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Adherence to and knowledge of best practices and occupational biohazards among manicurists/pedicurists

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Key Words:

Beauty and aesthetics center
Podiatry
Exposure to biological agents
Universal precautions

Background: Unsafe behaviors of the professionals working at health and beauty centers are arousing concern among researchers, especially because of the risk of infections related to occupational health.

Methods: This study involved a survey of 153 manicurists/pedicurists working in beauty salons in Belo Horizonte, Brazil between June 2012 and March 2013. The data were analyzed through descriptive statistics, χ^2 tests, and logistic regression. Participants' knowledge of and adherence to best practices were evaluated based on the median results, and serologic markers for hepatitis B and C were identified.

Results: Associations ($P < .05$) were observed between adherence and workload, biosafety training, and hepatitis B surface antibody (anti-HBs) serology, as well as between knowledge and courses in the area and accidents with sharp instruments. Manicurists who participated in a course on biosafety (63.6%) and were positive for anti-HBs reagents (56.8%) achieved better results on issues of adherence. Those who reported taking a specific course on this topic had good scores on issues of knowledge (60%). Reactivity to hepatitis C antibody was identified in 1.3%, and reactivity to anti-HBs was detected in 53%.

Conclusions: Overall, the participants demonstrated poor knowledge of and adherence to good safety practices and exposure to occupational biohazards, such as contact with blood by accidents with sharp instruments and minimal vaccine protection.

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The beauty and aesthetics industry is continuously growing, influenced by today's standards, demands of the labor market, and a desire to look younger. During beautification procedures, areas of the body are manipulated, and materials used are contaminated by microorganisms or microbes from customers.¹ When providing nail care, especially when removing the eponychium (cuticle), the instruments used in manicures/pedicures come into contact with blood from customers.¹ When proper procedures, as recommended by national and international health agencies, are not adhered to, these instruments can act as agents for the cross-transmission of such microorganisms as hepatitis B virus (HBV), hepatitis C virus (HCV), and HIV.^{2,3}

The occupational risk of microbial transmission is characterized by the possibility of the professional hurting herself with sharp

instruments when providing services to her customers or caring for her own nails using these same instruments.^{1,2,4}

Although many customers are attended to in beauty establishments,^{1,4} few records of infections or adverse events resulting from visits by the clientele of these establishments are available. This dearth of data is not necessarily related to a lack of events, but rather is related to the relative absence of notification and well-conducted epidemiologic studies directed at this type of activity.

Nonetheless, the data that are available point to a potential relationship between beauty and aesthetics services and the acquisition of HBV and HCV by clients and professionals, as demonstrated by the fact that specific risk factors have not been identified for these diseases in these individuals, the incidence of which has been estimated as only 5% in developed countries but 40%-50% in developing countries.¹

The unsafe conduct of professionals in the beauty and aesthetics industry owing to a lack of preparation and poor knowledge of and adherence to best practices is arousing concern among researchers due to the risk of infections to the professionals and their clients. In this context, the present study aimed to identify the knowledge of and adherence to best practices to protect against occupational biohazards among manicurists/pedicurists.

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Table 1
Sociodemographic profile of interviewed manicurists/pedicurists, Belo Horizonte, 2013 (n = 153)

Variable	Number	%
Female sex	153	100
Age group, median		
≤30 y	80	52.3
>30 y	73	47.7
Marital status		
Single	70	45.8
Married/cohabitating	67	43.8
Other (divorced, widower)	16	10.4
Education		
Elementary school incomplete	14	9.1
Elementary school complete	29	19.0
High school incomplete	22	14.3
High school complete	84	55.0
Higher education	4	2.6
Time working in this business		
≤9 y	97	63.4
>9 y	56	36.6
Time working in the salon visited		
≤2 y	90	58.7
>2 y	63	41.3
Carries out the activity in another salon		
Yes	3	2.0
No	150	98.0
Daily workload		
≤6 h	12	7.8
8 h	77	50.4
>8 h	64	41.8
Vocational training		
No regular/informal	100	65.4
Regular training course	53	34.6
Various courses in the area		
Yes	92	60.0
No	61	40.0
Course on biosafety		
Yes	44	28.8
No	109	71.2
Participation in the establishment		
Informal job	117	76.5
Formal job	20	13.1
Partner	10	6.5
Owner	6	3.9
Responsible for family income		
Yes	62	40.5
No	91	59.5
Insertion in class association		
Yes	2	1.3
No	151	98.7

NOTE. Regular training course: education in schools regulated by Ministry of Education guidelines. No regular training course: self-taught, training, and insertion into service without a qualified training. Formal job: on the books. Informal job: service without employment. Diverse course training: nail decoration, porcelain nails, makeup, hairstyles. Biosafety course: course/training in the workplace, during professional training, event/fair.

METHODS

The present study consisted of a survey of manicurists/pedicurists working in beauty salons in the city of Belo Horizonte, Brazil between June 2012 and March 2013. This study was approved by the Research Ethics Committee of the Federal University of Minas Gerais (UFMG), logged under protocol no. CAAE-0195.0.203.000-11.

A sample of 235 establishments was selected from a pool of 600 salons, considering a 95% confidence interval, a standard deviation of 0.5, and a maximum estimated error of 0.05. All salons had been duly registered with and authorized by the appropriate municipal authorities, as set forth in the city's 2010 Urban Regulation Ordinance. One professional per salon was interviewed.

The 253 salons for the study were selected from the 600 registered salons by simple randomization. The salons were mapped carefully by neighborhood to obtain a sample that was

geographically distributed throughout Belo Horizonte, which has a population of approximately 2.475 million. A telephone call was made to each selected salon to confirm its existence and current address.

Five interviewers were trained, and the list of salon addresses was compiled and distributed to each interviewer. In the event that a salon refused to participate, was closed, or could not be located, another duly registered and authorized salon was chosen. The criteria for manicurist/pedicurist participation in the study included age ≥ 18 years and at least 1 year of experience, regardless of sex or position within the salon (ie, owner or employee). If more than 1 professional was interested in participating, then the professional with the birth date closer to the date of the visit was chosen. The interviews were conducted after an invitation explaining the goals and relevance of the research project had been sent to the owners and professionals of the selected salons.

The interview process incorporated a structured questionnaire containing multiple-choice and open-ended questions, divided into 5 parts: I, sociodemographic characteristics of the professionals; II and III, knowledge of and adherence to best practices, avoidance of occupational biohazards, disposal of sharp instruments, and proper vaccinations; IV, accidents with sharp instruments, immediate actions, and risk factors for acquiring HBV, HCV, and HIV; and V, factors involved in professionals' adherence to proper vaccinations.

For both the open and closed questions, the answers were categorized and subsequently analyzed using SPSS version 17.0 (SPSS, Chicago, IL), as well as through descriptive statistics, Pearson's χ^2 test, or Fisher's exact test. We used multivariate binary logistic regression analyses to examine the influence of sociodemographic variables considered possibly associated with knowledge of and adherence to best practices. We assessed knowledge and adherence among the professionals according to the median of results.

All professionals were invited to simultaneously answer the questionnaire, and tests were conducted to detect the following serologic markers for HBV and HCV: hepatitis B surface antigen (HBsAg), total hepatitis B core antibody (anti-HBc), anti-HBs, and anti-HCV. For these tests, 4 mL of blood was collected by the vacuum method in the proper blood collection tubes according to the UFMG Department of Medicine's laboratory protocol. At scheduled times, blood samples were collected by experienced pathology technicians in the participating salons. On receipt of the serologic results from the laboratory, professionals who were nonreactive to anti-HBs were advised to go to the health clinic to request either initiation or continuation of the HBV vaccination schedule. In cases of positive results, new samples were collected, and the test was repeated. If the positive result was confirmed, then the professional was referred for treatment at an authorized reference center.

RESULTS

According to previously defined criteria, completed questionnaires were received from 235 manicurists/pedicurists, 153 of whom had undergone serologic examination and composed the study sample. All 153 manicurists/pedicurists were female, ranging in age from 18 to 69 years. Sociodemographic data are presented in Table 1.

Knowledge of and adherence to best practices and occupational biohazards; disposal of sharp instruments and proper vaccination

Regarding the disposal of sharp instruments, although 41.2% of the survey participants knew about the recommended container for the correct disposal of these instruments, 84.3% of the manicurists/pedicurists reported disposing their used instruments

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