) of São Luís, in 2013. Since 824 salons/shops were identified, the sample size was estimated in 263, considering a confidence interval of 95%, a standard deviation of 0.5 and type I error rate of 5%. The establishments were randomly selected using Excel 2007®. After the elimination of duplicated registrations, the final sample included 256 establishments.

During data collection, it was found that many establishments did not keep updated records: some had changed their locations and some had changed their business names and had another owner. Thus, an alternative approach was used to ensure the appropriate sample size, as follows: it was stipulated that if the establishment selected was not found, the next similar establishment located on the same street would be selected for data collection, provided it was not part of the initial sample. Nonetheless, sample loss was reported because some of the previously establishments that failed to be contacted could not be replaced by others, in order to maintain the initial sample size. This fact, combined with refusals to receive the teams of researchers, resulted in 238 establishments visited: 226 salons and 12 tattoo and piercing studios. According to administrative and planning criteria of the Municipal Health Department (Semus), the city of São Luís is divided into seven health districts (HD). Thus, by random sampling, the establishments were distributed as follows: DS Centro (39), DS Bequimão (104) DS Cohab (67), DS Coroadinho (8) and DS Tirirical (20).

Only one professional, randomly selected among those who were available or appointed by the manager, was interviewed in each establishment. The visits to beauty salons and tattoo and body piercing studios were performed by two properly trained researchers. During the inter-

views, the respondents completed questionnaires containing items related to the way the professionals performed their work activities and the self-reported biosafety procedures adopted. The questionnaire had 51 questions, including subjective and objective questions, and it was divided into 6 parts: demographic data, professional aspects and exposure to biological material, immunization, sexual activity, personal background. All questions were asked orally by the researcher in a separate room, so as to avoid embarrassing the respondents.

Qualitative variables were expressed as absolute and relative frequencies and quantitative variables were expressed as mean and standard deviation. Data was coded using SPSS software version 18.0 and entered in duplicate. In accordance with Resolution 466/12, this study was approved by the Research Ethics Committee (CEP) of Universidade Ceuma (467,184# 2013). Prior to being included in the study, all the participants signed the Free Informed Consent Form (TCLE).

RESULTS

Sociodemographic characteristics of professionals in the beauty segment

Table 1 includes data on the following characteristics of the respondents: occupation (in the beauty service), age, skin color, length of time in the profession, family income, gender, educational level and marital status, in absolute and relative data.

Table 1 – Sociodemographic profile of professionals of the beauty segment, São Luís – MA, 2015

Sociodemographic variables	Total	
	N	%
Profession		
Manicurists/pedicurists	226	95.0
Tattoo artists/piercers	12	5.0
Age		
≤ 34 years	128	53.8
> 34 years	110	46.2
Skin color/race (according to the interviewer)		
White	45	18.9
Black	75	31.5
Brown	111	46.6
Indigenous	1	0.4
Yellow	1	0.4
Did not answer	5	2.1
Family income (MW*)		
Minus than 1 minimum wage	21	8.8
1 to 3 minimum wages	190	79.8
4 to 6 minimum wages	20	8.4
7 to 11 minimum wages	4	1.7
More than 11 minimum wages	3	1.2
Length of time in the profession		
≤ 10 years	137	57.6
> 10 years	101	42.4
Gender		
Male	13	5.5
Female	225	94.5

Educational level		
Incomplete primary education	11	4.6
Complete primary education	19	8.0
Incomplete secondary education	42	17.6
Complete secondary education	148	62.2
Incomplete higher education	9	3.8
Complete higher education	1	3.8
Marital status		
Single	145	60.9
Married/Stable relationship/Lives with a partner	84	35.4
Legally separated/Divorced	7	2.9
Widowed	2	0.8

Source: Research data, 2015.
*MW= minimum wages

Frequency of responses about the knowledge of the professionals about transmission and prevention of diseases that may affect them during their professional activities

Around eighty-six percent (86.1%) of the respondents said they were at risk of being infected by one of their customers, and 70.6% also acknowledged that they could be potential sources of infection for their customers. Respectively 92% and 69.7% of the respondents had already heard about HIV/AIDS and viral hepatitis, and 91.6% said they knew how to prevent these diseases.

The diseases most commonly mentioned by the respondents regarding the risk of infection and transmission, during work activities were viral hepatitis, HIV/ AIDS and fungal infections; and the least cited diseases were other types of disease, bacterial infections, sexually transmitted diseases (STD's) and diabetes (Figure 1).

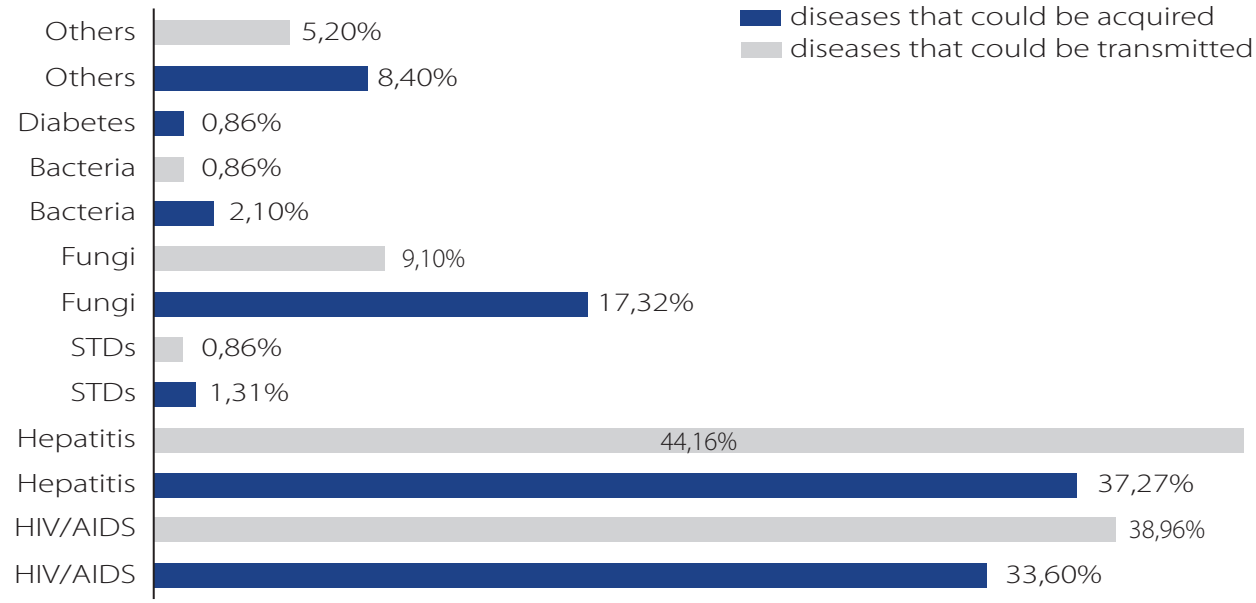

Figure 1 - Distribution of the infectious diseases that could be transmitted during work activities mentioned by professionals of the beauty segment in São Luís, 2015

Source: Research data, 2015.
STDs: Sexually Transmitted Diseases.

Regarding the modes of prevention of these diseases, the most frequently reported were the use of condoms (31.31%), sterilized material (20.89%) and disposable gloves (15.15%) (Figure 2).

Percentage of adherence to biosafety procedures adopted in beauty and aesthetic services

Regarding the adoption of biosafety measures, 62.6% of the respondents said they had contact with blood from customers when they were not wearing gloves. Of these, 43.4% used some type of medication and 20.1% used alcohol as a preventive measure. Regarding hand hygiene (HH) before and after each service and another, 74.4% reported having adopted this procedure.

Interestingly, 32.8% of the participants reported not using any type of PPE during their work activities and 5% did not know the types of PPE required for their professional practice. Regarding the processes of cleaning, disinfection and sterilization of tools, 21.8% did not know the differences between these practices, how to perform them and the necessary equipment.

Data related to knowledge and the biosafety practices carried out by the study participants is shown in Table 2.

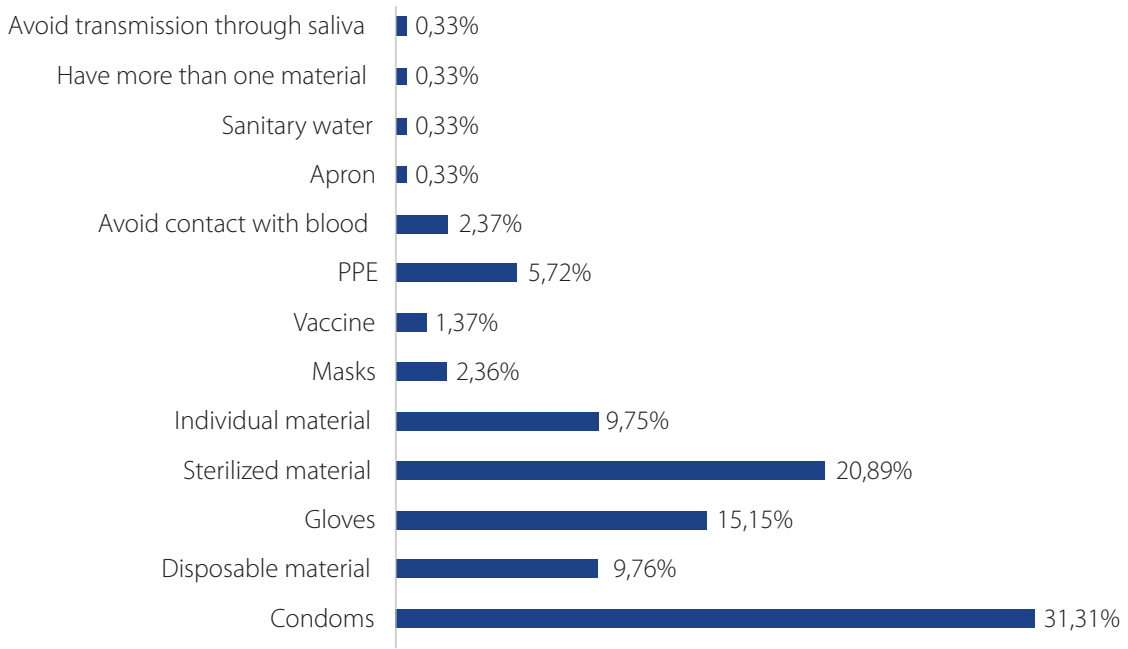

Figure 2 - Distribution of the modes of prevention of infectious diseases cited by professionals of the beauty segment in São Luís, 2015

Source: Research data, 2015.

Table 2 - Biosafety procedures performed by professionals of the beauty segment – São Luis – MA, 2015

Procedures	Total	
	N	%
During work, did the respondent come in contact with blood from customers when he/she was not wearing protective gloves?		
No	76	31.9
Does not know	12	5.0
Yes	149	62.6
What the respondent does when bleeding occurs?		
Cleans with paper towel	6	2.5

Makes a bandage	2	0.8
Washes the bleeding site with soap and water	19	7.9
Stops bleeding by applying pressure to the site	31	13.0
Applies a medication	103	43.4
Applies alcohol	48	20.1
Various	3	1.3
Does the respondent discard single-use items (wooden sticks, nail files, etc.) after use?		
No	40	16.8
Yes	191	80.2
Minimum amount of each item of the set of tools necessary to perform the procedures?		
One	84	35.3
Two	32	13.4
Three	40	16.8
More than three	81	34.0
Does the respondent wash his/her hands before and after each service?		
No	8	3,4
Yes sometimes	51	21.4
Yes, always	177	74.4
Method for sterilization of the materials used		
Does not sterilize	4	1.7
Greenhouse	190	79.8
Autoclave	33	13.9
Others	8	3,4
Does the respondent know how to disinfect the tools?		
No	58	24.4
Yes	177	74.3
Is there a difference between the process of cleaning, disinfecting and sterilizing the itools?		
No	52	21.8
Yes	185	77.7
Does the respondent use PPE*?		
No	78	32.8
Yes	148	62.2
Is not aware of the individual PPE	12	5.0

Source: Research data, 2015.
*PPE = Personal Protective Equipment

DISCUSSION

The risk of infection and silent transmission of important diseases through aesthetic procedures provided by manicurists/pedicurists, tattoo artists and body-piercers is a serious public health issue faced by these professionals and their clients, when proper biosafety practices are not observed[9].

The present study found low compliance to biosafety procedures, as well as poor perception of the risks of contamination in the work environment caused by the handling

of biological materials that can transmit infectious agents such as hepatitis B, hepatitis C and the human immunodeficiency virus. Such data corroborates the findings of an international study conducted in a city of Pakistan on the knowledge and practices of barbers and professionals of the beauty and aesthetic segment regarding the prevention of viral hepatitis[12], and in a district of Ghana on barbers' awareness of and the factors associated with the risk of transmission of HBV and HCV[13].

A study with professionals of the beauty segment conducted in the city of Goiânia, capital of Goiás and the Metropolitan area of the state of Goiás also found an unsatisfactory/insufficient level of knowledge on the aspects related to adherence to biosafety recommendations[6], which is similar to the findings of a study with professional manicurists/pedicurists in Maringá (PR)[3], as well as in a study in the city of Itaúna (MG)[11].

Regarding the characterization of professionals, 94.5% m of the participants were young women with an average age of 34.13, corroborating the prevalent profile of the professionals of the beauty segment[11]. However, most tattoo artists and piercers were male individuals, which is common in these services[2].

More than half of the respondents had completed secondary education and have been working in the beauty segment for about 10 years, which is consistent with other findings[6-7]. However, such characteristics do not ensure compliance with good biosafety practices in the work setting[8-9,14-15]. Also, 42.4% of the respondents reported they have been working in their profession for more than 10 years. Therefore, they began their activities before the regulation of the profession of manicurist, in 2012, with the publication of Law 12,592[16]. The fact that the profession of manicurist remained unregulated for a long time and that no specific training or education is required discourages the search for training and stimulates informal practice and non-compliance with biosafety standards.

Regarding the diseases that could be acquired and transmitted through unsafe actions and lack of relevant knowledge, the results suggest that most respondents are aware of the importance of HIV/AIDS and viral hepatitis because of the biological risks associated to their professions. Nevertheless, previous studies conducted in Brazil found that manicurists /pedicurists had scarce knowledge about the modes of transmission/prevention of viral hepatitis[17].

Concerning unsafe actions, it is important to stress that a considerable number of subjects (62.6%) said they were not wearing gloves when they came into contact with biological material (blood) from their clients. Such data reveals the susceptibility of professionals of the beauty segment to infectious diseases such as hepatitis B and C and HIV /AIDS and bacterial dermatoses[18].

Non-use of protective gloves as PPE by manicurists/pedicurists during service was reported. On the other hand, adherence to this practice was more common among tattoo artists and piercers, perhaps because this group includes individuals with a higher degree of education and because their studios were located in shopping malls or in most sophisticated areas of the capital, i.e., in places frequented by more educated and demanding persons.

Regarding the conducts of these professionals after accidental exposure to biological material, we found that few (7.9%) immediately adopted preventive measures such as washing the exposed body site with soap and water and alcohol (20.1%). In such cases, the National Health Surveillance Agency (ANVISA) and the Center for Disease Control and the US Prevention (Center of Disease Control and Prevention - CDC) recommend thorough washing of the exposed body site with soap and water and the use of antiseptic solutions such as 70% ethanol, which reduces the number of microorganisms, but do not remove dirt[19].

Regarding the question on the use of disposable articles, 16.8% of the professionals said they reused single-use materials, such as wooden sticks and/ or nail files, for example, which could come in contact with blood, other body fluids, and fragments of nails. Therefore, professionals of the beauty segment must be aware of this risk as a mode of transmission of infectious agents[7].

Regarding the minimum amount of each item of the set of tools necessary item of the set of tools necessary to perform the procedures, it is remarkable that 35.3% responded that one set of tools was ideal and 13.4% and 16.8% said that two and three set of tools, respectively, were sufficient. The percentages above are inadequate and worrying, corroborating data collected in a study in Turkey, where only 2.6% of the manicurists/pedicurists used one different set of tools for each client[20]. This finding may be attributed to the fact that these tools are considered expensive, given the low income of most professionals of the beauty segment.

As for the use of PPE - disposable gloves, disposable protective mask, goggles, disposable cap, and others, like rubber gloves for washing and rinsing the material to be sterilized, 32.8% said they did not use such equipment, and 5% reported that they were not aware of the purposes and types of PPE. However, it should be noted that, although 62.2% of the professionals reported, during the interviews, that they adhered to PPE, e.g. use of gloves and hand washing, the researchers did not witness the use of such equipment by the professionals when they were per-

forming the procedures. Despite the awareness of these professionals of the biological risks associated with their occupation, adherence to biosafety standards is not consistent with their knowledge, i.e. perception of the risk of contamination by serious diseases such as viral hepatitis and AIDS was not sufficient to promote changes in professional practices. For some authors, the fact that bleeding is usually not significant and not common during cuticle removal, associated to the fact that the professionals assume their customers to be healthy, contribute to the inaccurate perception of the risks associated to their profession by these individuals[8]. In the present study, 21.8% of the subjects said there was no difference between the cleaning, disinfection and sterilization procedures, and 24.4% were not aware of the process necessary for disinfecting their tools. When asked about the method for sterilization of their items, only 13.9% said they performed sterilization by autoclave; 79.8% in greenhouse heaters; 3.4% reported the use of a UV sterilizer that resembles a toaster oven; and 1.7% did not sterilized their tools. Also, 68% of the professionals reported using autoclaves, which was similar to the findings of a study in the cities of Itaúna[11] and Arcos[2], both in the state of Minas Gerais, where greenhouse heaters were mentioned by 83% of the respondents, followed by autoclave, by 11.3% and 3.8%, respectively. The unusual use of the autoclave is possibly related to its higher cost compared to greenhouse heaters or even to the lack of information about this type of sterilization[2].

In beauty salons located in high-income neighborhoods, the owners sometimes would not allow manicurists/pedicurists to participate in the study. There are few tattoo and piercing studios in the city of São Luis, and in many cases the locations provided by the local Health Surveillance agency were outdated.

Based on these findings, we suggest the implementation of educational campaigns on public health, particularly with clarification on the epidemiology of HBV, HCV and HIV, and biosafety recommendations for the use of PPE and washing/disinfection/sterilization procedures targeted to professionals of the beauty and aesthetic segments and to the population. In order to minimize the risk of occupational infections caused by blood - borne viruses, we also recommend that governmental authorities produce appropriate educational materials to be disseminated in establishments that provide beauty services and require that professionals take periodical refresher courses, and also improve the training provided in the aesthetic and beauty segments, health surveillance and the accreditation standards of establishments and professionals of the beauty and aesthetic segments.

Since nursing and other health professionals strongly contribute to improve health education and professional training, the important role played by these professionals regarding the safety of the services provided in the beauty segment should be emphasized in order to improve the identification of accidents with sharp devices and increase adherence to biosafety recommendations. The present study reaffirms the importance of greater attention from Brazilian local, state and national health authorities, educational, research and extension institutions and the civil society, to the elaboration of public policies in biosafety targeted to the health of these professionals and their clients, since all the actors should be responsible for the development of safe practices in this area.

CONCLUSION

This study on the assessment of knowledge and biosafety practices adopted by professionals of the beauty segment found that most frequently reported diseases associated to the risk of infection and transmission in their work activities were viral hepatitis, HIV and fungi. Regarding the modes of prevention, the most frequent were the use of condoms, sterilization of the materials and use of disposable gloves. Regarding the biosafety procedures adopted, most participants reported using personal protective equipment. However, a large percentage pf the sample had already come in contact with blood from customers when they were not wearing such equipment. A high percentage reported knowing the difference between the procedures of cleaning, disinfection and sterilization of the tools. However, the greenhouse heater was the most prevalent method of sterilization. Most respondents reported applying a medication or alcohol to the body site in case of bleeding during the procedures.

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