LEISHMANIASIS: THE HEALTHCARE PROFESSIONALS' KNOWLEDGE IN ENDEMIC AREA

Leishmanioses: o conhecimento dos profissionais de saúde em área endêmica

Leishmaniasis: el conocimiento de los profesionales de La salud en area endêmica

ABSTRACT

Objective: To assess the knowledge about leishmaniases among healthcare professionals of an endemic municipality of the state of Minas Gerais-Brazil. **Methods:** Cross-sectional study conducted with 228 professionals (95 zoonosis professionals, 83 community health agents, 18 doctors, 17 nurses, 8 dentists and 7 veterinarians) of the municipality of Divinópolis – Minas Gerais between July and November 2009. It was used a structured questionnaire, previously validated, containing objective questions about the disease. Analyses were performed using the Statistical Analysis System. **Results:** The professional category that obtained the best mean scoring answers was the veterinarians (8.3), followed by the doctors (8.1), while community health agents had the lowest mean scoring (6.7). The adequate answers with the lowest percentage of correct answers were: preventive measures (42.5%), clinical manifestations (25.9%), popular names (20.6%) and transmission (20.2%). Although zoonosis professionals and health community agents presented the highest percentage of wrong answers, they were the ones – along with veterinarians – who answered most of the questions about preventive measures right. **Conclusions:** Conceptual gaps were observed among the healthcare professionals participating in this research, reinforcing the need to implement continuing education processes for these professionals, contextualizing the information on leishmaniases according to the reality studied.

Descriptors: Leishmaniasis; Knowledge; Health Manpower; Primary Health Care; Endemic Diseases.

RESUMO

Objetivo: *Investigar o conhecimento sobre as leishmanioses dos profissionais de saúde de um município endêmico do estado de Minas Gerais-Brasil.* **Métodos:** *Realizou-se um estudo transversal com 228 profissionais (95 agentes de zoonoses, 83 agentes comunitários de saúde, 18 médicos, 17 enfermeiros, 8 dentistas e 7 veterinários) do município de Divinópolis - Minas Gerais, entre julho e novembro de 2009. Utilizou-se um questionário estruturado, previamente validado, contendo questões objetivas sobre a doença. As análises foram realizadas através do programa Statistical Analysis System.* **Resultados:** *A categoria profissional que apresentou melhor média de acertos foi a dos veterinários (8,3), seguida pela dos médicos (8,1), enquanto os agentes comunitários de saúde tiveram a menor média (6,7). As respostas adequadas com menor percentual de acerto foram: medidas preventivas (42,5%), manifestação clínica (25,9%), nomes populares (20,6%) e transmissão (20,2%). Os agentes comunitários de saúde e zoonoses, embora tenham apresentado maior porcentagem de respostas incorretas nas demais questões, foram os que mais acertaram sobre medidas preventivas, juntamente com os veterinários.* **Conclusão:** *Evidenciaram-se lacunas conceituais nos profissionais de saúde participantes da pesquisa, reforçando a necessidade de implementar processos de educação permanente destes profissionais, contextualizando as informações sobre as leishmanioses à realidade estudada.*

Descritores: *Leishmaniose; Conhecimento; Recursos Humanos em Saúde; Atenção Primária à Saúde; Doenças Endêmicas.*

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RESUMEN

Objetivo: *Investigar el conocimiento de los profesionales de La salud del municipio endémico del estado de Minas Gerais-Brasil sobre la Leishmaniasis.* **Métodos:** *Se realizó un estudio transversal con 228 profesionales (95 agentes de zoonosis, 83 agentes comunitarios de salud, 18 médicos, 17 enfermeros, 8 dentistas y 7 veterinarios) del municipio de Divinópolis - Minas Gerais entre julio y noviembre de 2009. Se utilizó un cuestionario estructurado, previamente validado con cuestiones objetivas sobre La enfermedad. Los análisis fueron realizados a través del programa Statistical Analysis System.* **Resultados:** *La categoría profesional que presentó mejor media de aciertos fue los veterinarios (8,3), seguido de los médicos (8,1), mientras los agentes comunitários de salud tuvieron la menor media (6,7). Las respuestas adecuadas con menos porcentaje de aciertos fueron: medidas preventivas (42,5%), manifestación clínica (25,9%), nombres populares (20,6%) y transmisión (20,2%). A pesar de los agentes comunitarios de salud y zoonosis presentaren mayor porcentaje de respuestas incorrectas, en las demás cuestiones fueron ellos los que tuvieron más aciertos de las medidas preventivas, junto a los veterinarios.* **Conclusión:** *Se evidenció lagunas conceptuales em los profesionales de la salud de la investigación lo que refuerza la necesidad de implementación de procesos de educación permanente de los mismos, contextualizando las informaciones de Leishmaniasis y la realidad estudiada.*

Descriptores: *Leishmaniasis; Conocimiento; Recursos Humanos en Salud; Atención Primaria de Salud; Enfermedades Endémicas.*

INTRODUCTION

The Leishmaniases are infectious, non-contagious diseases caused by protozoan parasites from different Leishmania sp. Species. They are transmitted to humans by the bites of little Lutzomyia insects that get infected in wild reservoirs (foxes, marsupials, primates, and rodents) and domestic reservoirs (dogs). The biological cycle of the Lutzomyia sp. starts with the deposition of eggs in humid, dark places, which are rich in organic matter. Also, there is no evolutionary phase in the water[1-3].

In the Americas, the Leishmaniases presents two main clinical categories associated with a range of symptoms and different degrees of severity: the Visceral Leishmaniasis (VL) and the American Tegumentary Leishmaniasis (ATL). The VL has shown a geographic expansion and an urbanization over the last years, causing eco-epidemiological changes in transmission in many regions of Brazil due to the evolution of the ecology/biology of the vectors and the parasite, the correlation between canine/human infection, and others[4]. The ATL presents different epidemiological profiles and transmission patterns due to socio-environmental changes[5,6].

The insidious nature and the unspecific symptomatology of leishmaniases make them difficult to diagnose. This fact, coupled with professionals' inexperience, can lead to serious delays in the detection of the disease, which can be fatal in case of VL[7]. Health education may be a strategy capable of minimizing these outcomes because it allows to associate important concepts of the cycle and symptomatology of the zoonoses with habits and attitudes of the local population. With this parallel, applying effective and enduring preventive/curative actions becomes easier because they are developed according to the perceptions of the communities affected[8]. Such process of health education should be constant, allowing to generate bonds of commitment and co-responsibility between the population and those who are part of the health care system[9].

In Brazil, this process is led by the *Sistema Único de Saúde – SUS* (Brazil's Unified Health System) based on equity, universality, and integrality. This program includes primary care as the first level of care of the SUS and comprises multi-professional teams – doctors, nurses, dentists and community health agents – that must develop sanitation responsibility in the adjoining communities of their territory taking into account their sociocultural characteristics[10]. The joint action of these professionals can facilitate the dissemination of knowledge and progressively implement the informative and preventive cycle about diseases like the leishmaniases.

However, the scientific literature is scarce in terms of assessing the knowledge and attitudes of professionals regarding leishmaniases. There is evidence of the poor knowledge of the symptomatology of the disease, inadequate clinical follow-up in the health care unit, with impacts on treatment success, and mandatory actions rather than a dialogic approach to popular education[8,11-12].

The fact that the national program for control of leishmaniases was not able to stop the disease's advance over the country raises questions about the role of healthcare professionals within the institutional context and reinforces the hypothesis that their knowledge, although indispensable, is still incipient for contributing to its success.

In Brazil, between the years 2007 and 2013, there were 26,112 cases of VL and 159,301 cases ATL notified[13]. In Divinópolis, Minas Gerais, both forms of the disease are expanding. The city registered 135 cases of ATL in the 1990's and 54 between 2007 and 2013[13,14]. The VL is a recent manifestation, with 15 cases registered during the same period[13]. Studies conducted in the city showed that teachers and the population lack information on leishmaniases, revealing a fragmentation of knowledge when considering the scientific context of the disease[15,16]. Studies have also

reported the existence of phlebotomine sandflies – naturally infected vectors – in urban forest patches[14,17] and a high prevalence of canine leishmaniasis[15].

Given that, it can be noticed that the endemic situation of the city requires effective preventive actions of the healthcare team in order to prevent an increase in the number of disease cases in Divinópolis. Therefore, it has been raised the hypothesis that the knowledge of these professionals may be unsatisfactory and little articulated with the population to face the reality of this disease in the city. Thus, the present study aimed to assess the knowledge about the leishmaniases among healthcare professionals of an endemic municipality of the State of Minas Gerais, Brazil.

METHODS

This is a quantitative cross-sectional study conducted in Divinópolis, an endemic area of Minas Gerais, Brazil, in the period from July to November 2009.

Divinópolis is located in the Midwest region of the state (20º8'21''S and 44º53'17'' W) and has an estimated population of 213,016 inhabitants[18]. The municipality is an important center of the Midwest region of the state, standing out for its industry and commerce – clothes and steel – that make it more attractive than the neighboring municipalities[19]. Historically, the city was an endemic region for the disease and presented an epidemic ATL outbreak between the years 1989 and 1990 when the number of human cases increased from 29 to 79 per year, respectively[15,20]. Afterwards, cases of VL started to appear in the years 2009 and 2010.

The study comprised 228 healthcare professionals, including 95 zoonosis agents (ZA), 83 community health agents (CHA), 18 doctors, 17 nurses and 8 dentists who worked in the public health care units of the municipality, and 7 veterinarians who worked in all the veterinary clinics of the municipality. The study included the professionals who were in the health care unit or veterinary clinic on the day scheduled for the application of the questionnaire.

The collection instrument was developed using important concepts about the disease found in similar studies described in the literature[7,21-25]. The authors developed a self-administered questionnaire composed of 9 close-ended questions with six answer choices from which the respondent should choose one.

The questionnaire was validated by applying it to 27 individuals with an educational level similar to that of the study participants. Some questions were reformulated due to some difficulties respondents had to understand them.

The results were analyzed through descriptive statistics and presented adopting absolute and relative frequency using the Statistical Analysis System (SAS).

The present study was approved by the Research Ethics Committee of the *Fudação Educacional de Divinópolis/ Universidade Estadual de Minas Gerais – FUNEDI/UEMG* (Divinópolis Educational Foundation/State University of Minas Gerais) No. 16/2009 following what is recommended by Resolution 196/96 of the National Health Council, currently revoked by Resolution 466/12 of the National Health Council. The professionals were informed about the objectives, risks and benefits of this study through the free, informed consent form.

The healthcare professionals of the public health system (doctors, nurses, dentists and CHA/ZA) were invited to participate by the Health Secretariat through a letter of collaboration informing the research theme. Veterinarians were directly contacted in the veterinary clinic in order to schedule a day. CHA and ZA were interviewed during a meeting in the auditorium of FUNEDI and the contact with the other professionals was previously scheduled in the health care units or veterinary clinics where they worked.

RESULTS

Of the 228 interviewees, 65.6% (n=149) were women, 50.7% (n=115) had completed secondary education and 43.6% (n=99) had an income between 1 and 3 minimum wages (Table 1).

Table I - Socioeconomic characteristics of the healthcare professionals and veterinarians of Divinópolis, Minas Gerais.

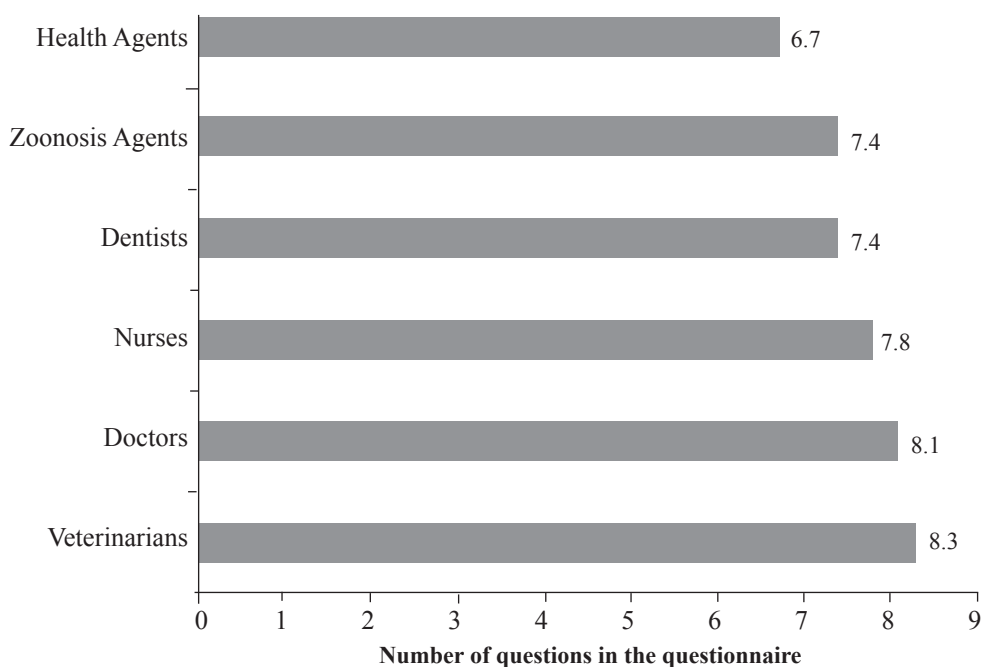| Socioeconomic characteristics	Frequency (n)	Percentage (%)
Sex		
Male	79	34.4
Female	149	65.6
Education		
Incomplete primary education	1	0.4
Incomplete secondary education	18	7.9
Complete secondary education	116	50.7
Technician	3	1.3
Incomplete higher education	21	9.3
Complete higher education	69	30.4
Income		
From 1 to 3 wages	100	43.6
From 4 to 5 wages	58	25.6
More than 5 wages	70	30.8

Figure 1 - Distribution of hit rates regarding leishmaniases according to the different healthcare professionals interviewed. Divinópolis, Minas Gerais, 2009.
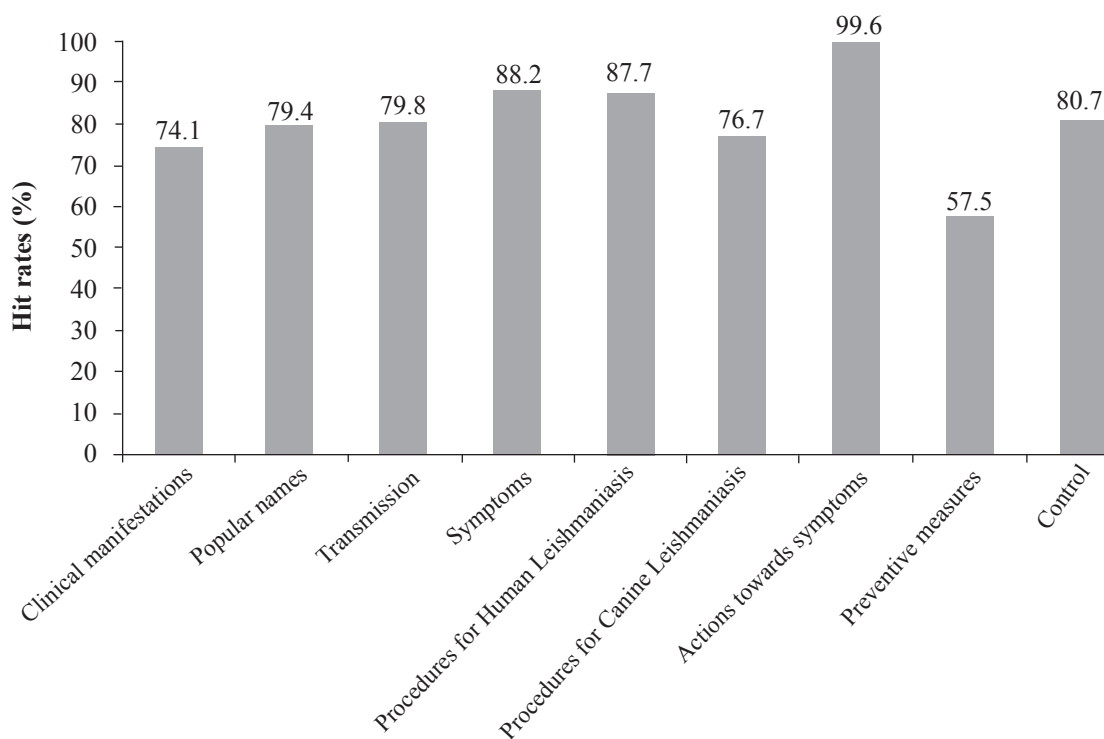

Figure 2 - Analysis of the general performance of the healthcare professionals interviewed according to each question about leishmaniases. Divinópolis, Minas Gerais, 2009.

The healthcare professionals got an average number of 7.6 questions right out of 9 questions. Veterinarians had the highest scoring, 8.3, and the CHA had the lowest scoring, 6.7 (Figure 1).

Figure 2 shows the interviewees' performance in each question. All the questions had similar hit rates, except the one about "preventive measures".

Analyzing the 4 questions with the worst results (preventive measures, clinical manifestations, popular names of the disease and transmission) relative to the different professionals interviewed revealed a discrepancy between the performances of these professionals, especially the CHA and ZA (Figure 3). On the other hand, the knowledge of these professionals and veterinarians about preventive measures was better than that of the other public health professionals, although their hit rate was not high.

Regarding preventive measures, this aspect presented 57.5% (n=131) of right answers ("keeping the external area of the house clean"). This percentage was influenced by the choice of wrong alternatives like "cover the water tanks and do not leave standing water" pointed by 12.6% (n=12) of ZA, 21.7% (n=18) of CHA, 28.6% (n=2) of veterinarians,

38.9% (n=7) of doctors, 43.7% (n=7) of nurses and 50% (n=4) of dentists, indicating dengue prevention actions.

Concerning the question about the clinical forms of the leishmaniases, 74.1% (n=169) of the professionals correctly answered "visceral and tegumentary". However, 12.5% (n=1) of dentists reported the forms "classic and hemorrhagic" and 20.5% (n=17) of CHA chose the option "symptomatic and asymptomatic".

With regard to the knowledge of the popular names of VL and ATL, 79.4% (n=181) answered correctly ("kala-azar and Bauru's ulcer). However, 13.3% (n=11) of CHA reported the disease was known as leptospirosis, and 13.7% (n=13) of ZA did not know the answer.

When asked about the form of transmission of the leishmaniases, 79.8% (n=182) of the professionals answered correctly. However, 11.1% (n=2) of doctors, 12.5% (n=1) of dentists and 10.9% (n=9) of CHA chose the wrong alternative "through the bite of infected Aedes aegypti mosquitos" and 12.5% (n=1) of dentists, 8.4% of CHA (n=7) and ZA (n=8) chose the alternative "through the bite of infected dogs".
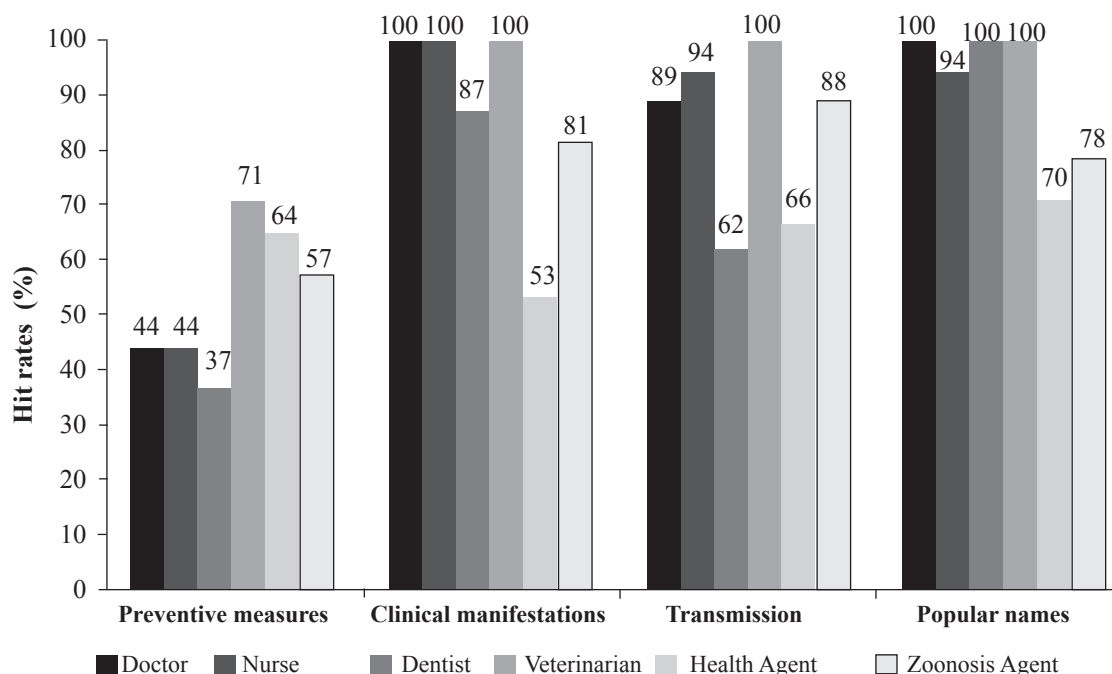

Figure 3 - Distribution of the hit rates of questions about leishmaniases with the worst results according to the healthcare professionals. Divinópolis, Minas Gerais, 2009.

Concerning the actions that should be taken towards the manifestation of the disease in humans, 87.7% (n=200) of the interviewees correctly answered "immediate treatment"; however, 25% (n=2) of dentists, 7.2% (n=6) of CHA and 6.3% (n=6) of ZA marked the option "vaccination of dogs and humans".

It was observed that 80.7% (n=184) of the healthcare professionals chose the right answer for the question about the control of the disease ("eliminate infected dogs, eliminate phlebotomine sandflies and treat patients"). However, 28.6% (n=2) of veterinarians, 20.5% (n=17) of CHA and 12.5% (n=1) of dentists and nurses (n=2) answered that in order to control the disease it is necessary to "eliminate standing water, vaccinate dogs and treat patients".

DISCUSSION

It has been shown that the healthcare professionals interviewed presented many conceptual gaps regarding the leishmaniases. The subject they knew less about was the preventive measures, with an overall hit rate of 57.5%. This may reflect a conduct that is mainly focused on the diagnosis and treatment of infected patients or animals at the expense of a preventive orientation, which is very important in preventing new cases of the disease or its recurrence.

The erroneous association between the biological cycle of dengue and leishmaniasis vectors reveals this discrepancy, since the vectors of these diseases have different life cycles. Appropriate information and education are important for building sceneries that may favor the prevention in endemic areas, and the professionals within this context are disseminators of knowledge and also part of the population[26]. Therefore, their perceptions need to be improved in order to allow the control of the disease, a goal that must be achieved through appropriate public policies that should go beyond the performance of these professionals.

The CHA and ZA are the health actors who are closer to the population, and their actions are very important for the dissemination of information and detection of suspected cases. Studies on the agents' perceptions of dengue, for example, revealed a proximity between agents' representations and the scientific knowledge, a fact that can have a positive effect on their practices[27]; however, this practice is based on vertical prescriptions and recommendations, giving little importance to the dialog with the population[28].

Other studies show the names of VL and leptospirosis are often confused by zoonosis agents and other professionals of the Family Health Strategy (FHS) like the nurses of a research conducted in the metropolitan region of Belo Horizonte[7]. This has also been observed in the present study, in which 13.3% of CHA pointed leptospirosis as a popular name for the leishmaniasis.

The wrong answers regarding the leishmaniases transmission were mainly related to the role of the vector and dog in the cycle of the disease. The indication of Aedes aegypti as a vector transmitting the disease shows that these professionals know the disease is transmitted by an insect, but they do not know its name. Some professionals reported the disease could be transmitted by the bite of infected dogs (12.5% of dentists and 8.4% of CHA/ZA), an association that was also verified in a study conducted by the Federal University of Paraná, in which 50% of CHA interviewed reported leishmaniasis was transmitted by infected dogs[29].

The dog is the main host of the disease in urban areas and has one of the main currently-adopted measures for disease control. Two vaccines against leishmaniasis are available in the market; however, the efficacy and the verification of an adequate immune protection are under testing phases[30]. However, the Ministry of Health recommends the euthanasia of seropositive dogs and does not recognize the vaccination as an effective measure for the disease control.

In the present study, 16.7% of doctors reported the treatment is only performed during the "chronic stage of the disease". A study on the epidemiological history of ATL and its perspectives of control in Brazil revealed that the lack of preparation of health care units for the diagnosis of the disease is a major obstacle to the early approach to the patient[31]. The same authors observed the existence of a long period between suspicion and diagnosis, which is partially caused by the lack of diagnostic capacity and technical preparation of healthcare professionals.

The differential diagnosis is very important in order to avoid disfiguring scarring and mutilations, especially in the case of Mucocutaneous Leishmaniasis, which is little prevalent[32]. Thus, dentists need to be trained for early diagnosis of buccopharyngeal lesions, which can be caused by several diseases – paracoccidioidomycosis, neoplasias, laryngitis, among others[32,33]. Late diagnosis results in high rates of lethality from leishmaniases – especially VL – and has been considered a risk factor that increases the risk of death, for which reason the training of FHS doctors must be prioritized by the primary health care system[34,35].

In a new perspective of health promotion, with the creation of bonds of commitment and co-responsibility

between professionals and the population, the health education of these professionals and their technical preparation can ensure more effective diagnoses and treatments[4,9,31]. Thus, a new dialog with the population can be established, making it possible to employ collective practices to prevent users from getting sick, going beyond the process of cure.

Thus, the health care team and the veterinarians should be empowered through continued education that should be in line with the municipality's reality. The results of this research are expected to contribute to the improvement of patient-professional relationship within the plural and dynamic context of the leishmaniases, shifting the practice in terms of prevention, promotion and rehabilitation of users rather than focusing on the biomedical approach to the disease.

CONCLUSION

The healthcare professionals who participated in this research presented conceptual gaps, reinforcing the need to provide them with continued education processes that should contextualize the information on leishmaniases according to the reality investigated.

ACKNOWLEDGEMENTS

Conflicts of Interest

All the authors have effectively contributed to the development of this work, being responsible for its content. Additionally, they have no conflicts of interest with companies/institutions or the subject investigated.

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