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ORIGINAL ARTICLE

DENTISTS' KNOWLEDGE AND EXPERIENCE REGARDING LEPROSY IN AN ENDEMIC AREA IN BRAZIL

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SUMMARY

This study aims to analyze the dental surgeons' knowledge about leprosy and its ways of transmission, clinical characteristics and treatment, besides analyzing their experience with respect to diagnostic suspicion and case referrals. The study population comprised 242 dental surgeons working in the public dental service of the city of *Cuiabá*, *Mato Grosso*, Brazil. A self-applicable questionnaire containing questions about the dental surgeon's profile was used, including his/her knowledge on leprosy, as well as his/her practices concerning the disease. The results showed a predominance of female dental surgeons (65.7%), with ages ranging between 30 and 39 years old (43%) and professionals having six to 10 years of experience since graduation. Concerning their time working in the Unified Health System (SUS), the highest percentage of dental surgeons referred more than 10 years. Regarding the knowledge about the disease, 30.6% did not know the efficacy of the treatment of leprosy, 47% did not know the disease had to be notified compulsorily and only 8.3% had received information about leprosy at work. Besides that, most of them mentioned feeling little security when treating patients with leprosy (61.6%). Thus, dental surgeons' deficient knowledge on issues related to leprosy may be highlighted.

KEYWORDS: Leprosy; Attitude of health personnel.

INTRODUCTION

Leprosy is considered one of the great public health problems in Brazil, which is the second country in the world with respect to absolute number of leprosy cases. The distribution of disease is quite irregular and follows the poverty map, with higher prevalence in the northern, northeastern and nid-western regions. In 2010 there were 18.2 new cases per 100,000 inhabitants. The disease is considered hyper endemic in the state of *Mato Grosso*, which ranks first in the detection of new cases, with an estimate of 81.6 cases per 100,000 inhabitants[1].

Leprosy is considered a priority by the World Health Organization (WHO) due to its disabling power, as it marginalizes millions of patients and interrupts their productive capability[2], leading to suffering not only caused by the pain and sickness but also by the social and psychological impact on the patient[3].

It is a compulsory notification disease due to its magnitude and transcendence, as it is transmissible and causes deformities, although it can be treated and controlled[4].

The diagnosis of leprosy is made through the identification of skin lesions with loss of sensitivity, which can appear in any part of the body, including the nasal mucosa and the oral cavity[5]. Prioritizing practices that contribute to the early diagnosis of leprosy are fundamental to the disease control, thus it is important that all the health professionals know its signs and symptoms[6].

In this context, the dental surgeon should participate in the diagnosis of leprosy and in the care of the patients, regardless if the cases are new or old cases[7]. In the dental practice, whenever there is a suspicion of leprosy, the clinical examination should extend beyond the oral maxillofacial complex, allowing the recognition of signs and symptoms from any region of the body through the gathering of information about the patient's general health[8].

Regarding leprosy, the Ministry of Health recommends that members of the oral health teams of the Family Health Strategy Program develop actions and educational activities to prevent the disease, treat it, fight its stigma, inform patients about medication adverse effects and prevent disabilities, contributing to the epidemiological surveillance[2].

A broader view in the dental care services may contribute to the improvement of the individual's and the community's health condition.

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Cases of suspected leprosy should be referred by the dental surgeons to a diagnostic confirmation[9]. Dental surgeons' and other health professionals' little knowledge about the disease is highlighted among the factors that have worsen the leprosy control. This stems from the fact that teaching the subject at university undergraduate and graduate programs and public health services has been overlooked even in countries where the disease is endemic[10].

Assessment of dental surgeons' knowledge and experience of leprosy is scarce[9,11]. Based on the stated above, the aim of this study is to analyze the dental surgeons' knowledge on leprosy, its ways of transmission, clinical characteristics, treatment and care given to patients, as well as his/her experiences with diagnostic suspicion and referral.

MATERIALS AND METHODS

The study was conducted in accordance with the requirements of Resolution 466/12 of the National Board of Health and was approved by the Research in Humans Ethics Committee of *Araçatuba* Dental School – *Universidade Estadual Paulista* – UNESP, state of *São Paulo*, Brazil (process number 36331714.0.0000.5420/2014).

This is a cross-sectional exploratory study carried out in the public dental services of *Cuiabá*, the capital city of the state of *Mato Grosso*, Brazil. *Cuiabá*'s estimated population in 2015 was 580,489 inhabitants and its urban area is subdivided into four administrative regions: north, south, east and west[12]. The organizational structure of Unified Health System (SUS) is comprised of 92 Basic Health Units (UBS), 63 Family Health Strategy Programs (ESF), 10 Dental Care Units (UAO) and seven Dental Specialty Centers (CEO).

The dental surgeons participating in the study worked in the basic care and at the CEOs in the city. The professionals out of work due to health problems, vacation or because they were carrying out administrative duties at the Municipal Health Department were excluded from the study.

Data collection was performed between January and March 2015. Interviews were carried out by one trained researcher, during the working hours. The dental surgeons who agreed to participate in the study signed an informed consent form.

A self-applicable questionnaire with objective questions was used. A pilot study with 20 dental surgeons who worked in the administrative sector of the Department of Health was previously carried out so that the questions of the survey were adjusted to improve the understanding of the research and its aims.

The questions used concerned the characterization of the sample (sex, age group, time since graduation and time working for SUS, type of work and training in a specialization program), knowledge of leprosy, where the knowledge was acquired, knowledge of the existence of a relationship between dentistry and leprosy, participation in programmed actions against the disease, and dental care of patients with leprosy.

The dependent variable "suspicion and referral of a leprosy case", was associated with the variables "time since graduation", "time working for SUS" and "compulsory notification of leprosy". The variable "efficacy of multidrug therapy (MDT) against the disease transmissibility" was associated with the variable "level of safety felt in the dental care of patients with leprosy".

The data obtained from the sociodemographic and disease characteristics variables were described as frequencies. As for the statistical analysis, a bivariate analysis with Chi-square test with significance level of 5% was carried out to identify the most significant differences in the variables studied. The SPSS software, version 21.0 (IBM, Armonk, NY, USA) was used.

RESULTS

The sample of the study comprised 297 dental surgeons, 106 worked under an employment contract and 191 were public servants. From those, 242 (81.5%) answered the questionnaire, and the majority was female (65.7%), aged between 30 and 39 years old (43%) and had graduated 6 to 10 years earlier (23.6%). Regarding the time working for SUS, the highest percentage (28.1%) of professionals had been working there for more than 10 years, acting in both, the private practice and also in the public dental service (68.2%). Furthermore, 82.2% were specialists.

Concerning the knowledge of leprosy, only 13 (5.4%) of the professionals could not define the disease. However, wrong answers, such as "disease caused by a fungus or by the tsetse fly" were observed. Most of them answered correctly that it is an "infectious-contagious disease affecting the skin and nerves" (63.2%), whose transmission occurred through the airway and prolonged contact with a sick person (54.1%). However, 30.6% did not know about the efficacy of MDT, 47% did not know that the disease had to be compulsorily notified and only 8.3% had obtained information about the disease at work. Furthermore, 72.8% believed that there was no relationship between dentistry and leprosy, 95.9% had never taken part in activities of permanent education about leprosy, but 27.3% had already given dental care to leprosy patients.

The bivariate analysis found a significant statistical association between the suspicion or referral of leprosy cases and the time since graduation ($p = 0.02$), as well as with the time working at the public health service ($p = 0.003$) and with the knowledge that leprosy is a compulsory notification disease ($p = 0.001$).

MDT was considered effective to reduce the disease transmission by 74.7% of the professionals, however, most of them reported feeling little security regarding the dental care of leprosy patients (61.6%).

DISCUSSION

Dental surgeons working in the public health service, in an area where leprosy is endemic need to have a deeper knowledge about the disease so that suspected cases will be adequately referred for treatment. It is of fundamental importance that the dermatological and neurological aspects related to the early clinical manifestation of the disease are known by the dental professional, so that they can contribute to increase the diagnosis of the disease[9,13].

Even though the great majority of dental surgeons has claimed that they know what leprosy is, the disease was described in a simplified way, being related only to skin depigmentation caused by bacteria. It

Table 1
Characteristics of the studied professionals, *Cuiabá*, 2015

Variables	n	%
Sex		
Male	83	34.3
Female	159	65.7
Age Group		
20 to 29 years old	46	19.0
30 to 39 years old	104	43.0
40 to 49 years old	63	26.0
50 years old or over	29	12.0
Time since graduation		
Less than 1 year	9	3.7
From 1 to 5 years	33	13.6
From 6 to 10 years	57	23.6
From 11 to 15 years	63	26.0
From 16 to 20 years	45	18.6
Over 20 years	35	14.5
Time of work at SUS		
Less than 1 year	55	22.7
From 1 to 3 years	30	12.4
From 4 to 6 years	40	16.5
From 7 to 10 years	49	20.3
Over 10 years	68	28.1
Type of work		
Only public service	77	31.8
Private practice and public service	165	68.2
Specialization		
Yes	199	82.2
No	43	17.8

Table 2
Knowledge of leprosy by dental surgeons, *Cuiabá*, 2015

Variables	n	%
Definition of leprosy		
Infectious contagious disease affecting skin and nerves	153	63.2
Skin disease	43	17.7
Disease caused by a bacillus	24	10
Disease caused by poor hygiene	7	2.9
Disease caused by a fungus	1	0.4
Disease caused by the tsetse fly	1	0.4
Does not know	13	5.4
Transmission of leprosy		
Prolonged contact with a sick person	72	29.8
Airway	59	24.3
Direct contact with the lesion	28	11.6
Contact with body fluids	22	9.1
Contact with contaminated objects	16	6.6
Tsetse fly bite	1	0.4
Does not know	44	18.2
Leprosy treatment is efficient		
Yes	168	69.4
No	15	6.2
Does not know	59	24.4
Knowledge about leprosy compulsory notification		
Yes	128	53
No	114	47
Where learned about leprosy		
Media	69	28.5
Personal readings	58	24
Workplace	20	8.3
Graduation	70	28.9
Scientific paper	2	0.8
Courses	5	2.1
Did not get information	18	7.4
Relationship between dentistry and leprosy		
Existent	66	27.3
Non existent	176	72.7
Programmed actions about leprosy		
Participated	10	4.1
Never participated	232	95.9
Given dental care to leprosy patients		
Yes	66	27.3
No	99	40.9
Does not know	77	31.8

is important to emphasize that some professionals affirmed that it is a disease transmitted by a fly or a fungus, demonstrating their lack of understanding about the causative agent. In previous studies a simplistic definition of the disease, highlighting only the skin blemishes, was also observed[9,14,15].

In this study, the graduation in dentistry was the main source of knowledge about leprosy among the dental surgeons, a finding that disagrees with other studies[9,14], in which the main sources of information were the media and the workplace.

Dental professionals should not restrict their examination to the signs and symptoms related exclusively to the oral cavity, but rather participate in the identification of the problems that different population

Table 3
Bivariate analysis of suspicion of leprosy and the dental surgeons' profile and knowledge, *Cuiabá*, 2015

Variables	Have you ever suspected of or referred any leprosy case?				*p*-value
	Yes		No		
	n	%	n	%	
Time since graduation					
Less than 1 year	1	2.7	8	3.9	0.02*
From 1 to 5 years	4	10.8	29	14.1	
From 6 to 10 years	4	10.8	53	25.9	
From 11 to 15 years	7	18.9	56	27.3	
From 16 to 20 years	9	24.3	36	17.6	
Over 20 years	12	32.5	23	11.2	
Time working at SUS					
Less than 1 year	4	10.8	51	24.9	0.003*
From 1 to 3 years	4	10.8	26	12.7	
From 4 to 6 years	6	16.2	34	16.6	
From 7 to 10 years	3	8.1	46	22.4	
Over 10 years	20	54.1	48	23.4	
Is leprosy a compulsory notification disease?					
Yes	56	71.8	72	43.9	0.001*
No	22	28.2	92	56.1	

*maximum likelihood ratio.

Table 4
Bivariate analysis of the knowledge of the efficacy of leprosy treatment and dentists' safety feeling in treating leprosy patients, *Cuiabá*, 2015.

Level of safety feeling in providing dental care to patients with leprosy	Is MDT efficient against leprosy transmissibility?				*p*-value
	Yes		No		
	n	%	n	%	
Feels safe	84	34.7	9	3.7	0.001*
Feels unsafe	97	40	52	21.6	
Total	181	74.7	61	25.3	

*maximum likelihood ratio.

groups have in their working area and also take part in multidisciplinary and intersectoral teams[16]. In the present study, a small portion of the respondents affirmed having acquired their knowledge about leprosy at the workplace, a result that suggests poor information exchange about the subject in the health sector.

Mycobacteryum leprae transmission occurs through the upper airways, and the probability of infection is influenced by the duration of the contact with infected people, by the severity of infection and by the degree of the organism resistance[11]. Most dental surgeons in this study answered correctly that the transmission occurred by means of direct contact through the air, as reported in other studies[14,17-19].

MDT is considered the most important treatment to leprosy and was introduced in Brazil in 1986. A patient on MDT no longer transmits the disease right after the first doses, becoming thus unable to infect other people[20]. A study carried out with medical students about their knowledge on leprosy showed that a little portion of the interviewees were aware of the efficacy of MDT[15]. In the present study**,** although most dentists considered MDT effective to reduce the disease transmission, most of the respondents affirmed that they felt insecure treating leprosy patients, a finding in agreement with that of other studies[9].

The importance and the possibility of involving dental surgeons in the actions to control leprosy through their ability to identify suspicious skin

lesions and refer the patient to other health professionals was reported in another study[9]. In this study, few dental surgeons suspected of leprosy or referred patients to other health professionals, a finding that is in agreement with other studies[9,14].

Leprosy is a compulsory notification disease (CND) in Brazil and investigation is mandatory, thus the case notification forms must be filled in by health professionals in the units in which there is a case suspicion or diagnosis confirmation[4]. A high percentage of dentists did not know that leprosy is a compulsory notification disease, so that under-notification is a real possibility. Furthermore, as the studied area is endemic for leprosy and few dental surgeons affirmed having treated or referred a patient suspected of having leprosy, it is likely that leprosy cases have been missed.

Time since graduation and time working at the public health service have influenced the increase in the number of suspicion and referral of leprosy cases by the dental surgeons in *Cuiabá*. This demonstrates that the experience acquired through the years of work allows the questioning and analysis of the patient as a whole, with an assessment of his/her general health and the improvement of the health team performance. Leprosy has to be studied in a multidisciplinary and multifactorial way. It should be taught in undergraduate health programs, and to health professionals working at basic health units. They should be given training in their workplace. If these measures are not adopted, there is little likelihood of reducing the incidence of disease in the coming years[21].

Concerning the relationship between leprosy and oral health, it is important to emphasize that there are no pathognomonic lesions of leprosy[22,23]; however, several studies have demonstrated the presence of oral lesions in patients with leprosy at varied percentages. There is high prevalence of chronic inflammatory periodontal disease in patients with leprosy due to the presence of *Mycobacterium leprae* in the gingival mucosa[24.] This information was not known by the professionals interviewed in this study, who reported having performed only a few programmed evaluations of leprosy patients.

It is evident that dental professionals need to develop not only competences related to the techniques and practices of the dental profession, but also those directed to the patient. The dental surgeon can and should contribute to prevent and control leprosy, take part in health education campaigns and understand his/her role in the epidemiological surveillance actions and in public health programs[10,11,14].

In conclusion, dental surgeons' deficient knowledge about leprosy stands out. It is necessary to deepen the dental surgeons' knowledge about leprosy, so that they become multiplying agents of information on leprosy, favoring the early diagnosis and treatment of the disease.

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