



Perception and use of Medicinal Plants and Chemical Products in the Traditional Treatment of Cutaneous Leishmaniasis in Morocco

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ABSTRACT

Cutaneous leishmaniasis is a neglected skin disease that poses a serious health problem in many countries including Morocco. Although treatment is free of charge at state health facilities, there is under-utilization of health services by patients. The objective is to know and understand the obstacles faced by people with cutaneous leishmaniasis when seeking anti-Leishmania treatment. Qualitative study was conducted among people affected by cutaneous leishmaniasis in central Morocco in rural communes in the province of El Hajeb. In-depth individual interviews were conducted and transcribed verbatim. A thematic analysis was used to process and present these data. In total, fourteen people with cutaneous leishmaniasis were recruited with an average age of 45 years, 78.6 % of whom lived in rural areas. Four main themes emerged from the data analysis: (1) Perception of the disease and trivialization of skin lesions; (2) Popular treatment-seeking behavior; (3) Gender and decision to seek treatment; (4) Therapeutic preferences and refusal of injection. This research showed that patients did not seek medical treatment for their disease until the lesions persisted despite the application of traditional remedies. Socio-cultural aspects were the most important factors preventing patients from seeking and receiving timely medical care. The female gender was a determinant for seeking health care from caregivers. The trivialization of skin lesions and the use of traditional practices were socio-cultural factors limiting the use of medical treatment by those affected. These factors, together with the fear of pain caused by the injection, were the decisive point for abandoning anti-Leishmania treatment.

Keywords: Cutaneous leishmaniasis; Perception; Traditional treatment; Medicinal plants; Chemical products; Morocco.

Introduction

Cutaneous leishmaniasis (CL) is a group of neglected tropical diseases of parasitic origin caused by protozoa of the *Leishmania* genus transmitted by the bite of infected female sandflies, insects of the genus *Lutzomyia* in the New World; and the genus *Phlebotomus* in the Old World.¹⁻⁵ These insects are a health problem in many countries around the world.^{6, 7, 8} They are skin lesions that produce loss of self-esteem, anxiety, and social stigma.⁹ Thus, according to global estimates, the current incidence of CL ranges from 700,000 to 1.2 million new cases per year, with 90% of cases reported in twelve countries, namely: Afghanistan, Algeria, Brazil, India, Colombia, Pakistan, Syria, Morocco, Nicaragua, Peru, Sudan, Tunisia; and Yemen.⁸

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Morocco is one of the countries that have suffered from CL for a long time, with epidemic outbreaks constantly spreading throughout the country. These skin diseases constitute a real public health problem and have been notifiable since 1995. The strategy to combat this skin disease focuses on the strategic pillars outlined by the National Leishmaniasis Control Program (PNLL), based on screening and diagnosis, as well as free treatment with antimony (Glucantime®). However, there is an under-utilization of health services by people suffering from leishmaniasis. The Ministry of Health states that the percentage of cases notified in health structures does not exceed 35% of the estimated cases. Unfortunately, no information exists to understand the causes that hinder the affected population from seeking care in health services. The WHO argues that knowledge of these factors allows the government to effectively combat these diseases and stop epidemics.¹⁰⁻¹³

In Morocco, most studies that have been carried out on leishmaniasis are of the quantitative type, describing the eco-epidemiological and clinical aspects of the disease and the psychosocial effects of skin scars.^{14, 15, 16} However, to our knowledge, there are no qualitative studies that focus on the individual experiences of people affected by CL in Morocco. This is the first study that seeks to understand the problems of under-utilization of health services by people affected by leishmaniasis skin lesions. This study aimed to explore the perceptions and experiences of patients living with CL and the challenges they faced when seeking medical diagnosis and care in Morocco using a qualitative approach. Therefore, this study focused on the qualitative

exploration of the experiences and health care-seeking behaviours of people affected by CL disease.

Methods

Study design and sampling

A qualitative exploratory approach based on in-depth individual interviews with people affected by CL was adopted. It is a descriptive study that aims to understand the socio-cultural context of the disease and the therapeutic preferences of CL patients.

The study was conducted in central Morocco in four rural communes of the El Hajeb province between January and March 2020. Participants were selected based on epidemiological data according to their history with CL disease. In the field, we used the epidemiological data on leishmaniasis disease in the region,¹⁵ and thanks to the collaboration of community workers and local health authorities, contacts with the patients were successful. Therefore, we conducted interviews with the inhabitants of the communes classified as most affected by CL: these were the localities of "Ait Naaman ", " Bitit " and " Laqsir (Sidi Mbarek) " (Figure1). The methodology followed was saturation sampling in qualitative health research.¹⁶

Data collection procedure

Data were collected using individual in-depth interviews with people affected by CL. All interviews were conducted face-to-face in the homes of people affected by CL and lasted between 40 and 75 minutes. The interview guide was composed of two parts. The first part focuses on the demographic and clinical aspects of the participants: gender, age, and living environment, location of skin lesions, type of habitat, education level, and family status. The second part asks questions about the disease, knowledge, perceptions, and preferences for the treatment of skin lesions.

Data processing and analysis

An inductive thematic analysis was used to exploit the data. The processing of the collected data was carried out following stages of thematic content analysis: pre-analysis, exploration, data analysis process, and interpretation, which ensure the completeness, homogeneity, and representativeness of the information.^{17, 18} Then, we used *QDA Miner v6* software to code and cross-reference the variables. Consistency and credibility of the codes were checked for all translations. Potential themes were developed by grouping categories and subcategories. Finally, the results were presented with the themes and citations derived from the data. Thus, the socio-demographic and clinical data of the respondents were analysed and presented using descriptive statistics.

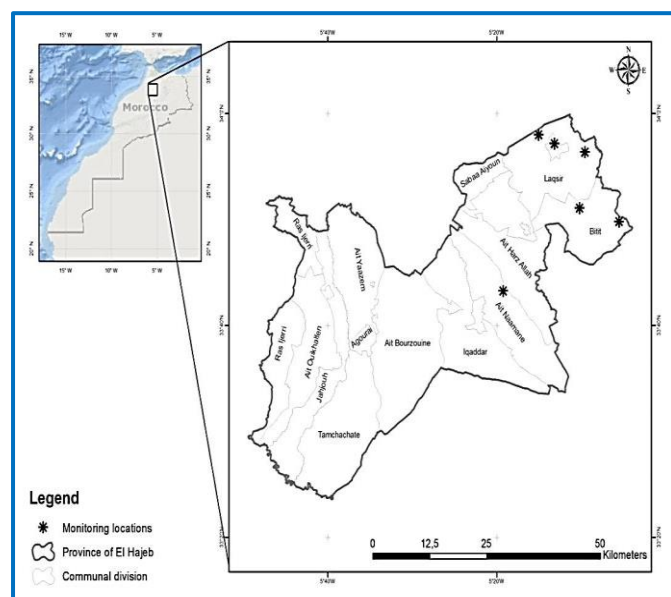


Figure 1: Study area in Morocco⁴

Ethics approval

The study was authorized by the delegation of the Ministry of Health in the city of El Hajeb. The study was carried within the framework of a PhD project No. FSR3531/21. The participants were informed of the purpose of the work and of the right to voluntarily participate or withdraw from the study at any time. To guarantee their privacy, the ethical principle of anonymity was respected throughout the study process. The patient's informed consent and willingness to participate freely in our study were obtained verbally before starting each interview. At the end of each in-depth interview, the participant was provided with an awareness-raising session relating to the disease, means of prevention, and the need to follow the treatment.

Results and Discussion

This exploratory qualitative study aims to improve the understanding of the context of Cutaneous Leishmaniasis control reported by the quantitative study.¹⁹ The low rate of screening for CL at the level of health centres and the under-reporting of affected cases reported by the Ministry of Health could be explained by socio-cultural factors related to the disease and the therapeutic preferences of patients.

The clinical and socio-demographic characteristics of the interviewees

A total of fourteen in-depth interviews occurred between January and March 2020, including six interviews in the rural commune of Sidi Mbarek, three interviews in the commune of Ait Oufellah, and three interviews in the commune of Bitit and two interviews in the commune of Ain Taoujdate. All participants were people with cutaneous leishmaniasis, aged between 18 and 64 years with a mean age of 49 years (± 9.1). Six were women and eight were men. The sex ratio was 1.33 (F/M). 78.6% of the participants interviewed lived in rural areas (Table 1).

The main clinical characteristics of the affected individuals reveal that the location of CL was in the bare parts of the body. The number of scars varied between 2 and 6. All patients confirmed that they were treated at the primary health centre in the city of El Hajeb with injections and local care. However, all interviewees stated that they applied traditional treatments at the beginning of their illness.

Perception and popular treatment-seeking behaviour for cutaneous leishmaniasis

The results of the interviews with people affected by cutaneous leishmaniasis were initially processed by word frequency (Figure.2), and then were analysed and presented with the themes and quotes derived from the data. For the people affected by CL in our study, the trivialisation of skin lesions and the use of traditional remedies were the main factors hindering patients from seeking medical care from health professionals. However, the fear of injections was the main cause for abandoning and stopping the treatment.

CL is part of the daily life of the inhabitants of these communes. The disease is popularly known as "Hboub Chniwla". The most common names for the disease are "Hboub Chniwla" in the Arabic dialect, and "Tihboubt timssi" in the Amazigh dialect: " *The disease is known among us as "Hboub Chniwla. It is widespread in our locality. It attacked the face of my little girl and her cousin was also affected. We thought that these lesions were caused by bounif: an insect living in dirty water, but the nurses at the health centre told us that the culprit is a small flying insect, I do not remember its scientific name.* " (41-year-old woman).

The lesions of CL are considered a source of shame, especially when the disease affects women. The latter felt that they lacked cleanliness and hygiene: " *At the beginning, I thought the lesions would disappear, but on the contrary, the lesions grew, I avoided contacting women and I preferred to stay inside my house and not have people around because they say that it is because of dirt that these skin bumps appear. Therefore, I often hide my forehead with a scarf.* " (48-year-old woman).

In interviews with three members of the same family (a man and his two sisters), all affected by cutaneous leishmaniasis, the affected man with several scars on his legs gave a magical explanation for their lesions and argued: " *I told my sister that it was my wife who practised surgery on me so that I would not divorce him and despite the*

injections I received at the health centre, the scars remained on my skin and I am convinced that it is because of her that these lesions do not disappear, but in any case, I am far from her I sleep in a room and she sleeps with her children in a room." (51-year-old man).

Traditional treatment at home was most frequently used, belief in religion and sometimes even magic was also reported as a treatment route, but resorting to very dangerous practices such as fire treatment remains the last resort before deciding to seek medical care at the health service level from health personnel at this stage, when the LC injuries had worsened so much. In fact, all affected participants confirmed their use of home preparation and remedies. The patients reported the use of "Dwa laarab" based on local plants and herbs, mainly the mixture of henna and astringent powder (chebba) in paste form directly applied on the points of skin lesions for treatment that were kneaded and bandaged: "I had severe lesions which used to hurt me a lot. I applied the mixture of onion juice and salt to the lesion points and tried to treat them with the paste of henna and chebba which is usually effective for these pimples, but it does not work well for me."

Cutaneous leishmaniasis is a vector-borne disease in which the vector is a small insect called sandfly. In Morocco, this insect is popularly known as "Chniwla".²⁰ Relevant research has revealed that the Moroccan population used medicinal plants and traditional preparations based on essential oils to fight the bite of this insect.²¹ The use of essential oils and plant extracts as effective insecticides was also proven by pharmaceutical research.^{22, 23} On the other hand, other studies have proven the beneficial effect of some medicinal plants as natural antileishmanial treatment.²⁴ In our case, this study explores for the first time in Morocco the type of medicinal plants used by affected people for the traditional treatment of cutaneous leishmaniasis. During the interviews with people with cutaneous leishmaniasis, one participant affected on her face showed us the herb (Figure 3 that she used to treat her lesion herself (the scientific name of the plant is "convolvulus tricolor"): "I crushed the leaves of lowaya (English Ivy, *Hedera helix* L) and mixed them with vinegar and applied them on the wounds."

Misconceptions and dangerous practices were mentioned by three participants who confirmed the use of the services a Fqih to get a quick cure. One affected person said that the patient seeks treatment from the Fqih who sprays hot salty water through his mouth on the skin lesions. A fqih is a very well-known traditional healer among the local population, who administers remedies at a very low cost (a few Moroccan dirhams) and sometimes provides the affected person with talismans (Hraz in Arabic). The traditional healer is allowed to use 'Kai' as a treatment by cauterisation, which is the most dangerous practice that consists of applying fire on persistent skin lesions: "In our district, we treat Hboub Chniwla lesions with oil and vinegar by rubbing the onion inside. If it is not cured, we go to the Fqih, our district healer, who cauterises the lesion with fire and takes out what is inside." (44-year-old woman).



Figure 3: Local plants used for the treatment of cutaneous leishmaniasis lesions

Therapeutic preferences and refusal of injection

The therapeutic management of cutaneous leishmaniasis at the level of health facilities is free of charge based on Glucantime. The treatment is administered by intramuscular or intra-lesion injection but all the patients declared that they do not like this mode of treatment.

In fact, in our study, several people affected by CL expressed their therapeutic preference and argued that the best treatment for skin lesions was an ointment or a skin-application pharmaceutical: "I had sores on my hands, I preferred to use ointments, for me, I think that injections should be done for serious diseases and not for small skin lesions (39-year-old man).

In Morocco, the treatment of leishmaniasis is standardised according to an official protocol of the Ministry of Health published in the national guide for leishmaniasis control activities.^{25, 26} The treatment is based on Glucantime offered free of charge in health facilities to patients with leishmaniasis. In cutaneous forms, the route of administration of Glucantime can be intramuscular or intra-lesion. In our study, it was found that a large proportion of them discontinued the treatment after the first injections. This was well confirmed by our participants who stopped the medical treatment because of the pain caused by the injections and their unbearable side effects. This is in line, on the one hand, with findings from other countries, such as the study in Colombia, which emphasised resistance to medical treatment due to needle phobia and myths about *Glucantime* such as sterility and sexual abstinence.^{27, 28} On the other hand, this explains what health professionals working in health facilities in central Morocco have found about the fact that patients with CL do not adhere properly to the treatment and abandon their injections.²⁹

A very interesting finding was revealed by our study in the course of the affected people's search for an effective treatment for their lesions, the majority of whom stated that the persistence of the lesions and the failure of traditional remedies pushed them to consult a health professional. In fact, four interviewees stated that the pain caused by the injections was the main obstacle to giving up medical treatment: "Yes, I was affected in my legs; the health professionals took samples from the lesions. I don't like this kind of treatment because it is very painful, I asked if there is an ointment or "kina" (i.e. tablets) but they told me that I have to do the injections, I did it only once. But then I stopped this treatment, and I asked the pharmacist to give me an ointment." (54-year-old man).

Gender and decision to seek medical treatment

Given the worsening and persistence of skin lesions, most participants stated that they sought treatment from the health personnel. However, three patients stated that it was the health personnel who obliged them to do the tests and follow the medical treatment following the contamination of their families. Most participants agreed that women and girls are the most concerned, as they are the ones with the most worrying lesions: "The injections are indeed as a compulsory treatment if you want to get cured. As far as I am concerned, I rather

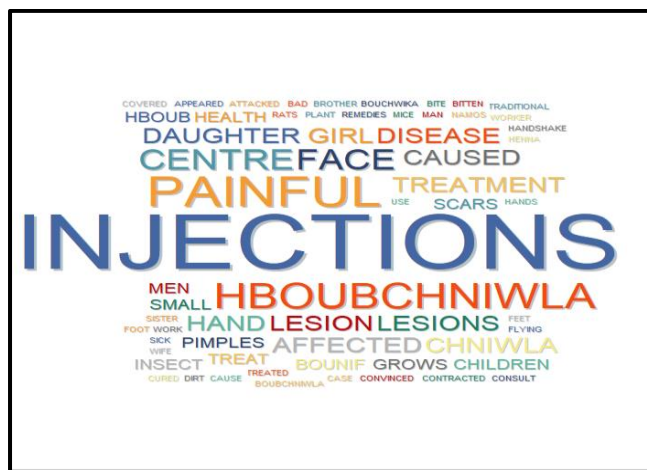


Figure 2: Word cloud of the perception of cutaneous leishmaniasis and its treatment

like it. However, my daughter had to take all her injections because her face was too much affected, and she was a girl. So, if she had not taken it properly then when she would grow up, she couldn't get married anymore". (43-year-old man).

In our survey, we found that members of only one family were all affected by cutaneous leishmaniasis. Women were most aware of the need to seek treatment at a health centre: "When I first came into contact with the disease, I kept for almost one year and a half taking home remedies, but when the nurse applied injections to the lesions, they disappeared. I therefore forced my brother to go to the health centre to get the injections, too" (30-year-old woman).

Based on these results, gender was found to be a determining factor in skin care seeking. Indeed, the women in our study reflected a positive attitude toward treatment and follow-up injections. All women affected by CL completed their treatment period and even played an important role in convincing family members affected by the lesions, especially men, to go to the health centre for treatment, whereas the male interviewees stated that they finally stopped their treatment

because they considered that these lesions do not deserve all these injections, that these wounds represent proof of their hard work, and that only the women and girls who are interested in their health and body hygiene need to take injections. This was also proven by Patiño's study which showed that only women used the treatment and none of the men did so by choosing to self-medicate.²⁷

The present study reported results on the socio-cultural aspects of CL in Morocco, and was able to unveil the perception of people affected by CL and their behaviours in seeking adequate treatment. The study also made it possible to answer a strategic health issue which is the low rate of detection of CL cases and to understand the underlying causes behind the under-utilization of health services by affected people in the treatment of CL. In addition, this study highlights the importance of carrying out awareness campaigns on the importance of consulting for skin conditions, encouraging more men to consult for skin lesions, and involving the pharmaceutical community on a larger scale to invent and innovate anti-Leishmania treatments in dermal or tablet form for human use.

Table 1: Socio-demographic characteristics of the participants in the study

		N =14	100%
Gender	Male	8	57.1
	Female	6	42.9
Average age (SD)		39 years (± 9.1)	
Family status	Married	7	50
	Single	5	36
	Divorced	1	7
	Widowed	1	7
	Housewife	3	21
Type of activity	Teacher	1	7
	Farmer	2	14
	Trader	1	7
	Fqih (agent of religion)	1	7
	Student	5	36
	None	1	7
Level of Education	Illiterate	6	43
	Primary	5	36
	Secondary	2	14
	Junior High School Degree	1	7
Living environment	Rural	12	85.7
	Urban	2	14.3
Type of housing	Prefabricated house in wood, brick and sheet metal	6	42.9
	Traditional cement house	5	35.7
	Modern house	3	21.4
Existence of pets (cattle, dogs, and others)	Yes	12	85.7
	No	2	14.3
Health coverage	Yes	6	42.9
	No	8	57.1
Organ most affected by cutaneous leishmaniasis	Face	3	21
	Arms and hands	5	36
	Legs and feet	6	43

Conclusion

The present study describes the perceptions, the socio-cultural dimensions of cutaneous leishmaniasis, and the pathway that affected persons do follow to seek adequate treatment. The use of traditional treatment at home and the trivialisation of lesions are the main factors hindering affected people from seeking medical treatment from health professionals, and therefore explaining the under-registration of cases with the health authorities. Social factors hinder the process of seeking appropriate treatment and the process of treatment management. Health authorities must carry out awareness-raising and health education campaigns to encourage affected people to consult healthcare providers as soon as skin lesions appear and to follow up on their injections. The scientific community must intervene by providing some other innovative therapeutic routes of administration for anti-Leishmania treatment such as dermal applications or tablets.

Conflict of Interest

The authors declare no conflict of interest.

Authors' Declaration

The authors hereby declare that the work presented in this article is original and that any liability for claims relating to the content of this article will be borne by them.

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