



**ADDIS ABABA UNIVERSITY**  
**COLLEGE OF HEALTH SCIENCES**  
**SCHOOL OF PUBLIC HEALTH**

**Traditional Medicine Usage for Cutaneous Leishmaniasis in Kallu District,  
South Wollo, Ethiopia**

**BY: Massame Tadesse (BSc.)**

A Thesis Submitted to the Graduate Program of Addis Ababa University, College of Health Sciences, School of Public Health in Partial Fulfillment for the degree of Masters of Public Health in Health Education and Promotion specialty.

January, 2024

Addis Ababa, Ethiopia

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## **Declaration**

I the undersigned, declare that this thesis is my original work, has never been presented in this or any other university, and that all the resources and materials used for the thesis development are recognized and cited, and people who involved in are acknowledged.

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## **Acknowledgements**

I would like to express my deepest gratitude to God for His guidance and blessings throughout my life and this thesis journey. I am also grateful to my advisors, Dr. Mulugeta Tamire, Mrs. Yordanos Tadesse, Dr. Mirgissa Kaba, and Dr. Endalamaw Gadisa, for their invaluable guidance, support, and encouragement.

I would also like to thank the SHARP social science team for their support and collaboration. I am grateful to the health extension workers in the study area and to the health center heads for their assistance and guidance in the data collection process. Finally, I would like to express my sincere gratitude to my participants for their time and willingness to share their stories with me.

I would also like to thank my family and friends for their endless love and support and for always believing in me.

This thesis would not have been possible without the support of all of these people. Thank you.

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## **Acronyms**

AHRI	Armauer Hansen Research Institute
CL	Cutaneous Leishmaniasis
GBD	Global Burden of Disease
HEW	Health Extension Worker
IDI	In-depth Interview
KII	Key-informant Interview
NTD	Neglected Tropical Disease
SHARP	Skin Health Africa Research Programme
TH	Traditional Healer
TM	Traditional Medicine
WHO	World Health Organization

## **Abstract**

**Background:** Cutaneous leishmaniasis is neglected tropical disease that is endemic in many parts of the world, including Ethiopia. In Ethiopia, diagnostic and treatment facilities for cutaneous leishmaniasis are limited. As a result, traditional healthcare is a locally available resource that patients turn to. However, there is limited evidence on the use of traditional medicine and resources in Kallu district of the Amhara region.

**Objective:** The aim of this study was to explore traditional medicine use and sources for treatment of cutaneous leishmaniasis in Kallu district, South Wollo, Ethiopia.

**Methods:** A qualitative study using phenomenological study approach was conducted in Kallu district, Ethiopia. The data collection was through in-depth interviews, key informant interviews and participatory observation. Purposive sampling using maximum variation was used to recruit participants for in-depth interview with cutaneous leishmaniasis patients, snowball sampling for key-informant interviews with traditional healers and criterion sampling for community leaders. The data was analyzed thematically using MAXQDA 2022 software.

**Results:** Participants reported using local treatment options first, usually from traditional healers, to treat cutaneous leishmaniasis. Plant-based medicines are the main source of traditional medicine. Several reasons led participants to use local treatments, including limited access to and duration of modern treatment, lack of awareness, high cost of modern healthcare, belief in traditional healers' expertise and traditional medicine, and recommendations from their social circle.

**Conclusion:** The findings of this study indicated the use of traditional medicines, which are primarily derived from plant sources, as a first treatment option for cutaneous leishmaniasis. This choice is primarily driven by factors such as awareness, accessibility, affordability, personal beliefs, and recommendations from trusted individuals. To promote the adoption of modern healthcare, efforts should focus on enhancing awareness, improving accessibility, and reducing costs. Collaboration with community leaders, former patients, and local healers is also crucial.

**Key words:** *Traditional medicine, Traditional healer, cutaneous leishmaniasis, local treatment, pattern of resort, sources of traditional medicine, Kallu district, Ethiopia*

# **1. Introduction**

## **1.1. Background**

Leishmaniasis is a vector-borne infection caused by the protozoan parasite *Leishmania* that is spread through the bite of infected female phlebotomine sandflies (1). It is endemic in nearly 100 countries with about 350 million people estimated to be at risk globally. Approximately, 2 million new cases are reported annually, bringing the total prevalence to 12 million cases (2). Cutaneous leishmaniasis is the most common clinical manifestation of leishmaniasis causing skin lesions, with an estimated 700,000 to 1 million new cases worldwide each year. It is also listed as one of the neglected tropical diseases (2,3).

It is one of the most common skin diseases for which people visit health facilities, especially in developing countries where low socioeconomic status, high population density, and unsanitary living conditions facilitate the survival of sandflies (4). Nevertheless, in most countries incidence rates are likely to be underestimated due to patients' low health-seeking behavior, limited access to health-care facilities, and poor case diagnosis and reporting (2,5).

Cutaneous leishmaniasis is endemic in many parts of Ethiopia (6). Amhara, Tigray, Oromia, and southern nations, nationalities and peoples regions are at high risk of CL even though the disease's prevalence and distribution have not yet been fully studied (6,7). Nearly 29 million people in Ethiopia are thought to be at risk for CL, with an estimated annual incidence of 20,000 and 30,000 cases (7). According to studies, it is the most common of all skin Neglected tropical diseases (NTDs) in Dessie town and its surroundings, accounting for 35.4% of NTD cases having an overall prevalence of 1.5%, with an increasing trend from 0.9% in 2012 to 3.5% in 2018 (1,8).

All Neglected tropical diseases, including CL, are currently the focus of national attention in Ethiopia. As a result, The Third National NTD Program Strategic Plan aimed to control cutaneous leishmaniasis by 2030 by means of increasing the number of diagnostic and treatment facilities as well as improving case detection and treatment services (7).

The burden of human health problems and the skills required to manage these conditions is disproportionate in many parts of the world due to a lack of trained personnel and medications.

This leads to a buildup of untreated or inadequately treated diseases, causing major concern for those working to address global health inequalities (4). As a result, a number of countries have indigenous or traditional medical practices that are deeply established in their culture and history (9). Traditional medicine is an essential source of healthcare as well as an important part of a community's identity in many cultures. It also provides a major source of income for traditional healers (10).

There is a high demand for traditional practices and practitioners all over the world. In addition, visits to traditional health practitioners have also increased significantly in the last decade (10). People use TM for a number of reasons, including cultural and historical pressures, as a complementary medication, and as the only treatment option in limited settings where standard health services are scarce and difficult to access, although this varies between individual countries and regions (9,11).

## **1.2. Statement of the problem**

The estimated prevalence of cutaneous leishmaniasis has nearly doubled from 2.1 million cases in 2002 to nearly 4 million cases in the 2015 global burden of diseases (GBD) study (12). It is also endemic in most parts of Ethiopia, primarily in the highlands, nevertheless, despite an estimated 20-50,000 cases per year, only 450 were reported in 2008 (13).

Nowadays, TM is an essential component of healthcare management worldwide. Traditional medicine is used in 65–80% of healthcare practices globally (14). It encompasses a wide range of treatments and procedures that vary depending on the culture and country it is being practiced (10,14). However, direct or indirect harm may result from using TM. Its direct effects may be posed by drug interactions and issues with quality control, whereas its indirect effects may result from a delay in seeking medical care and using standardized treatment (10).

Similarly, TM is more widely used in Africa and other developing countries like Ethiopia, where 70%-80% of the population relies on it for primary healthcare and accounts for 40% of all healthcare services provided since it is affordable and locally accessible (9,10). In addition, an essential component of traditional healthcare is its holistic character and culture-based concept. When they are ill, many Africans, particularly rural people and the poor in urban districts rely on the use of TM. In many rural areas in Africa, it is the primary and, in some cases, the only

available source of healthcare making the significance and acceptability of traditional medicine unquestionable, even though more can be done to enhance its quality and effectiveness, resulting in more success (15).

In Ethiopia, diagnostic and treatment facilities for CL are limited, making access and availability of healthcare hard, forcing the majority of people to rely on traditional healthcare practices (7,16). According to the literature, antileishmanial medications are scarce in health centers and have severe side effects with poor treatment outcomes, which can be attributed to drug-resistant parasites (11,17,18). Therefore, the majority of CL patients use traditional medicine as a form of healthcare and prefer it to modern medicine (16,19). Among patients who visited health centers the majority of CL patients arrived after using traditional treatment for a prolonged period of time (17). According to studies, 59.3% of patients in the Sodo district and 90% in Ganta-afeshum district prefer TM due to a lack of trust in modern medication, a preference for herbal medication, the high cost of modern medication, the need for patients to travel long distances for care and a lack of time to attend medical care (16,19).

Based on a routine health records review, the Skin Health Africa Research Programme (SHARP) found that the South Wollo Zone is an endemic area for CL, with Kallu district being one of the most affected sites. The study also reported that it caused economic impact, psychological trauma from stigma and discrimination, and physical deformity on those who are affected. However, most patients resort to traditional healers first for their treatment (20).

Most people in rural Ethiopia depend on traditional medicines to treat their illnesses; however, there is a lack of evidence on the natural resources that traditional communities use to treat cutaneous leishmaniasis, the types of local treatment available to them, and their reason for preference particularly in the study area. Thus, the purpose of this study was to explore the pattern of resort to healthcare and practice of traditional medicine use in the treatment of cutaneous leishmaniasis, and reasons for their use to draw suggested improvements as indicated by Kallu district communities.

### **1.3. Significance of the study**

Traditional medicine has been used for different health problems in all parts of Ethiopia, yet there is a paucity of data on traditional medicine use for CL. Hence, this study aimed at exploring the patterns of resort to seek healthcare, sources, and types of local/traditional treatments used for the treatment of cutaneous leishmaniasis, and the reasons for their use among Kallu district communities.

The findings of this study shed light on the role of traditional medicine in the treatment of cutaneous leishmaniasis, particularly in settings where access to modern healthcare is limited; thus, it can serve as an input for policymakers to regulate and promote safe and effective use of traditional medicine through the regulation, research, and integration of traditional medicine products, practices, and practitioners into the health system as appropriate.

Understanding the reasons that influence the use of traditional medicine helps to develop more effective and culturally appropriate interventions to address the needs of people who rely on traditional medicine for the treatment of cutaneous leishmaniasis in order to improve existing service provision and bridge the gap.

Furthermore, the study may generate information in the study area for researchers to investigate further experimental evidence to evaluate the quality, safety, and effectiveness of TM, as well as lead to new drug discoveries.

## **2. Literature review**

### **2.1. Burden of cutaneous leishmaniasis**

In the 2010 GBD study, leishmaniasis had the largest single-cause disease burden of any NTDs (12). The link between poverty and the risk of developing leishmaniasis is strong and is mediated by a variety of factors, including ecological factors such as poor housing conditions, which create favorable conditions for vector's survival, as well as other socioeconomic factors such as literacy level and occupation, which have been shown to influence the incidence of leishmaniasis (21). Ethiopia is one of the ten countries that have the highest estimated case counts, which accounts for 70 to 75% of the global estimated CL incidence (13).

The mortality data were extremely limited and mostly represented hospital-based deaths and using a 10% overall case fatality rate 20,000 to 40,000 leishmaniasis deaths are estimated to occur each year. Nonetheless, despite having the highest disease burden among individual infectious diseases, it is largely ignored in discussions of tropical disease priorities due to its complex epidemiology and ecology, a lack of simple, easily applied case management tools, and a scarcity of current incidence data, which frequently leads to policymakers failing to recognize its significance (13).

Although CL has a low morbidity and mortality rate, it causes very severe disfiguring scars in affected people (21). Furthermore, the scarring (both treated and self-healing) resulting from it is known to cause psychological problems, which is supported by epidemiological studies that show approximately 50% of CL lesions are on the face, and lesion visibility is a significant risk factor for depression in dermatological conditions (12,22,23).

Disfiguring scars cause social stigma, and exclusion from community activities, and can lead to mental health problems in both men and women. Young women with disfiguring scars encounter social stigma and are frequently unable to marry; even married women are rejected by their husbands/partners for fear of contracting the diseases from them (21,22). Leishmaniasis is thought to be contagious in some societies, so affected people are restricted from going to school and may be isolated from their families and communities (21). Thus, in endemic communities, stigma is caused by the long-term aspect of scarring, which is independent of a patient's

microbiological status (12). In addition to social stigma, there is the issue of perceived stigma, which causes shame, embarrassment, and low self-esteem in the affected women (21).

In some societies, CL lesions are also seen as indicators of low social status and reflect underlying poverty, adding to the stigma (21). However social stigma has been shown to reinforce poverty in affected individuals, making it a major concern (24).

## **2.2. Historical overview of traditional medicine and its importance in modern healthcare**

Traditional medicine is the world's oldest form of healthcare that is used to prevent and treat physical and mental illnesses. Throughout history, different communities developed several important healing methods to fight against health and life-threatening conditions (25). As a result, there are records from the earliest days that demonstrate how people have used natural products, primarily plants, minerals, and animals, to cure illness. Across many generations, medicinal plants and microorganisms have been the primary sources of medicine. Currently, they are used as a direct source of therapeutic agents, a raw material source for the development of complex, semi-synthetic drugs, prototypes for lead molecule design, and taxonomic markers for the discovery of new drugs (26).

Even though recent developments in physiological chemistry and molecular biology have greatly contributed to improved understanding and ability to treat diseases, a significant number of people still prefer traditional medicine as their primary source of healthcare (27). The majority of people in developing countries, including Ethiopia, rely heavily on traditional medicine for their healthcare needs thus, traditional healers continue to play a significant part in Ethiopia's primary healthcare systems (28). However traditional medicines are not necessarily safe only because they are natural and have a long history of use; therefore, more research is needed to determine the safety and efficacy of many traditional medical practices, as inappropriate use of traditional medicine or practices can have adverse consequences (10).

TM has contributed to the discovery, development, and advancement of modern medicine. Modern medicine has greatly benefited from TM in two areas: drugs with similar effects and drugs with effects that differ from those of TM. Many drugs have been developed as a result of inspiration from TM, according to the history of drug development (25).

Literature shows that TM is now used alongside conventional medicine in Sub-Saharan Africa, demonstrating that it is primarily used as a complementary treatment rather than as an alternative to modern care. This is possibly related to a growing paradigm shift among patients toward a holistic approach to health that is consistent with the TM principles and recognizes the limitations of biomedical treatment (24). Similarly, according to a study conducted in Addis Ababa, the majority of patients chose traditional healers' clinics as their first option for addressing their health issues, demonstrating traditional healers' clinics' significant contribution to the public health care system (29).

### **2.3. Use of traditional medicines for cutaneous leishmaniasis**

Most patients with CL seek medical care from traditional healers and self-medication before visiting a health center. A study conducted in CL endemic areas of Peru indicates that of 106 participants who had CL 51 (48.1%) never visited a health center, while 76 (72.6%) used traditional medicines as the first choice of treatment and 31 of 106 (29.2%) went to a healthcare institution as a second choice after the appearance of a lesion suspected of CL (30). Similarly, different studies conducted in Ethiopia and other African countries show that the majority of patients sought traditional medicines for treatment even though the number varies depending on the place where the study took place (11,22,23,31,32).

Regarding the types of traditional treatments, the majority of patients use plants that grow in the area. Another popular category is the application of acids, such as citric acid and battery acid, followed by the application of chemicals such as alcohol and menthol, and lastly the local application of heat and self-prescribed antibiotics (22,30,32).

For the majority of CL patients, using TM is a necessity rather than a choice because modern leishmaniasis medications are not available in health centers. For instance in Ethiopia, there are very few healthcare facilities that offer leishmaniasis treatment, and most of them are located far from the communities that need them the most, making access to the service challenging and resulting in the majority of cases treated with traditional medicines in the community or at home (16,19). Additionally, the patient's long waiting time to get healthcare is the other factor influencing the use of TM because the majority of patients are unable to attend medical appointments due to their busy work schedules (19).

A study conducted on the preference and practice of traditional medicines shows that the marital status of individuals, occupational status, and educational level have an influence on the utilization of traditional medicine (22). Studies also show that the perceived effectiveness of traditional medicine over modern medicines contributes to the high utilization of traditional medicines in the community (16,19,29). While other studies show fear of side effect from modern medication contribute to increased use of TM (22).

### **3. Objectives of the study**

#### **3.1 General objective**

The aim of this study was to explore the practice of traditional medicine use and sources for the treatment of cutaneous leishmaniasis among the communities of Kallu district, South Wollo, Ethiopia.

#### **3.2 Specific objectives**

- To explore patterns of a resort in seeking care for cutaneous leishmaniasis.
- To explore sources of traditional medicine and types of local treatment for cutaneous leishmaniasis.
- To explore the reason for using traditional medicines for cutaneous leishmaniasis.

## **4. Methods and materials**

### **4.1 Study setting**

The study was conducted in Kallu district which is part of South Wollo Zone, Amhara region. Its capital town is Kombolcha which is 376 km north-east of Addis Ababa the capital of Ethiopia. The district consists of highland, midland, and lowland agroecological settings. This district has 9 health centers, 35 health posts, more than 20 private clinics, and more than 10 drug stores. Kombolcha General Hospital serves as a referral hospital for lower-level health facilities in Kallu district. On the other hand, the cutaneous leishmaniasis treatment service is provided at Boru Meda Hospital, which is 90 kilometers away from the farthest village in Kallu district (20).

Kallu district was selected for this study based on a formative assessment report from the SHARP that showed a high prevalence of cutaneous leishmaniasis and that the majority of patients used traditional medicine in the area (20).

### **4.2 Study approach and period**

Qualitative research using a phenomenological study approach was employed to conduct the study from March 22 to April 13 and July 1 to August 6, 2023 GC. A phenomenological study is a qualitative research design that focuses on understanding the essence of a particular phenomenon as experienced by the participants themselves, providing rich, in-depth insights into their perspectives and the meaning they attach to that phenomenon (33). This approach allowed the exploration of subjective experiences, perceptions, and beliefs related to traditional medicine, providing a deep understanding of the cultural, social, and individual significance attached to these practices. The researcher chose this approach to gain insight into how patients and traditional healers understand, interpret, and engage with traditional medicine in the treatment of cutaneous leishmaniasis.

### **4.3 Study participants**

Participants for this study were selected from the Ketetiya and Ardibo clusters (cluster: a group of Kebeles that are served by one health center) because CL is more prevalent in these areas (20). In addition, a traditional healer repeatedly mentioned by CL patients and who was a referral point for traditional healers was included from Kombolcha. In this study, six former and four current cutaneous leishmaniasis patients participated in in-depth interviews, and key informant

interviews were conducted with three community leaders and five traditional healers who are acknowledged by community members and well-known for their traditional medicine practices in the community. The number of participants for the in-depth and key informant interviews was determined by the principle of saturation, the point at which no new information or categories emerged from the data. To ensure saturation, the data were analyzed at the end of each day of data collection. This analysis involved identifying emerging categories and assessing whether additional interviews were needed to further refine or develop these categories. Interviews continued until the data on the key emerging themes was saturated, as evidenced by the repetition of key points and the absence of significant new information.

#### **4.4 Eligibility criteria**

##### **4.4.1 Inclusion criteria**

Individuals who have been permanently residing in the study area for at least 6 months and are willing to participate in the study are included in the data collection.

##### **4.4.1 Exclusion criteria**

Those who are below the age of 18 are not eligible to participate in the study.

#### **4.5 Recruitment of participants**

The investigator first approached the health center heads in the cluster to get information about the *Kebeles* under the cluster and the health extension workers' contact addresses. Then HEWs were consulted for the selection of study participants based on accessibility and geographic distribution. After discussion with HEWs participants for the study were selected by purposive sampling using the maximum variation sampling technique was used for IDI with current and previous CL patients, this allowed for the most variety of participant characteristics to be included such as age, sex, place of residence, and the time they experienced the CL lesion in order to facilitate analysis of experience in using traditional medicine. Snowball purposive sampling technique was used to select interviewees for KII with traditional healers. In addition, the criterion purposive sampling method was used to select community leaders based on their age, experience, acceptance, and influence in the community.

#### **4.6 Operational definitions**

**Traditional medicine:** any religious or culturally based ancient health care practice that is different from scientific medicine and is primarily transferred verbally from generation to generation by different cultural communities

**Traditional healer:** a person who has no formal medical training but is regarded (by the local community) to be competent to provide health care using animal, plant, and mineral substances, as well as certain other techniques based on social, cultural, and religious background.

**Modern medicine:** the most advanced, scientifically based, and statistically approved therapeutic system and diagnostic methodology

**Local treatment:** local treatment for CL include the available treatment options for patients with CL in their local setting, such as home remedies, traditional healers, and religious healing practices.

**Sources of traditional medicine:** Sources of traditional medicines for CL indicate what the locally prepared medicines are obtained from; plant source, animal source, chemical substances, and religious/ cultural beliefs.

**Patterns of resort to care:** Pattern of resort is the pathway CL patients take for the purpose of finding a remedy for their condition.

**Home remedy:** Home remedies are simple and easily accessible treatments that can be prepared using common household ingredients. These remedies are often passed down through generations and are believed to have healing properties.

**Religious healing practice:** Religious Healing Practices are certain religious beliefs and practices that involve religious leaders performing specific rituals, reciting prayers, or using blessed substances to aid in the healing of CL.

#### **4.7 Data collection**

The data was collected through key informant interviews, in-depth interviews, and participatory observations. Semi-structured interview guides were prepared for IDI and KII separately in English and translated to the local language, Amharic, with open-ended questions based on the

objectives set to conduct a face-to-face interview by the principal investigator. In addition, probing questions were used as needed. All interviews took place in the participant's home compound or a location of their choice where they felt comfortable, and the conversation began with informal dialogue, which created a friendly environment and made it easier to gain the participants' trust so that they could explain their ideas freely and in detail. Furthermore, a quiet place was chosen as much as possible to avoid the nuisance.

An observation checklist was used for participatory observation to systematically record observations. The observation took place at the location where the traditional healer was practicing traditional treatment to observe the treatment processes through which community members applied traditional medicine. Active-overt observation was employed, in which the researcher openly observed the participants and their activities. The purpose of the study was clearly explained to the THs to obtain their permission. To reduce the observer effect, trust and rapport were built prior to the observation through repeated visits to traditional healers' workspaces and the community, as well as informal conversations with community members.

In addition, following each interview and field visit to the sites, detailed field notes were taken.

#### **4.8 Trustworthiness**

Lincoln and Guba's criteria for trustworthiness in qualitative studies, which include credibility, transferability, dependability, and confirmability, were used to ensure the trustworthiness of this study (34).

##### **Credibility**

To achieve credibility, the investigator had a persistent and prolonged field engagement in the study area to collect the data and to observe the actual context while the data were collected from current and previous CL patients, community leaders, and traditional healers with a method of data collection and a source of data triangulation. Additionally, the in-depth interview findings were checked to see if they were supported by the results from the key informant interview and observation. Peer debriefing with other colleagues was an ongoing process, and more emphasis was given to deviant findings. In addition, data saturation was assured by repetition and the overflow of ideas.

##### **Transferability**

In order to ensure transferability, this study employed purposive sampling to select participants from diverse backgrounds. Detailed descriptions of the research context, participant characteristics, and data collection procedures were provided to allow for a thorough understanding of the study's context and methods. The rich narratives and direct quotations from participants were presented to illustrate the findings, enhancing the reader's ability to evaluate the transferability of the results to other similar settings.

### **Dependability**

To ensure dependability, the primary investigator collected and transcribed the data after a prolonged field engagement. Peer debriefing was conducted with colleagues who were not involved in the data collection and analysis, which allowed to examine the processes of data collection, data analysis, and the results of the research and confirmed the accuracy of the findings as well as ensured the findings were supported by the data collected. All responses are also documented in text form, with audio recordings as supportive evidence. As a result, if another person collects and transcribes the data, the results will be similar.

### **Confirmability**

The audit trail technique was used to ensure the confirmability of the study, which involves writing down details of the data collection process, data analysis, and interpretation of the data. Frequent debriefing sessions with the research team and checking and rechecking of the data during the entire research were done. Furthermore, triangulation using different methods and sources of data collection to obtain corroborating evidence was used.

## **4.9 Data processing and analysis**

A voice recorder was used during the data collection in order to avoid the difficulty of writing down all of the study participants' ideas. The audio-taped interviews were then transcribed verbatim and translated into English. A repeated reading of the transcribed data was done prior to the analysis in order to immerse and familiarize with the data. The translated data were imported into MAXQDA 2022, a qualitative data management software, for analysis following the principles of thematic analysis. After uploading the data into the software, it was coded line by line. Identified codes were categorized based on their similarities, and then themes and

subthemes emerged. Relevant quotations of the study participants' expressions were used in the presentation of the study findings.

#### **4.10 Positionality and reflexivity statement**

**Positionality:** As a health professional with a background in public health, I am aware that my perspective may influence my understanding of TM practices. Recognizing that my prior training emphasized modern medicine allows me to critically examine how this may have influenced my initial perceptions of TM in the community.

**Reflexivity:** The investigator tried best not to interfere with or influence the findings as much as possible, recognizing and addressing potential biases and assumptions in the study. Being aware of the influence of my background, I actively engage in ongoing self-reflection to continually question my perceptions, beliefs, and actions within the research context. Ultimately, through this reflexive process, I aim to ensure that the findings of the study remain grounded in the community's experiences and perceptions of TM usage for CL, independent of my own predispositions.

#### **4.11 Ethical consideration**

Ethical clearance was obtained from Addis Ababa University, College of Health Sciences, School of Public Health. An official and formal letter of permission was obtained from Addis Ababa University School of Public Health and AHRI. Then a letter of support was written for the South Wollo Zone Health Bureau and the Kallu Woreda Health Bureau and distributed to each Kebele. After explaining the purpose of the study to each participant, the data collector first requested the respondents' informed consent orally, and written consent forms were read to obtain their agreement before starting the interview. Respondents were allowed to refuse or discontinue participation at any time they wanted. To maintain confidentiality, the names of the study participants and other information that enabled their identification were not taken on the form; rather, a code number was assigned to ensure anonymity. Furthermore, any attempt to cause participants psychological or physical harm was avoided at all times. Permission was obtained from formal and informal community leaders, and special attention was given to participant privacy and confidentiality.

#### **4.12 Plan for dissemination of findings**

The research findings will be submitted to Addis Ababa University, the Department of Preventive Medicine, the South Wollo Zone Health Bureau, the Kallu Woreda Health Bureau, and the SHARP project. The findings will also be communicated to different stakeholders who are interested in or working in the area. Finally, efforts will be made to present at various seminars and workshops and for publication in national or international journals.

## 5. Findings

### 5.1 Participants' socio-demographic characteristics

A total of ten former and current cutaneous leishmaniasis patients participated in the study for the in-depth interview. The study involved six female and four male participants with an age range of 18–70 years. (Table 1)

**Table 1:** Socio-demographic characteristics of in-depth interview participants on the practice of traditional medicine usage for cutaneous leishmaniasis in Kallu district, July 2023 (n=10)

Characteristics of participants	Number (Total 10)
<b>Sex</b>	
Female	6
Male	4
<b>Age</b>	
18–25	6
30–49	3
Over 50	1
<b>Occupation</b>	
Farmer	5
Government employee	1
Currently not working	4
<b>Education level</b>	
Tertiary education	2
Secondary school	2
Primary school	6
<b>Marital status</b>	
Single	5
Married	4
Widow	1

In addition, eight key informant interviews with five traditional healers and three community leaders were conducted. Except for one, the participants were all men. (Table 2)

**Table 2:** Socio-demographic characteristics of key informant interview participants on the practice of traditional medicine usage for cutaneous leishmaniasis in Kallu district, July 2023 (n=8)

Characteristics of participants	Number (Total 8)
<b>Sex</b>	
Female	1
Male	7
<b>Age</b>	
28–39	2
40–60	5
Over 60	1
<b>Occupation</b>	
Farmer*	4
Small business owners*	3
Traditional healer*	5
<b>Education level</b>	
Tertiary education	1
Secondary school	3
Primary school	2
Never attend school	2
<b>Marital status</b>	
Single	1
Married	7

\* There is an overlap of occupations with traditional medicine practice. Two traditional healers were farmers and another two owned small businesses as their main source of income.

## 5.2 Emerged themes

This study tried to explore the practice of traditional medicine usage for CL. Three themes emerged by merging similar sub-themes, which were developed by joining related codes. The themes were the pattern of resort for treatment of cutaneous leishmaniasis, sources of traditional medicines, and reasons for using traditional medicine for cutaneous leishmaniasis. Each sub-theme was presented in detail, with descriptions and quotes cited in the text to support the ideas. (Table 3)

**Table 3:** Themes and sub-themes on the practice of traditional medicine usage for cutaneous leishmaniasis in Kallu district, July 2023

Theme	Sub-theme
Pattern of resort to care for treatment of cutaneous leishmaniasis	
Sources of traditional medicines for cutaneous leishmaniasis	Plant source
	Religious/ cultural beliefs
	Animal products
	Hot metal
Reasons for using traditional medicine	Accessibility
	Duration of modern healthcare treatment
	Personal factors
	Economic reasons
	Sociocultural influence

**Theme 1: Pattern of resort to care for treatment of cutaneous leishmaniasis**

The results of the study indicate a dynamic pattern in the resort to healthcare among the participants. All study participants used local treatment options at first which includes traditional healers, home remedies, and religious healing practices.

Several participants in the study reported seeking the help of traditional healers as a first treatment option. Traditional healers play a significant role in the treatment of cutaneous leishmaniasis in the community. They utilize local knowledge and traditional medicinal practices to provide therapeutic interventions based on traditional knowledge passed down through generations. Traditional healing methods involve the use of plants, rituals, and different materials to alleviate the symptoms and promote healing. A female participant stated her experience in visiting a traditional healer as follows;

*“I didn't do anything. When I asked someone, they told me that there is a person at Ergoye (a place) who knows, so I went there directly.” (CL patient-F-Ketetiya)*

Participants also stated that they relied on home remedies as a first line treatment for CL. Home remedies typically involve the use of easily accessible ingredients found in the household from natural substances like honey, salt, garlic, and other locally available plants. A participant mentioned the use of salt as a mouthwash for the wound; the directly quoted response is as follows:

*“The wound was on my lips, so I boiled salt with water and washed out my mouth. After I rinsed my mouth, I would just leave it. I just did this on my own in case there were any bacteria around my teeth.” (CL patient-M-Ketetiya)*

Religious healing practices are also observed in the context of cutaneous leishmaniasis treatment. These practices involve the use of blessed materials, prayer, or religious leaders to perform specific rituals to promote healing and well-being. Blessed materials used by participants include holy water and *Emnet* (a religious practice of applying blessed soil or ash from a church). The belief in the power of faith and spirituality to heal is central to these practices.

*“I just applied the Emnet once and after that, there is something called a Silet (vow) in our religion, then I just vowed then it was healed by that.” (CL patient-M -Ardibo)*

The participants would resort to a different type of treatment if the first one didn't provide the expected outcomes. Additionally, those who had poor results with one traditional healer frequently seek out another one.

*“Then he (the traditional healer) told me to apply hot garlic; he told me that the wound would peel off when I applied the hot garlic, but it didn't work. It persisted. Then I went to the other person and now I'm fine.” (CL patient-F-Ketetiya)*

Furthermore, it was observed that modern healthcare was often considered the last option, only when all other traditional treatment options had been exhausted. The severity and persistence of the disease emerged as significant reasons influencing the participants' choice to opt for modern healthcare. When the wound became more severe or persistent, participants were more inclined to turn to modern medical treatment.

*“...but now we are ready to go to the modern treatment. We have seen that the work of traditional medicine has not healed us; that is all I'm saying.” (CL patient-M-Ketetiya)*

## **Theme 2: Sources of traditional medicines for cutaneous leishmaniasis**

This section is about sources of traditional medicine for cutaneous leishmaniasis, which has discovered the sources traditional medicines are obtained from. This encompasses plant sources, animal sources, chemical substances, religious/cultural beliefs, and hot metal.

### **Sub-theme: Plant source**

It was observed that the community members mainly used plant-based traditional medicines for the treatment of CL. Different plant parts, such as leaves, garlic cloves, blood of cacti, black cumin, and barks, have been utilized by study participants. These plant sources are often prepared in different ways, such as by heating, grinding, crushing, mixing together, or as a standalone medicine. These prepared medicines are administered topically.

#### ***Leaves***

The most commonly used part of the plant in the treatment of CL is the leaves. Participants have mentioned different leaves, and each has their own way of preparation, either alone or in combination, although all are administered topically. The community members have limited knowledge about certain medicinal plants, as they are exclusively known to traditional healers who gather them secretly to sustain their income.

Participants mentioned the use of a leaf locally known as *Yebere chew (Oxalis corniculata L.)*. It is used alone and applied by squashing and warming it on fire to get the desired healing outcome. A traditional healer describes her experience of using *Yebere chew (Oxalis corniculata L.)* as follows:

*“After it (Yebere chew) has been plucked, we don't use its stem; we gather only the leaves and squash it with a lean stone or mortar; it is squashed with a little mortar. Then we put it on the castor leaf... and then it is placed, including the castor leaf, on a charcoal stove; after it is heated, we bring up the medicine, not the castor leaf, and put it on the cutaneous leishmaniasis wound; it has the characteristic of holding; it sticks.” (TH-F-Ardibo)*

*Hulegeb* (*Salvia nilotica*) is the second leaf used in the treatment of CL. It is administered along with *Damakesie* (*Ocimum lamifolium*), which is used for its medicinal and preventive properties against cold sore which might aggravate further the cutaneous leishmaniasis wound.

*“I squash the Hulegeb and Ocimum lamifolium and tie it up like this, both the Hulegeb and the Ocimum lamifolium.” (CL patient-M-Ketetiya)*

The other leaf mentioned is locally known as *Boter* (*plectranthus sp.*); this can be used alone by rubbing it on the CL wound or in combination with other leaves. A current cutaneous leishmaniasis patient explained his experience as follows:

*“I rub and tie the Boter right here on my lips. I tie it (the Boter) when I want to. (CL patient-M-Ketetiya)*

A traditional healer also shared her experience of using *Boter* (*plectranthus sp.*) by combining it with *Hulegeb* (*Salvia nilotica*) and *Damakesie* (*Ocimum lamifolium*) to treat CL.

*“This Boter, Damakesie, and what I said to you Hulegeb altogether, all three of them are prepared together; they will be squashed, then the paste will be tied up with something to make it into contact with the disease; but this doesn’t even need to warm it up.” (TH-F-Ardibo)*



Boter (*plectranthus sp.*)



Hulegeb (*Salvia nilotica*)



Yebere chew (*Oxalis corniculata L.*)

**Figure1:** Medicinal plants used by traditional healers to prepare traditional medicines for cutaneous leishmaniasis

One traditional healer mentioned that he prepares his own paste, which he calls *Ketran*, by combining different plant parts and chemicals to be applied to the CL wound. He combines

sulfuric acid, petroleum Vaseline, *Sibir* (Aloe Vera dried at factory level), dried and crushed *Croton macrostachyus* bark and *Ziziphusmauritiana* leaves, and *Shebul* stone. *Croton macrostachyus* bark and *Ziziphusmauritiana* leaves are dried in the shadow to preserve their medicinal value.



*Ketran*

**Figure 2:** Picture of *Ketran* the traditional healer prepared to treat CL

### ***Garlic***

Respondents reported the use of garlic in different forms; one is to place it on fire and apply it on the wound's edge when heated, and the other is by crushing it and mixing it with black cumin and spider web.

*“I have been prescribed a spider's web... Spider's web, black cumin, and then add garlic; the black cumin is crushed; after it is crushed along with the garlic, it is warmed up on a grill with a fire; after it is warmed up, the spider's web is also with it, and then it will be mixed together. After it is mixed, it is applied once a day, either in the morning or in the evening. When we apply it, it heals the scar immediately.” (CL patient-F-Ketetiya)*

A traditional healer also shared this idea by stating:

*“There is garlic; after peeling off the garlic, you will put that where the wound is; you will warm it with fire, then you will apply it to the wound.” (TH-M-BerberWenz)*

### ***Cacti***

Cactus is the other plant that has been used to treat CL. Participants indicated they would administer the blood of the cactus to the wound. They did, however, also claim that it can injure the skin and other body parts.

*“There is a cactus called Qolqolo. It is like an ointment; it has blood. You bring it; it looks like a cactus. When you daub it, it uproots not only the wound but also the other parts; it means that it will bore inside and uproot it.” (CL patient-M-Ardibo)*



Euphorbia abyssinica J.  
F. Gmel

**Figure3:** Cactus used to prepare traditional medicine for cutaneous leishmaniasis

### **Sub-theme: Religious/ cultural beliefs**

Religious beliefs form an integral part of traditional medicine practices. The participants mentioned different religious materials and rituals in the treatment process of cutaneous leishmaniasis, which involve holy water, *Emnet*, *Silet*, and *Tufita*.

*Tufita* ritual is a type of cultural treatment practice which involves a traditional healer or a religious leader chewing khat (a stimulant herb) and spitting on the wound. The community has accepted it as effective means of treatment of any health problems. As per the participants, these individuals are believed to have supernatural healing power they got passed down from generation to generation. They also stated their strong belief in this practice, as these individuals are blessed by God. A female CL patient describes her experience as follows:

*“First he (the traditional healer) spat the khat here (her lip with the wound); after that, he gave me the second one to smear it. Here it is said that his spit is a medicine; he spat that for me.” (CL patient-F-Ketetiya)*

Participants mentioned the use of holy water, *Emnet*, and *Silet* to get a cure, which are used by Ethiopian Orthodox Church followers. Holy water is fresh water in the form of springs or streams that runs within a church’s compound or is blessed by a priest. *Emnet* includes both the use of the ash from the incense burned during service and the soil in the church. Participants indicated applying *Emnet* mixed with holy water on the CL wound. *Silet* involves making a vow in order to do something when getting cured.

A former CL patient also shared his experience of applying *Emnet* mixed with holy water as follows:

*“I brought the Emnet, and for about five days I applied it, mixing it with holy water every morning. After I applied it every day for about five days, the wound disappeared.” (CL patient-M-Ardibo)*

### **Sub-theme: Animal products**

The third one is animal sources; participants mentioned the use of different animal products in traditional medicine practices. One participant mentioned the use of insects for treatment of CL by grinding them together and applying to wounds for their healing effects.

*“There are insects that fly, and the healer over there killed and collected the insects. After killing them, he dried and grinded them; after they are grinded, he put it in the wound.” (CL patient-M-Ketetiya)*

Spider’s web was also utilized in combination with other materials. Additionally, honey is usually applied to the wound for its medicinal properties as a first line of treatment in their home. A male former CL patient states his experience as:

*“The first thing I did was a treatment called Tazma honey. I applied honey in the morning when I woke up, but it didn't make any difference at the time.” (CL patient-M-Ardibo)*

### **Sub-theme: Hot metal**

According to the respondents, they mentioned a traditional method of healing involving the application of hot metal. This technique involves using a heated knife, nail, or any metal object, which is heated by placing it on fire and then placing it on the wound. One traditional healer shared his personal experience with this method, stating that it has been helpful in facilitating the healing process.

*“Then I thought that there was a knife; I just heated it and applied it to the wound. I just applied it myself... it made the edges pull inward and dried it.” (TH-M-BerberWenz)*

### **Theme 3: Reasons for using traditional medicine**

In this study, we found various drives that influence the community to prefer local treatment options for CL. Accessibility, duration of modern healthcare treatments, economic reasons,

sociocultural influence, and personal factors highly contributed to the preference of healthcare options in the participants' treatment experience.

### **Sub-theme: Accessibility**

In this study, accessibility was identified as an important reason why people use traditional medicine to treat cutaneous leishmaniasis. Accessibility encompasses the convenience, availability, and ease of access to CL treatments.

Limited access to modern medicines and healthcare facilities that provide treatment in their locality for cutaneous leishmaniasis contributes to the preference for traditional medicine. The participants mentioned that they face geographical barriers and limited transportation options, and modern medicines for CL are often unavailable in their area. A CL patient explains this as follows:

*"...even if there is a cure, the place where it is found is not in this area, and that requires a lot of searching. There are so many ups and downs to know which one is better, so he suffers here to avoid that. There would be no problem if it was found nearby or even more widely." (CL patient-M-Ketetiya)*

In contrast, traditional medicine is more available within the community, making it a more feasible option for people seeking treatment for CL. It is also often more easily obtainable, as it is available from traditional healers or their neighborhood. A traditional healer supported this notion and stated it as follows:

*"Well, it depends on the situation of the area; there is nothing. If there is someone in this area who gives traditional medicine for cutaneous leishmaniasis, then he will try that and go to medical treatment next." (TH-M-Ardibo)*

### **Sub-theme: Duration of modern healthcare treatment**

Another reason the study participants mentioned influencing the use of traditional medicine is the long duration required for the treatment of cutaneous leishmaniasis at health facilities. The study participants revealed that they have heard that modern medical treatments often necessitated a prolonged period of hospitalization, typically around 28 days. Therefore, this

extended duration of treatment is difficult for individuals due to different responsibilities they have. Traditional medicine, on the other hand, offers shorter treatment durations, allowing individuals to continue their daily activities while applying the medicine. One participant stated as follows:

*“Now there is a hospital in Boru. I have heard that it will take up to a month, and you need to be admitted to get treatment. Also, I need money when I stay there for a whole month, so I am thinking of going in the coming New Year after I fulfill what I need for that.” (CL patient-M-Ketetiya)*

A traditional healer also shared this idea:

*“When they go for treatment there, they are treated as inpatients for a month. Well, when you see that there are many problems for a person to leave his home and work for this time, it is from that point of view that people are attracted not to go there quickly.” (TH-M-Ardibo)*

### **Sub-theme: Personal factors**

Personal factors are the third identified reason why traditional treatments are used to treat cutaneous leishmaniasis. These factors are individual characteristics of individuals and include a lack of awareness about modern treatment and the perceived effectiveness of traditional medicine.

#### ***Lack of awareness about treatment***

One of the primary reasons individuals prefer traditional medicines for the treatment of cutaneous leishmaniasis is a lack of awareness about the availability of treatment at modern healthcare facilities. Participants stated that they are not informed about modern treatment options; consequently, patients turn to traditional medicines as a readily available and familiar option.

*“At that time, the treatment wasn’t strengthened like this, and we didn't have any information about the treatment; there was no going directly to the treatment place quickly when you got sick.” (CL patient-M-Ketetiya)*

A traditional healer also shared this idea:

*“They come straight here. There is nothing to give them, even if they go there thinking this is cutaneous leishmaniasis. Maybe they can just give them a pill or an injection for the wound, but there is no medicine that is prepared for cutaneous leishmaniasis in modern healthcare.” (TH-M-BerbereWenz)*

Furthermore, a community leader concurred with the notion that a lack of awareness about modern treatments contributes to the preference for traditional medicine.

*“They don’t think modern medicine will heal them; it is a problem of awareness, but if they know that they can get healed, there is no reason they would not go.” (Community leader-M-Ketetiya)*

### ***Perceived effectiveness of traditional medicine***

The study participants reported that their preference for the use of traditional medicine in the treatment of cutaneous leishmaniasis is strongly influenced by their perception of its effectiveness. The study participants are convinced of the effectiveness of traditional treatments since they have heard of successful outcomes from their use. Personal experience, cultural values, and the historical utilization of traditional treatments for related illnesses all support this perspective. People are more likely to choose traditional treatments over modern ones because they believe traditional medicine to be effective.

*“Usually, they have their own beliefs for a long time that traditional medicine cures many people, and secondly, there is a better chance of recovery for this disease here than medical treatment. I think that if the disease comes to us before it takes too long, there is a high chance of recovery. (TH-F-Ardibo)*

### **Sub-theme: Economic reasons**

Analysis has also discovered that economic reasons play a significant role in influencing treatment choices. Specifically, two key factors were identified: income and the cost of modern healthcare treatments. These factors serve as important indicators in determining individuals’ treatment options.

## ***Income***

The other factor that plays a crucial role in the preference of individuals affected by cutaneous leishmaniasis for traditional medicines is income. The participants have stated that the seasonal nature of their agricultural work has limited their income to specific periods of the year. As a result, they don't have sufficient financial resources to afford modern healthcare treatments, which can be expensive. On the other hand, traditional treatments can be found for free, for a small amount of money, or in-kind payment, which becomes a practical choice for these individuals.

*“The biggest problem for us right now is that we have no monthly income, but it has been long since we heard about the treatment’s availability there. However given that we work in agriculture, we have year-based income, so if we go there and start treatment, the cost will be too much for us, and it will cause us to get a lot of loans; thus, we thought that we would go later, but we have stopped using the traditional medicine.” (CL patient-M-Ketetiya)*

## ***Cost of modern healthcare***

The study participants stated that the cost of modern healthcare services, including accommodation and transportation for their prolonged stay, is a major obstacle to obtaining medical treatment for cutaneous leishmaniasis. The need to travel to distant healthcare institutions, combined with the expenses incurred during their stay, is financially challenging.

*“Now if we left here, there is transport cost by itself to go and to return; in addition to that, if we have to be admitted, we might stay longer; we have food costs; we have many costs. There are clothes, and so and so, we can't afford this because we are farmers’ children; that's why it (the CL) has been able to reach this stage, but it has been a while since we heard about the treatment.” (CL patient-M-Ketetiya)*

On the other hand, traditional medicines are often given for free or at a lower cost than modern healthcare services. This makes them a more viable option for those struggling with financial difficulties. Participants have stated that they are asked to give a small amount of money or something in-kind, such as sugar, khat, juice, incense, and the like, for the medication to be

effective and not as payment for the treatment, which is known as *Erensa* in their locality. In addition, they would bring *Hadiya* (a gift) to the traditional healer when they were healed. This payment aspect made it a practical and cost-effective option for people with few financial resources. A former CL patient explains this

*“When you visit a friend, you usually take bananas, right? Just like that, they bring things like juice, sugar, coffee, incense, etc., usually saying we don't go empty-handed, but he never says bring something.” (CL patient-F-Ketetiya)*

A traditional healer also stated his experience as follows:

*“There is no fee. But there is something called Erensa for the medicine. It depends on the person; he may give fifty birr or twenty birr; it is not something fixed.” (TH-M-Ardibo)*

However, participants also argue that the preference for traditional treatment isn't because it is cheaper or free. People spend a large amount of money to reach the traditional healer, and sometimes they bring expensive gifts like goats and camels, which cost more than modern healthcare. A female former CL patient shared her view as follows;

*“It is not preferred because it's free, but because of the outcome. It doesn't matter if there's a payment or not; it's because they see its effectiveness in the community. You don't think that it's free because you're taking a lot of things with you willingly.” (CL patient-F-Ketetiya)*

### **Sub-theme: Sociocultural influence**

The study found that sociocultural influence, such as custom, referral, testimony, and belief in the traditional healer's expertise, play a role in the preference for traditional treatments for cutaneous leishmaniasis. These codes shed light on the sociocultural aspects that shape individuals' preferences for traditional treatments in managing cutaneous leishmaniasis.

#### ***Custom***

Custom indicates ingrained cultural beliefs that influence individuals' treatment decisions since they are accustomed to them. It was observed that certain disease conditions are believed to be solely treatable by traditional treatments due to their adherence to traditional beliefs and

practices passed down through generations. A direct quote from a traditional healer is presented as follows:

*"Well, they choose the traditional one because there is an outlook in the past that it (CL) is cured by traditional medicine. This is their view that this can be cured by traditional; they believe hemorrhoid and cutaneous leishmaniasis can be cured only by traditional, but it can't be cured by modern." (TH-M-BerbereWenz)*

### ***Referral from Community***

The code "Referral" highlights the influence of social networks and interpersonal relationships on treatment preferences. Participants reported that their family members, neighbors, and community members had recommended traditional treatments for cutaneous leishmaniasis. These referrals carry weight as they come from trusted sources within their social circles, leading them to choose traditional treatments based on these recommendations.

*"In this area, all of them told me to go to Ergoye (a place) without first going to a doctor; when they told me that there is medicine at Ergoye, I just went, was treated, and came back. Now I am applying the medicine he gave me." (CL patient-F-Ketetiya)*

### ***Testimony from former patients***

Testimony refers to the influence of positive testimonials from former cutaneous leishmaniasis patients who have successfully completed traditional treatment. Participants reported hearing stories or receiving information about people who had been cured by traditional treatment, which instilled confidence and hope in the effectiveness of traditional medicines. The positive outcomes experienced by former CL patients also influenced participants' decisions to seek traditional treatment for their own condition.

*"People who were healed first are the ones who explained to me; these are those who got sick first and got healed. They said I did not see what kind of leaf the medicine is, but I am healed, so go there; don't spread your disease. Then I went; that traditional treatment healed me." (CL patient-F-Ketetiya)*

### ***Belief in the traditional healer's expertise***

Another significant element influencing the preference for traditional medicines is the belief in the expertise of traditional healers. As participants stated, traditional healers are highly respected and often believed to have specialized skills in treating various ailments, including cutaneous leishmaniasis, which made them a primary choice for the community members in that area in finding a cure for CL. It was observed that individuals place their trust in these healers due to their reputation within the community, personal experiences, or cultural beliefs surrounding traditional healing practices. A former CL patient stated

*"They believe that he (the traditional healer) recognizes cutaneous leishmaniasis quickly. They think that he doesn't order medicine because he thinks that this could be it by guessing; just as you approach, he knows... They think like that; they have a belief that since he knows it early, we have a chance of recovering quickly." (CL patient-F-Ketetiya)*

## **6. Discussion**

This study explored the practice of cutaneous leishmaniasis (CL) treatment within the Kallu District, Ethiopia. The findings revealed the use of traditional medicine, the various sources from which traditional medicines are derived, and the reasons behind the preference for traditional medicine over modern healthcare.

In this study, we found that the communities of Kallu district rely heavily on traditional medicine for the treatment of cutaneous leishmaniasis. Participants initially turn to local treatment options as their first choice when seeking a cure. Other studies also show that the majority of participants first try traditional treatment options before they visit modern healthcare facilities (11,16,30). This indicates a strong cultural inclination towards traditional healing practices within the community.

Modern healthcare was the last resort for most participants when all other treatment options failed and the condition worsened. This finding is in line with other studies in Ethiopia and abroad that reported a higher preference for traditional treatment in the treatment of CL, making them opt for traditional treatment first and resort to modern treatments when traditional medicines fail (11,35). The participants mentioned three main types of local treatment options: home remedies, traditional healers, and religious healing practices.

Participants stated that traditional healers were their primary choice for treatment, indicating their trust and belief in the healing abilities of these practitioners. Community members seeking treatment for cutaneous leishmaniasis frequently visit traditional healers, who possess valuable knowledge and experience in treating various ailments. Previous reports also support this finding (31,36,37).

Additionally, participants relied on home remedies as their first resort for care, highlighting the influence of self-care practices and the use of readily available resources within the community. This supports other findings in Morocco and Peru, which reported the self-treatment of CL by the patients (22,30). Furthermore, religious healing practices were mentioned as an additional option when previous treatments failed to provide the desired outcome. This suggests a multifaceted approach to healing, combining traditional beliefs and spiritual practices.

The commonly used traditional treatments for cutaneous leishmaniasis in the study area are plant sources, animal sources, religious healing practices, and hot metals. Plant sources were the most common, with participants mentioning the use of different plant parts, of which leaves are the most commonly used. This finding was in line with other studies conducted in Ethiopia and abroad in which herbal treatments are commonly used (23,30,36).

Religious beliefs play a significant role in sourcing traditional medicines, as certain rituals and practices are believed to possess curative effects. Participants have stated the use of faith-based healing practices involving a religious healer performing certain rituals, prayers or the use of holy water and *Emnet* in the treatment of CL. A study conducted in the Tigray region also reported the use of holy water in the treatment of CL (23).

In addition, local heat application was mentioned as a treatment option, which demonstrates the diverse range of traditional treatments employed by the community, often based on local customs and practices, and is also supported by other studies (22,36).

The reasons for using traditional medicine for cutaneous leishmaniasis are complex and multifaceted. The participants cited multiple reasons for choosing traditional medicine over modern healthcare options, including accessibility, duration of modern healthcare treatment, personal factors, economic reasons, and sociocultural influence.

Accessibility was one of the factors reported by the study participants. The local availability of traditional medicines, coupled with the unavailability of medicines when visiting modern healthcare centers, made the patients resort to traditional treatment options. In addition to this, the health centers providing treatment for CL are not accessible to the local community. Traditional medicine is often more accessible to the community geographically. This finding is consistent with a study conducted in Bolivia, which reported the long distance individuals have to travel to find a cure (11). The other factor is the long duration of treatment in modern healthcare, which made CL patients turn to traditional treatment. This finding is inconsistent with a study in Northwest Ethiopia that indicated a preference for modern treatment due to its short duration of treatment (37).

Lack of awareness about modern treatment options is the other cause. This lack of knowledge may stem from limited access to healthcare information. Consequently, individuals may turn to traditional medicines as a readily available and familiar option.

The other reason people use traditional medicine is that many people in the study area have a strong belief in the effectiveness of traditional medicine. This may be because they have had personal or family experiences with traditional medicine that have successfully treated cutaneous leishmaniasis or because of their belief in the traditional healer's ability to treat this condition. This finding is also supported by other studies conducted in Ethiopia (19,29,31).

Economic reasons, encompassing the income of individuals and the cost of modern healthcare, influenced the participants' decision to opt for traditional medicine, which is often more affordable. Traditional healers are often found in rural communities, and their services are typically less expensive than those of modern healthcare providers. People are reluctant to seek modern healthcare due to concerns about the cost of treatment since traditional medicine is often more affordable than modern healthcare. This is especially important for people living in poverty who may not be able to afford the cost of modern treatment. Participants have mentioned that modern healthcare usually requires a higher payment compared to the traditional one, which is usually free of charge or a small payment given to the traditional healer as a gift. There are also associated costs like transport and accommodation costs since the treatment takes a longer period of time and the health facilities that provide the treatment are located far from the community. This finding is also supported by other study reports from Ethiopia and abroad (11,19).

Sociocultural factors, such as adherence to customs and traditions and recommendations from community members, further contributed to the preference for traditional treatment options over modern healthcare. The study found that interpersonal interactions significantly influence people's preferences for healthcare options. Individuals were more likely to choose either local treatment or modern healthcare based on the information they got from their social networks. Traditional medicine is deeply rooted in the culture and traditions of many communities. People use traditional medicine for cutaneous leishmaniasis because it is what they are familiar with and what they trust. Additionally, personal or others' positive or negative treatment experiences can greatly contribute to the preference for different treatment options. This finding is also consistent

with a study in Bolivia that reported the adverse reaction of modern treatment to a family member as a reason to opt for traditional medicine (11) and a study in Addis Ababa that indicated dissatisfaction with modern treatment and past positive experience with a traditional healer as a reason for traditional treatment's preference (29).

## **7. Strengths and limitations**

### **Strengths**

- Triangulation of different data collection techniques, including in-depth interviews and key informant interviews supported by participatory observations, allowing for the exploration of a wide range of ideas related to the use of traditional medicines for CL, including the types of treatments used, the methods of preparation and application of medicines, and the reasons for choosing traditional medicine.
- This study included different groups of study participants, including former and current CL patients, traditional healers, and community leaders, which helps to give more representative information.

### **Limitations**

- The limitations of the study are that responses might be influenced by social desirability bias because the data was collected through face-to-face interviews. To minimize this, the researcher tried to create a friendly environment at the start of each interview and the interviews took place in a private area.
- The study's findings are based on the self-reported experiences of participants and may be subject to recall bias. To reduce this bias, open-ended questions with probing were used to clarify and elicit more detailed information.

## **8. Conclusions**

This research has provided important insights into the practice of traditional treatment and the source of treatment for cutaneous leishmaniasis in the Kallu District. Local treatment options are usually the primary option in the treatment of cutaneous leishmaniasis, with modern healthcare options being sought when the disease worsens and can't be healed.

The findings revealed a strong reliance on traditional medicine for the treatment of CL, with participants reporting a variety of sources and types of traditional treatments used. Findings from the study show that traditional medicines are derived primarily from plants, animals, religious beliefs, and hot metals. These treatments involve topical application of medicines either by smearing or tying up on the wound site either alone or in combination.

The widespread use of traditional healers, home remedies, and religious healing practices for the treatment of CL highlights the need for greater integration of these local treatment options into the formal healthcare system.

The findings of the research indicated that a variety of personal and environmental factors influence the decision to choose a particular treatment alternative. Accessibility, lack of awareness, perceived effectiveness, and financial reasons are major contributing factors for seeking care from local/traditional treatment options. This indicates the need for a multi-faceted approach to the management of CL. This study additionally found that discussions and interactions within social circles, including family, friends, former patients, and community members, play an important role in people's healthcare decisions; showing the need to engage these actors to promote early case detection and treatment.

## **9. Recommendations**

Based on the findings of this study, the following recommendations are proposed:

### **Policymakers**

- **Enhance accessibility:** Develop strategies to improve the accessibility of healthcare facilities providing modern treatments for CL to reach remote areas and ensure that patients can easily access treatment without the need for extensive travel and accommodation expenses.
- **Collaborate with traditional healers:** Engage in open dialogue and collaboration with traditional healers to provide them with accurate information about modern treatment options. This can help bridge the gap between traditional and modern healthcare systems, ensuring that patients receive comprehensive and evidence-based care.
- **Improve affordability:** Explore options to reduce the financial burden associated with modern healthcare treatments for CL patients. This may include strengthening community-based health insurance coverage to make treatment costs more affordable.

### **Health care providers**

- **Increase awareness about modern treatment options:** create awareness at the community level about the availability, benefits, and effectiveness of modern healthcare treatments for CL.
- **Promote early diagnosis and treatment:** Educate communities about the importance of early diagnosis and treatment to reduce the severity of the disease and how they can access modern treatment services.

### **Traditional healers**

- We recommend traditional healers to work closely with modern healthcare facilities in their locality to provide holistic and integrated healthcare to their communities.

**Researchers**

- We recommend further research on the safety and effectiveness of traditional medicines for the treatment of cutaneous leishmaniasis. By conducting research on the safety and effectiveness of traditional medicines, healthcare providers and policymakers can make informed decisions about whether to recommend these treatments to patients.

**Community members**

- We recommend active involvement of local community members, such as family members, former patients, and community leaders, to promote the acceptance and adoption of modern healthcare interventions. Their support and endorsement can positively influence the decisions and beliefs of patients regarding treatment choices.

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## **Annexes**

### **Annex 1: Information sheet**

Greetings! My name is Massame Tadesse, and I'm masters of public health student at Addis Ababa University. I am here to interview you for a study I am conducting on Exploring practice of traditional medicine use for cutaneous leishmaniasis in Kallu district for the partial fulfillment of my master's degree. You are selected to participate in this study because you have relevant information related to the study purpose. Before you decide whether to participate or not in this study, I would like to explain to you the objective of the study, any risks, benefits, procedure and what is expected from you.

**Objective of the study:** the study will explore traditional medicine use and resources for treatment of cutaneous leishmaniasis among the communities of Kallu district.

**Procedure:** The study involves a face-to-face interview with the principal investigator who will ask you a set of open ended questions. During the interview your responses will be audio recorded and written on notebook as well. The interview will last approximately 40-50 minutes.

**Benefit:** There will be no direct benefit you get; however, the information you provide will have great importance to conduct this research and the results of the study will be disseminated to concerned bodies working on this area to take action on the gaps identified

**Risk:** There is no risk or harm for participating in the study apart from your time (Average of 40 minutes) that will be consumed to answer the questions.

**Rights of participants:** The interview is voluntary and your participation/ nonparticipation, or refusal to answer questions will have no effect now or in the future on services that you or any member of your family may receive from health facilities. You are also free to withdraw from the study at any time if you feel like you cannot proceed. You can ask any question which is not clear for you.

**Confidentiality:** This interview will take place in private. The information you provide will be kept strictly confidential, and the data will be used only for the purposes of this study. Your name will not be mentioned and all of your information will be numbered. Your responses to any

of the questions will not be shared with anyone else, and no study reports will ever identify you. If the report of results is published, only information about the entire group will be presented.

**Whom to Contact:** If you need any further information or explanation regarding this study, you can have this address to contact.

Name: Massame Tadesse                      Phone: 0924324688

**Annex 2: Consent form**

<b>Statement</b>	<b>Please initial or thumbprint* each box</b>
I confirm that I have read the information sheet for the above-named study <u>OR</u> I have had the information explained to by study personnel in a language that I understand.	
I have had the opportunity to consider the information, ask questions, and have these answered satisfactorily.	
I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my access to healthcare or legal rights being affected.	
I understand that relevant sections of my personal information and data collected during the study may be looked at by authorized individuals from the research team. I give permission for these individuals to have access to my records.	
I understand that data about/from me/the participant may be shared via a public data repository or by sharing directly with other researchers to support other research in the future and that I will not be identifiable from this information.	
I consent to photographs being taken and used for the research assessments	
<p><u>OPTIONAL</u></p> <p>I hereby confirm that I give consent for the photographs to be taken of me. I understand the material has educational value. I consent to the material being shown to the appropriate professional staff and used in educational publications, journals, textbooks, and used in any other form or medium including all forms of electronic publication or distribution anywhere in the world. As a result, I understand that the material may be seen by the general public. All or part of the material may be used in conjunction with other photographs, drawings, videotape images, sound recordings, or other forms of illustration. Efforts will be made to conceal my identity, but full confidentiality is not</p>	

guaranteed.	
I agree to take part in the above-named study	

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Name of participant

Signature of participant

Date

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Name of impartial witness\*

Signature of impartial witness\*

Date

I attest that I have explained the study information accurately in Amharic and was understood to the best of my knowledge by the participant and that he/she has freely given his/her consent to participate in the presence of the above-named impartial witness (where applicable)

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Name of the person  
obtaining consent

Signature of a person  
obtaining consent

Date

[\*Only required if the participant is unable to read or write.]

### Annex 3: Study tools

#### Annex 3a: Topic guide for In-depth interview with cutaneous leishmaniasis patients

To better understand participant's experiences of cutaneous leishmaniasis and associated traditional healing practices, in-depth personal interviews with adult former and current CL patients will follow a semi-structured interview format. The purpose of this study is to explore traditional medicine use and resources for treatment of cutaneous leishmaniasis in Kallu district, South Wollo, Ethiopia. You are chosen for this study because you are one of resource full person in this regard as you have been affected by CL. I appreciate your participation.

#### Setting/Context

Interview type	
Place of the interview	
Date of the interview conducted	
Interview leader	
Interview note taker	
Duration of the interview	
Transcriber	

*Note: Encourage participants to tell the story in their own way and in their own words. At start of interview, collect basic demographic information.*

ID:	Education level:	Cluster:
Age:	Marital status:	Kebele:
Sex:	Occupation:	

- 1. What are some skin diseases that are common in this area?**
- 2. Could you please tell me about the time you first noticed symptoms of cutaneous leishmaniasis?**

*Probe: What did you feel first when you noticed the symptoms? (Fear, concerned...)*

*How did you come to know it was cutaneous leishmaniasis?*

*When did you know it was cutaneous leishmaniasis (at what stage)?*

- 3. What did you do when you knew you had cutaneous leishmaniasis?**

*Probe: Where did you get information about treatment of cutaneous leishmaniasis?*

*Who was there to help you get treatment?*

*Please explain what types of treatment you tried (what did you try first, then what?)*

- *Where and how did you get it? Who helped you in the process?*

- Which treatment option did you tried (Traditional medicine, Prayer/Dua, holy water, Modern health care, etc.)?

**4. Please tell me about your visit to a traditional healer.**

*Probe: Who told you to visit the traditional healer?*

- Friends, household member, former patient

*Probe: What are the reasons for choosing traditional healer over the modern ones?*

- Economic reason, accessibility, availability of services, affordability, efficacy, cultural reason, peer/HH members' influence?
  - What did you hear about the traditional healer before you go to him/ her?
- Probe for competency, knowledge, experience
  - What did the traditional healer do to you first when you meet? What did he/she say?
  - How did you feel first when you meet the traditional healer? Why?
- How did the traditional healer diagnose your problem? (Probe by observation, instrument, and application of substance...)
- What treatments were you given? (Probe on the procedures for each type of medicine?)
- What do you know about the medicine (s) he/she uses? Is it herb, a mineral or anything else?
- How frequent are you instructed to apply the medicines and for how long?
- What things are you advised to do during treatment with traditional medicine to promote healing?
- What are prohibited to do during treatment with traditional medicine?
  - Probe for daily productive activities, social interaction, sexual activities, schooling and why?
- What was the treatment outcome? How long did it take to recover from cutaneous leishmaniasis with this treatment?

**5. What would you consider amazing experience after using traditional medicine? (Probe what went right/ wrong, side effect)**

*Probe: Would you recommend traditional healer for others? Why?*

**6. How did you pay for the traditional healer? In what forms did you paid?**

*Probe: In cash or in Kind? From where did you get the money that you paid? (Probe for borrowing, selling assets, from friends)*

*Probe: How is the cost of the traditional healer? Your opinion on whether it is costly or cheap, please?*

**7. What other challenges did you face with traditional treatment of cutaneous leishmaniasis?**

8. **Tell me your experience of visiting healthcare centers or hospitals for this condition if you have?**

*Probe: about the availability of services, waiting time, attitudes of care providers, transportation related problems, cost of treatment? How they cope in paying this cost?*

9. **Please tell me anything you considered important but not raised in this discussion (if you want to add anything).**

**Thank you very much for your time!**

### Annex 3b: Topic guide for Key-informant interview with traditional healers

Good morning/afternoon. My name is Massame Tadesse. I am MPH student of HP&HE in Addis Ababa University and I am conducting study on exploring practice of traditional medicine use and sources for cutaneous leishmaniasis. One of the objectives of the study is to explore sources and types of traditional medicine for cutaneous leishmaniasis in Kallu district. So, I am here to discuss about your experience on traditional healing practice for cutaneous leishmaniasis.

#### Setting/Context

Interview type	
Place of the interview	
Date of the interview conducted	
Interview leader	
Interview note taker	
Duration of the interview	
Transcriber	

*Note: Encourage participants to tell the story in their own way and in their own words. At start of interview, collect basic demographic information.*

ID:	Religion:
Village:	Educational status:
Age:	Other occupation (If any):
Sex:	Years of practice (traditional medicine):

#### 1. Please tell me how you become a traditional healer?

*Probe:* How did you acquire your knowledge about traditional medicine?

#### 2. What health problems can you treat with the use of traditional medicine?

#### 3. I heard you treat cutaneous leishmaniasis; please tell me about cutaneous leishmaniasis itself? – causes, symptoms, transmission, its effects

#### 4. How did you acquire your knowledge about traditional medicine for cutaneous leishmaniasis?

*Probe* where do you learn to treat cutaneous leishmaniasis? From whom?

*Tell me if there is any way you would know when there is new traditional medicine?*

#### 5. What is your experience with cutaneous leishmaniasis in your work as a healer?

*Probe* How do you diagnose cutaneous leishmaniasis?

*How do you treat cutaneous leishmaniasis?*

#### 6. What kind of treatment would you give to cutaneous leishmaniasis patients?

***Probe** How do you choose which medication to administer? (The names and how they are used roots, leaves etc.)*

*How do you get these medicines (probe market, farm...?)*

*Commonly, how long does the treatment take (does it need repeated visit)?*

**7. How do you follow-up on your patients' progress?**

**8. What do you do if your medicine didn't help a person with cutaneous leishmaniasis?**

***Probe** for repeated visits, referral to other traditional healer or formal health care*

**9. What type of instruction would you provide to patients who received treatment with regard to precautions that they follow (**Probe** for "shadow" " don't touch soil")**

**10. How is the outcome of the treatment they received?**

**11. What do people in general prefer for the treatment cutaneous leishmaniasis and why?  
Traditional or modern care**

**12. What do people pay for the treatment that they receive from you?**

***Probe** In what form do they pay? In cash or in Kind? Like what?*

**13. How is your relationship with the healthcare facilities in your area?**

***Probe:** Do you refer your patients for treatment?*

*What can be improved in the collaboration between you and the healthcare facilities?*

**14. Please tell me anything you considered important but not raised in this discussion (if you want to add anything).**

**Thank you very much for your time!**

## Annex 3c: Topic guide for key informant interview with community leaders

### Setting/Context

Interview type	
Place of the interview	
Date of the interview conducted	
Interview leader	
Interview note taker	
Duration of the interview	
Transcriber	

#### 1. What are common skin conditions in this area

*Probe: What do you know about cutaneous leishmaniasis?*

*(Its cause, transmission, treatment)?*

*How can one recognize this disease? (Probe for symptoms)*

#### 2. How does someone who is affected by cutaneous leishmaniasis get treatment in your village?

*Probe: Where do they go to seek treatment first (probe whom they consult, what do they try as a treatment)?*

#### 3. What do you know about the treatment of cutaneous leishmaniasis?

*Probe: What kind of treatment options exist for treating cutaneous leishmaniasis in this area?*

*Where is it found?*

*What are the traditional treatments that can be used for cutaneous leishmaniasis?*

*What are treatments found at health centers for cutaneous leishmaniasis?*

#### 4. How much does it cost to get treatment? (Probe for modalities of paying, in cash or kind (what are these)?)

#### 5. What are reasons for visiting traditional healers in this area? (Probe for economical reason, social acceptability, and perception about its effectiveness...)

#### 6. Please tell me anything you considered important but not raised in this discussion (if you want to add anything).

**Thank you very much for your time!**

### Annex 3d: Observation checklist for looking at traditional healers healing practices

Please comment, explore and document the situation and context for each item,

Date of observation: ____/____/_____ Name of observer: _____ Place of observation: _____	<b>Comment, explore, document the situation and context</b>
<b>General observation</b>	
Situation at the main gate? Entry?	
Is there adequate cross ventilation across waiting area?	
Is there a place for registration?	
Is the waiting area adequately covered to prevent rain and sun?	
<b>Observation in the treatment area</b>	
Patterns of patient to healer communication/interaction	
Is there adequate cross ventilation across the treatment area?	
Is there adequate light to illuminate the treatment room?	
Presence and type of equipment for diagnosis and treatment	
Is there a method that traditional healer use to diagnose diseases?	
Is there a specific procedure that the traditional healer follows for medicine identification and dosage?	

Is there any spiritual or ritual practices involved in the traditional healing process	
Does the duration and application of medications differ for each individual or is it similar?	
Are there instructions on what to do and what not to do during the course of the treatment? (daily activities of the patient, diet restriction, social activities)	
Is there a cash or in-kind payment for the service?	
Do they give appointment for patients for follow up?	



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**Annex 5: Amharic version of consent form**

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