






Socio-epidemiological and cultural aspects of cutaneous leishmaniasis: conceptions, attitudes and practices in the populations of Tierralta and Valencia (Córdoba, Colombia)


Aspectos socioepidemiológicos y culturales de la leishmaniasis cutánea: concepciones, actitudes y prácticas en las poblaciones de Tierralta y Valencia, (Cordoba, Colombia)

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ABSTRACT This article focuses on the conceptions, attitudes and practices of the inhabitants from four villages (veredas) in Tierralta and Valencia (Cordoba, Colombia), who have suffered from or who are aware of the existence of cutaneous leishmaniasis. A mixed methodology was implemented based on a qualitative design, using interviews and focus groups (n=45), and an epidemiological design, which included applying the Montenegro test (n=251), uncovering suspected cases of cutaneous leishmaniasis in humans, (n=5) and applying epidemiological surveys (n=409). Among the results, a lack of knowledge regarding the vector was found; although respondents could identify the *Lutzomyia* (known as "alú"), they did not correlate it with cutaneous leishmaniasis. In addition, traditional home treatments were more frequently used, increasing the underrecording of cases. Regarding healthcare personnel, flaws in diagnosis and treatment were found, which reinforces adherence to home treatments. This scenario calls for a reflection about the challenges of the health care system in relation to the interventions of health personnel in communities situated in endemic areas.

KEY WORDS Leishmaniasis Cutaneous; Health Knowledge, Attitudes, Practice; Epidemiology; Colombia.

RESUMEN Este artículo se centra en las concepciones, actitudes y prácticas de los pobladores de cuatro veredas en Tierralta y Valencia (Córdoba, Colombia), que han padecido o conocen la leishmaniasis cutánea. Se implementó una metodología mixta que combinó un diseño cualitativo con entrevistas y grupos focales (n=45), y un diseño epidemiológico en el que se aplicó la prueba de Montenegro (n=251), se relevaron casos sospechosos de leishmaniasis cutánea en humanos (n=5) y se realizaron encuestas epidemiológicas (n=409). Entre los resultados se encontró que hay un desconocimiento del vector y, aunque identificaron la *Lutzomyia* (Alú), no la correlacionaron con la leishmaniasis cutánea. Por otra parte, los tratamientos tradicionales caseros son los más usados, lo que provoca el aumento del subregistro de casos. Respecto al personal de salud, se encontraron fallas en el diagnóstico y el tratamiento, lo que refuerza la adherencia a tratamientos caseros. Este escenario nos insta a reflexionar acerca de los retos del sistema de salud respecto a las intervenciones del personal de salud en las comunidades asentadas en zonas endémicas.

PALABRAS CLAVES Leishmaniasis Cutánea; Conocimientos, Actitudes y Práctica en Salud; Epidemiología; Colombia.

INTRODUCTION

Leishmaniasis is an endemic disease in Colombia, which affects people living at up to 1.750 meters above sea level, that is, 91% of the national territory. It is caused by a parasite that belongs to the genus *Leishmania*, and it is transmitted to humans by a phlebotomine vector that belongs to the genus *Lutzomyia*.⁽¹⁾ Leishmaniasis is a group of diseases that presents three clinical manifestations: cutaneous, mucocutaneous, or visceral. The latter is the most serious form.

The World Health Organization (WHO) describes leishmaniasis as “the disease that affects some of the poorest people on Earth, and is associated with malnutrition, population displacement, poor housing, a weak immune system, and lack of financial resources,”⁽²⁾ and it is categorized as a “disregarded disease.”

In Colombia, Act 100 of 1993 regulates the General Social Security Health System, and Act 1122 of 2007 sets the guidelines for public health, and creates the Surveillance System SIVIGILA, through which the incidence of important diseases in the public health field is monitored, and enables the creation of promotion and prevention campaigns. Thus, the “Guidelines for comprehensive clinical attention to patients suffering from leishmaniasis” was written in 2010, and the “Leishmania Public Health Surveillance Protocol” was written in 2014. These documents instruct on a national scale how to diagnose, treat, and control the disease, and which are the directives for the creation of local prevention programs.

To date, in Colombia, cutaneous leishmaniasis is considered a public health problem, given the fact it affects a great part of the population⁽³⁾ and the resources used for its control and prevention are minimal. In 2014, 10.358 new cases appeared, which represent 11.6% more in comparison to 2013. The department of Córdoba presented 4.5% of the cases on a national scale with 457 cases, and, within this department, Tierralta and Valencia municipalities presented, according to the National Surveillance System SIVIGILA, the

greatest number of cases: 310 and 31 respectively in 2014.⁽⁴⁾ However, in 2015, a decrease of 32% of cases in the whole country was registered, and in Tierralta only 127 cases were reported, amounting to 1.6% of the total cases in Colombia.⁽⁵⁾

Although those who suffer from cutaneous leishmaniasis do not die from it, they suffer the consequences of the social stigma, due to the association of the disease with armed conflict and the contexts of poverty and social vulnerability, as a result of state neglect.^(6,7,8) This scenario is complicated by the inexperience in diagnosis and treatment of healthcare personnel working in endemic areas, as a result of the health authorities' deficient support and training, which generates loss of credibility in western medicine.⁽⁹⁾ As a consequence, the population at risk turns to other therapeutic offers that, in addition to being more accessible, do not represent, from their conceptions, any type of health risk, which favors the underrecording of cases and hinders the measurement of the actual incidence of the disease.^(1,9)

Although there are nationwide policies for disease management, they lack clear directives for control and prevention. In most of municipalities, vector-borne diseases are controlled by means of fumigation programs, which fail to be sufficient enough to fight the vector of leishmaniasis, as it prefers to live in the peridomicile and the conditions of its breeding grounds. Campaigns for education and awareness of the disease are inexistent due to lack of resources and lack of knowledge of the disease.⁽⁹⁾

In Colombia, very few studies have been developed on conceptions, attitudes, and practices related to cutaneous leishmaniasis. These studies have enabled the identification of some aspects within the belief system concerning the causing agent, diagnosis, and treatment, most of which are based on the lack of knowledge of the disease origin, which causes the stigmatization of people suffering from cutaneous leishmaniasis.^(1,10)

This article belongs to a major project titled “Design of a program of studies on infections and tropical health for the department

of Cordoba" [*Diseño de un programa de estudios en infecciones y salud tropical para el departamento de Córdoba*], which, among its objectives, attempted to make a diagnosis of the conceptions, attitudes, and practices of the members of the community who have suffered from or who know the disease, in relation to the signs, diagnosis, treatment, and elements of the epidemiologic chain. The data arising from this study are aimed at generating a dialogue of knowledge among communities and healthcare personnel, so as to create health promotion and disease prevention policies according to the needs of the community.

METHODOLOGY

This project was assessed and approved in 2015 by the Ethics Committee of Universidad del Sinú (Act 003). The research team was formed by five professionals: a bacteriologist, an entomologist, a M.D., a veterinarian, and an anthropologist. It was a multidisciplinary proposal that combined mixed research methodologies. The project was conducted in the department of Córdoba, north Colombia,⁽¹¹⁾ in the villages of Tuis Tuis and El Loro, in the municipality of Tierralta, with 78,972 inhabitants, and in Guadual and Mielles, in the municipality of Valencia, with 34,654 inhabitants, according to the census of 2005. These municipalities belong to the subregion of high Sinú, near the Abibe mountains, places that are favorable for the settlement of the vector and the transmission of cutaneous leishmaniasis.⁽¹²⁾ The average temperature is between 28° and 30°C. The main economic activities in the area are rice farming and livestock. The four villages are located at about an hour and a half far from municipal seats driving on an unpaved road. Although there is a public transportation service, this service works only once a day. Domestic and farmed animals tend to be loose, or, in some cases, in corrals next to people's houses.

As these are distant rural areas with scarce services of drinkable water and access roads,

their inhabitants live in precarious conditions, with low incomes and a deficient access to education, health, and food; therefore, they are exposed to greater social vulnerability. This scenario became more complex a few years ago due to an increase in forced displacements, which generated a change in the patterns of migration. Maintaining these social, ecological, and demographic conditions coincides with what other authors reported concerning epidemiology of cutaneous leishmaniasis: these authors relate its occurrence in rural areas with scarce economic resources.^(13,14,15) The four villages were chosen, on the one hand, based on historical records of cases, and, on the other, based on the security and ease of access for the research team, given that it was not possible to have access to other areas of the region having historical records due to situations that caused breach of the peace.

Although the study design had various lines of research, this article is focused on two of them: *anthropology* and *epidemiology*. From the anthropological perspective, the qualitative design started from the conceptualization of *conceptions*, as inner convictions of people, that is, the set of beliefs or ideological principles rooted in the interaction of individuals with their culture; *attitudes*, as dispositions that enable human beings to act selectively in their social interactions, and which influence the way of acting and behaving before different daily situations, in this case, before a disease or some type of treatment; and *practices*, as the expression of human behavior that enables the expression of feelings and emotions through actions, in relation to personal attitudes and thoughts.^(16,17,18,19)

Once these initial categories have been defined, semi-structured interviews were carried out. They started with the search for participants who had suffered from cutaneous leishmaniasis in the last 15 years or knew about the disease, who were residents of any of the four communities for at least the past 5 years, and who were willing to participate. During the two field trips, carried out in September and November 2015, we

only found five participants that met all the inclusion criteria (three women between 45 and 57 years old, and two men between 48 and 52 years old, one of them being a witch doctor), who accepted to be interviewed after giving informed consent. This reduced number is due to the fact that more than half of the population has been living in the area for a short period of time.

Due to the difficulty of finding key actors, we turned to focus groups, another methodological tool that provided us with more information. Two focus groups consisted of teachers (27 participants), and another one consisted of healthcare personnel (13 participants). A total of 45 people participated, 32 of which were women. Furthermore, observation guides were used during the visits to the communities. The audio of both the interviews and the focus groups was recorded.

A convenience sampling was made and taken up to the level of data saturation,⁽²⁰⁾ taking into account the willingness of people to participate and the quality of the information provided by them. Both the interview guides and the focus groups included themes about conceptions, attitudes, and practices of the settlers concerning cutaneous leishmaniasis. Subsequently, transcriptions were analyzed with the support of a matrix in Excel 2010, under the perspective of emerging categories, which were cross-referenced with the initial categories. This enabled the identification of points of contact and divergence between “what people say they do” and what they really do, in relation to self-care regarding the disease. Subsequently, the meaning of the categories was described and interpreted.

Regarding the epidemiologic design, it had three structural components:

1. *Montenegro Skin Test*: the objective of this test^(21,22) is to determine the prevalence of the disease by means of an immunology test. The obtained data were tabulated using Excel 2010 and were analyzed using Epidat 3.1®. A convenience sampling was made within the four educational institutions, settled in the villages of the study. The test was applied to all the school

population older than 5 years of age, with the previous consent of the minors and their parents. In addition, during the door-by-door rounds, the test was also applied to the adults present after they were informed about the scope of the test. The healthcare team was responsible for the clarification of doubts regarding the immunological memory to the participants whose results were positive.

2. *Search for active cases of cutaneous leishmaniasis in humans*: by means of a “snowball” search strategy, and supported by the personnel of rural health centers and community leaders, information about people with lesions – bumps or skin sores – of more than 15 days of development, compatible with ulcers, difficult to heal and with raised edges was requested with the objective of carrying out a home visit.⁽²³⁾ Then, samples were taken for direct examination, culture, and polymerase chain reaction (PCR)⁽²⁴⁾ for suspicion of cutaneous leishmaniasis, and serum was taken for indirect immunofluorescence (IIF) for suspicion of mucocutaneous leishmaniasis.⁽²⁵⁾ Positive patients were reported to the local Health Department, which in turn reported the case to SIVIGILA and supplied the drug (Glucantime®) under medical supervision.
3. *Epidemiologic survey*: a research study was conducted on cutaneous leishmaniasis and its relation to housing characteristics, animals associated with it, plants, and historical data of the family that may lead to the identification of risk factors, taking the presence of old or new cases occurring in the area under study as dependent variables. The questionnaire was delivered to a family member of legal age. The data obtained were tabulated using Excel 2010 and analyzed using the SPSS program version 18.

FINDINGS

This section summarizes the answers of the study participants (teachers, community health

leaders, healthcare personnel, and ordinary people) in relation to conceptions, attitudes, and practices concerning cutaneous leishmaniasis, as well as the data obtained by means of the epidemiologic survey. The findings are divided into five theme segments: a) characterization of the population and presence of the disease; b) etiology of the disease (conceptions and knowledge); c) health-seeking behavior (attitudes and practices); d) prevention measures (practices); and e) cutaneous leishmaniasis in the rural medical context.

Characterization of the population and presence of the disease

A total of 409 epidemiologic surveys were conducted: 146 in El Loro, 61 in Tuis Tuis, 78 in Mieles, and 124 in Guadual. In the four villages, the most predominant age group was from 26 to 60 years of age; here we find the economically active population. As regards gender, its distribution was uniform in the four areas. None of the respondents reported an active lesion when answering the survey, only 35 (8.6%) of them reported having suffered 10 to 20 year old lesions, 27 (6.6%) of them presented lesions that were confirmed

by means of the Montenegro skin test, and none of them reported having acquired them in the study area (Table 1). It is important to add that many of the people currently living in these villages had lived in neighboring villages and were displaced due to the violence in the area.

During the first and second field trips, four suspected cases of cutaneous leishmaniasis were found, three of them with suggestive lesions in the lower and upper limbs, and all of them with more than six months of development. Only in Guadual village a suspected case of mucocutaneous leishmaniasis was found. After the sampling analysis, only one patient was positive for cutaneous leishmaniasis, but the patient had acquired it in a place different from the study area.

In the four villages, a total of 251 Montenegro skin tests were carried out (146 were applied to people younger than 18 years old, and 105 were applied to adults). After determining the prevalence of the infection among the people to whom the test was applied, we found that El Loro village had the highest prevalence (27.3% in adults, and 15.4% in children). However, all the adults with positive results stated that they had presented the lesions before inhabiting the area.

Table 1. Number of old cases and confirmed lesions produced by leishmaniasis in the municipalities of Tierralta and Valencia, Cordoba Department, Colombia, 2015.

Municipality	Old cases	Confirmed lesions	Treatment	
			Home-made	Antimonials
Tierralta				
El Loro	14	10	7	3
Tuis Tuis	8	6	3*	1
Valencia				
Mieles	4	3	1	2
Guadual	9	8	6	2

Source: own elaboration. *Not all the persons remembered what type of treatment they received for their disease.

As for the minors, this relationship could not be established since many of them were unaware of the disease or of the fact of having suffered from it before. This also happened in the other villages (Table 2). When analyzing child population, we find a panorama similar to the one found in adult population. It should be noted that there is an absence of positive cases in Tuis Tuis, which suggests that the disease is not transmitted in the domicile, or that it is not close to the urban area of this village (Table 2).

Since only one active case of cutaneous leishmaniasis appeared and the persons who had suffered from this disease stated they had acquired it away from the study area or before settling in their actual residence, it was not possible to carry out an analysis to try to determine the risk factors in the community that predispose people to acquire the disease.

Etiology of cutaneous leishmaniasis

Cutaneous leishmaniasis is part of the everyday life of the inhabitants of these four villages. The disease is known there as *leishmaniasis*, “*pito bite*,” or just “*pito*.” Although few patients were found in the area, people have a social representation of the disease, given that at least one member of the family or a neighbor has suffered from it.

All the respondents pointed out that cutaneous leishmaniasis is not a contagious disease. In fact, there was no relationship found between this disease and the access to work or education, as it is not considered a reason for being fired or for not being hired. As regards the place and type of scar, 70% agreed that children and women with lesions in their faces and necks inspire a feeling of pity, but not of rejection. In men, these lesions have become “naturalized” due to their

Table 2. Prevalence of the disease in children and adults of a sampling from the general population. Municipalities of Tierralta and Valencia, Cordoba Department, Colombia, 2015.

Municipality	Montenegro skin test (n=251)		Total positives (n=22)		Prevalence of the sampling	
	Adults (n)	Children (n)	Adults (n)	Children (n)	Adults (%)	Children (%)
Tierralta						
El Loro	22	26	6	4	27.3	15.4
Tuis Tuis	13	29	3	0	23.1	0.0
Valencia						
Mieles	28	48	2	2	7.1	4.2
Guadual	42	43	2	3	4.8	7.0

Source: own elaboration.

frequent interaction in the hills during labor activities such as farming, extraction of resources, surveillance, or security. In this case, there were no magical-religious or mythological explanations found for cutaneous leishmaniasis.

Friends of mine suffer from leishmaniasis, and this happens mostly to people living in the tropic, within the jungle, especially to soldiers. (Teacher, man, focus group, 2015)

During the epidemiologic survey, when inquiring about the recognition of the disease, half the population states that they know how to recognize lesions produced by the parasite, although very few know about the transmission form or the vector involved (Table 3). Along the same line, some of the participants of the focus groups used their own scars to explain the lesion, while others resorted to the image of a coin to describe the typical form of cutaneous leishmaniasis.

Vector-borne cutaneous leishmaniasis

Explanations concerning the vector-borne nature of the disease were less frequent (15%) than non-vector-borne explanations. Participants who stated that a “mosquito” transmits cutaneous leishmaniasis were asked to provide a description and, from their narrative, local names appeared, such as “pito,” “ya te veo” (“I see you”), “más te veo” (“I can see you more”), “pájaro” (“bird”), and “pájaro malo” (“bad bird”). Men and women maintain that these insects live in the hills or the jungle, far away from people’s houses, in humid places, especially where there is stagnant water (association with *Anopheles*, also present in the area). In addition to these characteristics, 12% of the participants believe that the mosquito “stings and lays eggs inside the open pores, when the skin is sweating,” and another 15% believe that the mosquito “stings and then urinates and leaves a skin sore.”

Table 3. Recognition of the vector and of the disease by the participants of the epidemiologic survey. Municipalities of Tierralta and Valencia, Cordoba Department, Colombia, 2015 (n=409).

Municipality	Does the participant recognize the vector?				Does the participant recognize the disease?			
	Yes		No		Yes		No	
	n	%	n	%	n	%	n	%
Tierralta								
El Loro (n=146)	6	4.1	140	95.9	123	50.0	123	50.0
Tuis Tuis (n=61)	17	27.9	44	72.1	41	67.2	20	32.8
Valencia								
Mieles (n=78)	27	34.6	51	65.4	43	55.1	35	44.9
Guadual (n=124)	7	5.6	117	94.4	63	50.8	61	49.2

Source: own elaboration.

The pito bite, they say, is produced by a mosquito commonly called pito, but I don't know its scientific name. It has contact with the person and lays one or various eggs and starts reproducing, creating a very drastic infection. (Teacher, man, focus group, 2015).

The name “pito” is very common in various areas in Colombia where cutaneous leishmaniasis is present, and although this name is associated with triatomine bugs (vectors of Chagas disease), communities use these name interchangeably; on the one hand, because of general lack of knowledge of diseases transmitted by a vector, and, on the other hand, because of the strategies used by people to try to explain what happens in their bodies based on the information they have received from different sources during their lives.

However, in this context, *Lutzomyia* is known as *Alú*, an insect that physically “is small, has raised little wings, it is whitish, the damned bites like hell and flutters around your legs” (Teacher, man, focus group). Nevertheless, none of the participants found a correlation between this phlebotomine vector and cutaneous leishmaniasis.

It was observed that the perception of the severity of the disease depends greatly on the sex of the mosquito that bit the affected person, that is, the amount of bumps or skin sores, their extension, and clinical characteristics are directly related to the belief that the female vector leaves multiple lesions and “eats the skin and the flesh of the surface starts opening little by little, filling the body [with the disease] if it is not treated”; the male vector, however, only leaves a big lesion and “causes swelling and eats the flesh and the flesh inwards.”

As regards the “ya te veo” (“I see you”), we found a relationship between the infection degree of the lesion and the transforming power of the word. In this belief system, a bump or skin sore is believed to grow bigger if the affected person names the mosquito out loud many times. As a teacher recounts: “Ouch! You’ve been bitten by the ‘I

see you,’ don’t say what bit you, because the more you say it, the more the wound grows.” This belief is less popular.

Deepening on the conceptions about this vector, three of the respondents who mentioned the mosquito did so because “that’s what people say”; however, they have their doubts due to the large amount of insects with which they coexist and, based on their belief, they explain: “if it’s true that thing about the mosquito, we would all have ‘pito bites’ all the time.”

Non-vector-borne cutaneous leishmaniasis

Non-vector-borne explanations regarding cutaneous leishmaniasis were the most frequent explanations (85%). With the exception of the healthcare personnel, most participants believe that cutaneous leishmaniasis is a consequence of inadequate corporal practice, such as “a scar that is scratched and becomes infected,” or due to the interaction of humans with nature, as in the case of “a liana in the hills that burns or itches at the touch.” This idea of the liana is very popular in the Pacific coast of Colombia, where it is described as a small animal in the form of thread, which lives in the forest on ranches or trunks.⁽¹⁷⁾ This disease can also be caused by something external and unknown, such as “something that is injected and cannot be seen” or, basically, it is the response of a weak and exhausted body that lacks vitamins.

Health-seeking behavior

It refers to the type of medicine and medical care system to which the affected persons usually resort. Qualitative analysis enabled us to identify four of them: 1) traditional home treatments, 2) traditional folk medicine and herbal medicine, 3) biomedical treatments, and 4) mixed treatments. As for healing of a mystic-religious type, it was not mentioned.

Traditional home treatments

This type of treatment is used more frequently than the biomedical treatment; in fact, 22 of the participants have turned to it, both men and women. As one of the participants expressed:

I've heard that [it heals] with some injections [laughs], but I didn't use them, I got better with home remedies, I used everything, everything they told me, I used it. (Woman, 34 years old, Tuis Tuis village).

The people affected resorted mainly to thermal therapies along with cleaning of the wound. In many cases, treatments included pharmaceutical drugs, especially antibiotics, petrochemicals, and veterinary products. Almost always, family members, mainly women, are the ones responsible for providing them. This is a list of traditional treatments that were mentioned: i) products that are directly applied to the lesion (hot paraffin, motor oil, solvent, thinner, Isodine with lemon, gentamicin, ampicillin, toasted and ground shell of morrocoy tortoise, yucca root powder, fresh slices of ripe tomato). ii) thermal procedures on the lesion (putting a hot metallic spoon – incandescent – on the sore, or placing the flame of a candle in front of the sore; as close as possible).

Traditional folk medicine and herbal medicine

In El Loro village, we found a folk healer of snake and “bird” (local name for cutaneous leishmaniasis), who performs a number of therapeutic treatments based on regional medicine plants. Patients from his village and surrounding areas come to see him for help. To some of them, his treatments are effective; however, other patients end up resorting to western medical treatments as they did not obtain the expected results. Among the participants, only three men had resorted to this type of treatment. In the following story, we will detail the “bird” treatment, step by step:

The bird treatment has three healings, for instance, I do the cleaning with Isodine with camphor to avoid infections, then I pour Caladril with Calomed (these are two creams that are sold in pharmacies). If the patient gets dry with the two bandages that I put on him or her, I let the patient alone, because that is the cure. Otherwise, I put on him this little stick called “man alone” and that's it. I grate it and put it on the patient. If this doesn't work, because the effect can be seen immediately, then I put a “contra,” a plant. I grate this contra and I put it in here [he shows a recipient]. This is for drinking, the other, I drink the other with rum. I grate it and give a little to the person with some rum and some of these bushes: the “baldivia” and the “warty.” With these three plants and the antidote, I can heal; you see it immediately, because they dry the “bordito” [local name for an injury] and heal it, with three or four healings. (Man, 47 years old, El Loro village, folk healer).

Biomedical treatments

This type of treatment is one of the most feared by the population, as there is a generalized negative perception about the treatment with Glucantime[®], not only because of the pain caused by injections or needle phobia, but also because of its side effects; which is a recurrent aspect in other areas of the country and the region.⁽¹⁸⁾ Six of the female respondents had resorted to this treatment, but none of the male respondents had done it: they had opted for self-medication. In part, this was due to the myths surrounding Glucantime[®], such as male sterility or prolonged sexual abstinence, among other myths.

Usually, the affected persons resort to this treatment as a last option, after going to and from among several health systems that are “less harmful” from their perception, but ineffective, though. When they return to a health center, they come with large and

infected wounds and even with extra damage to the skin, due to the chemicals they use to fight the disease. It is common for people who access this treatment and recover not to resort to other therapeutic systems again. However, it is also common for people who start treatment not to finish it because, according to them, *“the cure ends up being worse than the disease.”* The patient interrupts the treatment based on his or her perception of well-being and beliefs of recovery, which are related to the wet and the dry. As long as the sore is present (wet), the disease is present too, but when it dries, the effectiveness of the treatment is evidenced and, therefore, the recovery of health.

In the hospital, I did get a test and, at the following day, I went and that was correct. They gave me injections and I didn't administer them all. I was thinner back then, they gave me 42, and I administered myself just 16, because I saw that it [the wound] was already dry, and if one receives these injections every day, it's hard, these injections hurt. I saw that it [the wound] healed and that's it. (Woman, 36 years old, El Loro village, preschool teacher).

This belief is reinforced due to certain practices performed by the healthcare personnel, such as the lack of follow-up of cases, interruption of a treatment because the wound to the naked eye *“looks good,”* an inadequate treatment according to the international guidelines, among others practices.

Furthermore, there are other reasons that lead the population to choose another type of treatment, such as the distance between hamlets and health centers, the stories of third parties regarding their bad experiences with a certain treatment, the scarce medication in some seasons of the year, and the belief that treatment is only provided in the Army battalion.

Others say no, you have to talk to the battalion, the battalion is the one who has

glass vials and that's what people need. You have to inject yourself, I don't know how many times, and that will cure you. (Woman, 52 years old, community leader in healthcare, Tuis Tuis village).

Mixed treatments

Mixed treatments are conceived as another type of additional healing practice to face the disease, that is, they have the function of improving biomedical treatment. *“Medicinal herbs”* in beverages or plasters or disinfectant liquids applied to the wound were some of the products self-medicated by women while the affected people were under biomedical treatment. Fourteen participants resorted to this treatment, both housewives and teachers.

Preventive measures against cutaneous leishmaniasis

It was observed that preventive measures against cutaneous leishmaniasis, as reported by the population, were much more related to the population's experience with preventive measures against malaria. These measures were differentiated into three groups.

Personal protection measures

There is no correlation between personal protection measures and cutaneous leishmaniasis. Rather, this type of measure arises from self-care triggered by malaria eradication campaigns. Individuals could obtain some protection through the use of mosquito nets, which were provided to all families by the Malaria Colombia project. However, although most of the population has several mosquito nets in their homes and says that they *“use it every night,”* in practice, many of them prefer other measures, such as using the fan, while the mosquito nets rest bent inside a closet, until *“swarms of mosquitoes get annoying”* and they use them again.

At first, I used to use them, then they sort of bothered me, I washed them and didn't hang them, but when I see that there are a lot of mosquitoes I hang them back again. I don't know if it's the belief or I feel suffocated or what, but I feel discomfort. This awning is bothering me! [Laughs]. (Woman, 36 years old, El Loro village, preschool teacher).

Electric fans are commonly used during day and night, since electricity in the zone is subsidized and families can enjoy these services 24 hours at no cost. Therefore, this measure keeps them cool and protects them from vectors, for which reason it is very popular in other countries.⁽¹⁷⁾ None of the respondents mentioned the use of commercial or home-made repellents.

Environmental protection measures

The most commonly used measure among the population is the production of home-made smoke to keep vectors under control. Women, mainly, are those who go all over the house with containers in which they burn dried orange and lemon peels. Extensive fumigations are not frequent in the area and neither are other official measures.

Measures of commitment to community

Local health entities do not organize educational campaigns focused on the control of vectors in rural areas. The few campaigns organized have been led by international non-governmental organizations and they have focused on malaria; while other endemic diseases such as cutaneous leishmaniasis have been disregarded. This scenario becomes more complex due to the little knowledge that population has about the disease.

Organizations such as "Malaria Colombia," financed by the Global Fund, which worked in the area between 2012 and 2015, have been successful because they have provided medicines and awnings in each home, and they have trained local leaders in health issues related to prevention, diagnosis, and treatment

of malaria so that they themselves could be in charge of carrying out healthcare practices in their own villages.

Leishmaniasis in the rural medical context

Based on the results obtained during the focal group session with the healthcare personnel of the municipalities of Tierralta and Valencia, the fact that doctors and the nursing and laboratory personnel are familiarized with the clinical manifestation of cutaneous leishmaniasis was evidenced, as well as the fact that they consider it a disease of the rural area. However, knowledge gaps regarding the diagnosis of this disease were identified, as well as inaccuracies in the treatment. The fact that in rural health centers the service of diagnosis of cutaneous leishmaniasis is not provided was considered a difficulty that causes the population to move to the urban area. This entails an additional cost, which may be higher if the affected person needs company. It was also detected that, due to the type of labor relationship of the laboratory personnel, employee turnover is very frequent, which means that, at certain times of the year, we find professionals newly hired who do not have the necessary experience or training, thus hindering the correct diagnosis of the disease. As for rural doctors, they usually come from non-endemic areas for cutaneous leishmaniasis; therefore, during their undergraduate course, they only had a theoretical approach to this disease. Regarding the treatment, it was found that it is administered disregarding national and international protocols, which might produce an increase in adverse events or an incomplete cure.

DISCUSSION AND CONCLUSIONS

The results of the present study aim at some central conclusions. Regarding the epidemiologic study, a relationship was found between

what was reported in the SIVIGILA and what was found in the communities, since a decrease of 59% in the cases reported between 2014 and 2015 was evidenced. This may be due to the “El Niño” phenomenon, which was presented in Colombia in 2015 and generated a decrease in the reported cases of diseases transmitted by vectors in the national territory.⁽⁵⁾

Although only one case of cutaneous leishmaniasis was found in the area during the study period, it could be demonstrated that the population has been in contact with the parasite and knows about the disease; however, most of them claim that cutaneous leishmaniasis predominates in other places of the municipality with more wooded areas, as reported by most participants with old cases.

The fact that the child population of Tuis Tuis village has not presented cases of cutaneous leishmaniasis leads us to think of two causes: first, that the transmission has not been present in the area for some years or; second, that the daily practices of minors prevent them from being in contact with the vector and its transmission focus. It is highlighted that the highest prevalence in the adult population was presented in El Loro village, which is geographically closer to the flood zones of a dam, and it is the one which has the largest number of displaced people.

The Montenegro skin test is not conclusive to determine the prevalence of the disease in communities with displaced population, since this was a convenience sampling and it is not within the foundations of this technique to identify the infection, but a prior contact with the parasite, which could have occurred anywhere during the life of the individual. That is why it is recommended to undergo this test along with an epidemiologic survey that delves into the different places of residence of each individual, the ecological and socio-demographic characteristics, and potential outbreaks of the disease. This information will help make a better association concerning the individual's contact with the parasite.

The anthropological analysis shows that, in these communities of Cordoba, cutaneous leishmaniasis has always been present,

according to the eldest inhabitants. That is why there is a popular culture about diagnosis⁽²⁶⁾ and a series of therapeutic traditional practices to face this disease. Cutaneous leishmaniasis is perceived as a health problem and, because of this, a treatment is sought.⁽¹⁹⁾ Despite recognizing typical lesions caused by cutaneous leishmaniasis (bumps and skin sores), the population of these communities does not know the origin of the disease, the vector that transmits it and where they can find it, whether near or far from their homes. Similar particulars have been reported in other countries such as Ecuador, Perú and Costa Rica.^(6,17,18,19,26)

Explanations provided by the individuals in relation to the way of transmission of cutaneous leishmaniasis belong to the experience, whether of their own or of other people, with other diseases transmitted by vectors, such as Chagas disease or malaria. These individuals make use of the reconfiguration of those corporal experiences and of popular knowledge to give meaning to the disease that besets them and of which they have no knowledge. That is why we find multiple discourses around, explanations that are far from the scientific knowledge about cutaneous leishmaniasis, but that, within population beliefs, they give sense, give rise to the disease in their world and, in consequence, a solution or a cure.

The aforementioned enables us to understand, for instance, why the population does not take self-care measures against the vector, given that within the symbolic universe that they have constructed for cutaneous leishmaniasis there is no correlation with the *Lutzomyia* (Alú). Most of the population does not know neither the vector nor its behavior (place and time of the bite). In addition, the permanent interaction with different insects has made people “become familiar” with them, and they only take preventive measures when there is an increase in the mass of mosquitoes. Moreover, there is no risk perception, as people only take preventive measures to avoid a nuisance, such as mosquito bites, but not because they perceive in Alú a potential risk of disease.

As for treatments, there is a clear preference for traditional home treatments,^(19,26,27) as they are the best option for remote rural communities with limited access to first class medical services, despite the fact that the Secretary of Health provides treatment with Glucantime® for free.⁽¹⁷⁾ Among traditional treatments, the use of medicinal plants is emphasized, just the way it occurs in other areas of Colombia and in neighboring countries such as Ecuador or Perú.⁽²⁶⁾ These treatments are mainly provided by housewives, so they should be a key factor in the educational processes within the communities, especially when some of the empirical treatments have worsened the clinical picture,⁽¹⁷⁾ because they increase the inflammation of the wound area, produce necrosis and alteration in the most common lesions, and even generate a decrease in the sensitivity of parasitological diagnosis.⁽²⁶⁾

It is important to mention that the lack of knowledge of the local healthcare personnel regarding national and international protocols has generated adverse events during some treatments, which increases the negative response of communities before biomedical treatments, as well as the lack of credibility in health authorities. As a result, the population perceives the assistance of healthcare personnel practicing traditional medicine as being of higher quality.

Regarding the key actors within communities, we find that one of the most interesting results is the close similarity between the conceptions of teachers, people in general, and the community leaders in healthcare. In the three groups, we find lack of knowledge regarding the cause and transmission of the disease, as well as negative perceptions regarding biomedical treatments versus treatments of popular medicine.

Most of the teachers could explain cutaneous leishmaniasis much better from their own beliefs than from scientific knowledge and, in some cases, they reproduced risky practices. As for health leaders, they have been trained in the diagnosis, treatment and prevention of malaria, yielding outstanding results. However, and despite being in an

endemic area, they have not been trained in cutaneous leishmaniasis. Therefore, we find that there is no greater difference between the common knowledge of the other residents and health leaders in relation to cutaneous leishmaniasis. This shows that communication and validation of common knowledge by health authorities is important to generate effective prevention campaigns aimed at the rural context.⁽²⁷⁾

Lastly, it should be noted that the decrease in the number of cases of cutaneous leishmaniasis in the last two years reported by the inhabitants from the four communities under study suggests that the majority of the 127 cases registered in Tierralta by the National Surveillance System SIVIGILA could be from patients of the Colombian Armed Forces patrolling in the Abibe mountains. This would suggest that the infection and the natural cycle of the disease is taking place in remote and wooded areas, where most health authorities do not have access, as they are areas of difficult access and with complex public order conditions.

RECOMMENDATIONS

Being aware of the challenges posed by interventions in health matters, we propose four recommendations to reduce the gap concerning the access to medical attention to treat cutaneous leishmaniasis for the people who live in endemic areas.

The first challenge is to *involve the educational sector in an effective manner*. In these vulnerable contexts with poor educational level, teachers serve as a referent of "knowledge," a key actor people can turn to for seeking advice and information, but we found that teachers show knowledge gaps regarding cutaneous leishmaniasis. In light of this situation, we recommend the implementation of training programs for teachers on cutaneous leishmaniasis to potentially change this scenario,⁽²⁷⁾ as education based on strategies that result from local conceptions

about the disease, and that enable the transformation of collective imagination could imply the incorporation of new knowledge and the adoption of self-care practices within communities.

The second challenge is *to make the most of the human resource of communities*. Currently, the community leaders of the rural area are a resource untapped by local health institutions, considering that they are the main recipients of emergent cases in the villages. The strategies of intervention in health matters must include these leaders, who need to receive support in their active role and guidance to leave installed capacity within the communities.

The third challenge is *to prepare and update healthcare personnel on cutaneous leishmaniasis*. It is urgent that the healthcare personnel could manage national and international guidelines, as deaths related to cutaneous leishmaniasis are precisely due to the treatment with Glucantime®: mismanagement can bring about preventable losses. Trained personnel that manage a correct flow of information among the different therapeutic

systems are required. Such personnel will have to guide patients for an adequate diagnosis and treatment, and will strengthen prevention programs and strategies as well.^(17,27)

The fourth challenge is *to bring healthcare personnel and the local medical system closer together*. Traditional medicine must have an important role in the treatment of cutaneous leishmaniasis. It is necessary that the healthcare personnel know local treatments and how to guide their patients when they turn to them, as cases occur far from the urban area, which encourages patients to use plants and other elements as first-line therapy.

Finally, it is vital to add that a comprehensive management of cutaneous leishmaniasis is needed, which includes the participation of professionals from different areas to intervene in all dimensions of the disease. The work of the social component is highlighted, giving that it facilitates the dialogue between the population and the scientific community in order to generate real solutions based on the particular needs of each community.

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