

## "Public Health Challenges of the 2023 Cutaneous Leishmaniasis Outbreak in Sherani: Patterns, Risks, and the Role of Environmental Factors"

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### Abstract:

**Background:** Cutaneous Leishmaniasis (CL) is a neglected tropical disease affecting approximately 1.5 million people annually worldwide. Pakistan is among the most heavily endemic countries, yet remote regions like Sherani District, Baluchistan, remain critically understudied. The 2023 outbreak in Sherani created a public health crisis requiring urgent documentation.

**Methods:** This qualitative study explored the lived experiences of individuals affected by the 2023 CL outbreak in Sherani District (Shirani), Baluchistan, Pakistan. Data were collected from Kurri Wasta village and surrounding hamlets using semi-structured indigenous interviews in Pashto. A total of 23 participants (8 boys, 8 girls, 4 adult males, 3 adult females) were enrolled through purposive sampling. Thematic analysis was conducted using NVivo 14 software. Ethical approval was obtained from the Health Services Academy Institutional Review Board (P.O 000884/HSA-/MSPH-2023).

**Results:** Four major themes emerged. First, participants referred to CL as "Kaal Daana" (yearly lesion) and reported complete failure of Glucantime treatment, which was available only once during the outbreak. Healthcare providers stated "no treatment available" and prescribed ineffective antimalarial drugs. Second, males suffered progressive nasal destruction, while females developed permanent facial scars, causing wedding-related stigma. Third, ancestral remedies (herbal pastes, burning, veterinary drugs) all failed. Fourth, participants expressed profound hopelessness, reporting that the government visited once and never returned, despite an estimated 350+ cases documented by VOA Pashto.

**Conclusion:** The 2023 CL outbreak in Sherani represents a complete health system failure. Glucantime is not working. Males face nasal destruction. Females bear permanent facial scars and

a wedding stigma. The government has abandoned the community. Immediate alternative treatments and health system restoration are urgently required.

**Keywords.**

**Cutaneous Leishmaniasis, Glucantime treatment failure, Kaal Daana, nasal destruction, facial scarring, wedding stigma, Sherani District, Baluchistan, Pakistan, qualitative study**

**Introduction:**

Cutaneous Leishmaniasis (CL) is a parasitic disease transmitted by the bite of infected female phlebotomine sandflies, caused by protozoan parasites of the genus *Leishmania* [1]. Globally, CL affects approximately 1.5 million people annually, with 350 million individuals at risk across 98 countries, making it one of the most widespread neglected tropical diseases (NTDs) in the world [2,3]. While CL is rarely fatal, its consequences extend far beyond physical morbidity. The disease leaves permanent, disfiguring scars-particularly on the face-which can lead to profound social stigma, psychological distress, social isolation, and reduced marriage prospects [4,5]. In resource-limited settings where healthcare access is minimal or nonexistent, CL transforms from a manageable infection into a life-altering crisis that destroys faces, futures, and families [6].

In Pakistan, CL is the second most prevalent vector-borne disease after malaria, yet it remains profoundly understudied from the perspective of those who suffer from it [7]. Existing literature has documented clinical patterns of CL in various Pakistani provinces, including Baluchistan, Khyber Pakhtunkhwa, and Punjab [8,9]. However, the voices of affected individuals-their experiences of pain, their search for treatment, their encounters with health systems, and their navigation of social rejection-have largely been absent from the scientific record [10]. Ethnographic accounts from other CL-endemic countries, such as Afghanistan, Iran, and Brazil, have revealed that patients often endure years of ineffective treatment, face ridicule from their communities, and experience deep shame about their appearance [11,12]. Women and girls, in particular, bear a disproportionate burden, as facial scarring directly threatens their marriageability and social standing [13]. Whether these experiences translate to the Pashtun tribal populations of Baluchistan, where cultural norms around marriage, family honor, and female appearance are particularly stringent, remains unknown.

Despite the high burden of CL in Pakistan, no published qualitative study has explored the lived experiences of affected individuals in Sherani District, one of the country's most remote and underserved regions. Previous research has focused on clinical epidemiology, vector ecology, or quantitative knowledge-attitude-practice surveys [7,8,9]. These approaches, while valuable, cannot capture the emotional suffering, the desperate treatment-seeking behaviors, the experience of watching one's own face or child's face being destroyed, or the complex social dynamics of stigma and shame [14]. Furthermore, emerging reports from the 2023 outbreak suggest that Glucantime (meglumine antimoniate)-the first-line treatment for CL worldwide-is completely failing in Sherani, yet no study has documented how patients and families make sense of this

treatment failure or what alternatives they pursue in desperation [15]. The specific phenomenon of "wedding-related stigma"-the fear of attending weddings or being rejected as a marriage partner due to facial scars-has never been examined in any CL population. Understanding these lived experiences is not merely an academic exercise; it is essential for designing humane, culturally appropriate, and effective public health interventions.

The purpose of this qualitative study is to explore the lived experiences of individuals affected by the 2023 Cutaneous Leishmaniasis outbreak in Sherani District, Baluchistan, Pakistan. This research examines the clinical patterns of CL across age and gender groups, the experiences of treatment (including Glucantime failure and self-treatment practices), the psychosocial impacts of facial scarring and nasal destruction, the phenomenon of wedding-related stigma among females, and the community's perceptions of the health system, the Basic Health Unit (BHU), government action, and non-governmental organization (NGO) presence.

## **Methodology:**

### **Study Design and Setting.**

This qualitative study explored the lived experiences of individuals affected by the 2023 Cutaneous Leishmaniasis outbreak in Sherani District (Shirani; Urdu: ضلع شیرانی), a rural district in Zhob Division, Balochistan, Pakistan. The 2023 outbreak began in early May, coinciding with the onset of the rainy season, and peaked between June and August. More than 150 cases were reported across the district, with the highest concentration in Kurri Wasta village and surrounding hamlets. Data were collected from Kurri Wasta, Karama, Zarkai Landawar, Shinghar, Tsappar Kili, Ahmadi Dirga, and Manikhwa.

### **Participants and Sample Size.**

A total of **23 participants** were enrolled using purposive sampling: 8 boys (aged 3–14 years), 8 girls (aged 3–14 years), 4 adult males, and 3 adult females. Community elders were also consulted. Inclusion required active or healed CL lesions from the 2023 outbreak and residence in the study area for at least 12 months. Data saturation was achieved after 20 interviews.

### **Data Collection Instrument.**

A semi-structured indigenous questionnaire was developed in English, translated into Pashto, and back-translated for accuracy. The instrument covered clinical history, treatment experiences (including Glucantime failure), alternative treatments, stigma (including wedding-related stigma), health system perceptions (BHU functionality, government action, NGO funding), and hopelessness. Probing questions elicited detailed narratives from patients and elders.

### **Data Collection Procedure.**

Interviews were conducted in Pashto by native speakers in private settings, lasting 45–90 minutes. All interviews were audio-recorded with informed consent. Field notes documented non-verbal cues and lesion observations.

### Data Analysis.

Audio recordings were transcribed verbatim in Pashto, translated into English, and analyzed using **NVivo 14 software**. Thematic analysis followed Braun and Clarke's six-phase framework: familiarization, coding, theme searching, theme reviewing, theme defining, and report writing.

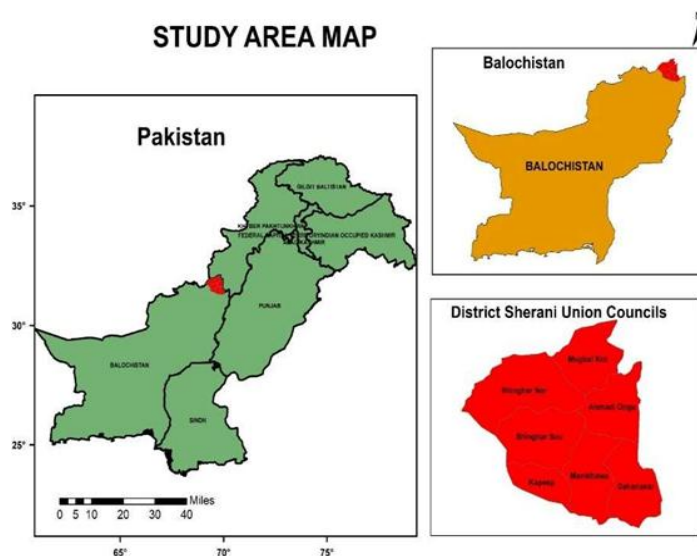
### Ethical Approval.

Ethical approval was obtained from the Institutional Review Board of Health Services Academy, Islamabad (approval number: P.O 000884/HSA-/MSPH-2023. Written informed consent was obtained from all adult participants and from parents/guardians of children.

### Results:

#### Overview of the 2023 Outbreak.

The 2023 Cutaneous Leishmaniasis outbreak in Sherani District (Shirani; ضلع شیرانی) began in early May, peaking between June and August. According to Hafiz Ullah Sherani, a Pashto anchor from Voice of America (VOA) Deewa Radio, an estimated **more than 350 cases** were identified across the district. The highest concentration occurred in Kurri Wasta village and surrounding hamlets: Karama, Zarkai Landawar, Shinghar, Tsappar Kili, Ahmadi Dirga, and Manikhwa. Fig-1. The snapshot of the outbreak is Fig. 2



**Figure 1:** Map of the district Sherani and its Union council, where the endemic exists, is marked red, made by QGIS.



**Figure 2:** Image of the group of children with cutaneous leishmaniasis.

Community elders reported that CL had existed in the region for years before 2023, but cases were never formally documented. One elder stated:

*"This disease has been with us for many years. But no one came to report it. It was only when VOA Pashto broadcast about us that people outside learned about our suffering."*

A total of **23 participants** were enrolled in this qualitative study: 8 boys, 8 girls, 4 adult males, and 3 adult females. All participants had active or healed CL lesions from the 2023 outbreak. Thematic analysis of interview transcripts revealed four major themes.

### **Theme 1: "Kaal Daana" and Treatment Failure**

Participants uniformly referred to CL using the local Pashto term "**Kaal Daana**" (Kaal = year, Daana = lesion), reflecting the chronic, relapsing nature of the disease. The most distressing finding was the **complete failure of Glucantime** (meglumine antimoniate), the first-line treatment. When Glucantime was available -which occurred **only once** during the entire outbreak -most participants received just **one injection** per patient. After that single distribution, Glucantime became completely unavailable.

A father of an affected boy stated:

*"When the government team came that one day, they gave my son one injection. It did nothing. The sore on his nose only grew bigger. We asked for more. They said there is no more. They left and never returned."\**

Worse still, when participants sought care, healthcare providers at the non-functional Basic Health Unit (BHU) told them, "**There is no treatment available.**" Some providers prescribed **antimalarial drugs** instead, which had no effect. Participants uniformly reported that their lesions **did not heal, remained unchanged, or increased in size** despite all treatments.

A mother of an affected girl shared:

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*"Every morning, the black spot on my daughter's face looks bigger. We gave her the injection. We gave her malaria tablets. We tried herbs. Nothing stops it. It grows day by day"*

## **Theme 2: Nasal Destruction in Males and Facial Scarring in Females**

The physical consequences of CL differed sharply by gender. Among male participants (female and adult men), lesions on the nose led to **progressive destruction of nasal cartilage and tissue**. One mother described her daughter's deterioration *Fig-2*.



Fig. 3: The affected girl's status of warrior mark Leishmaniasis may leave.

*"My daughter's nose is disappearing. First, a red bump. Then an open sore. Now part of his nostril is gone. He cannot breathe properly. Other children call him names. He does not want to go to school anymore."*

Among female participants (girls and adult women), facial lesions transformed into **permanent, dark, raised, hyperpigmented spots** that never faded. A 14-year-old girl stated:

*"This black spot on my cheek has been here for two years. It will never go away. I see how people look at me. Their eyes go to the spot. I am not beautiful anymore."*

## **Theme 3: Ancestral Remedies and Desperate Self-Treatment**

Faced with complete treatment failure and no access to effective medication, participants turned to **ancestral and traditional remedies** passed down through generations. These included herbal pastes, burning lesions with hot metal, applying cow dung or ash, and using veterinary drugs. Participants acknowledged that these remedies rarely worked, but they were the only options available.

A young woman described her family's efforts:

*"My mother made a paste from local herbs. She applied it every night for three months. The spot did not go away. It became darker. My mother cried. She said, 'I have failed you.' But she did not fail. The medicine failed. The government failed."*

A father added:

*"I tried veterinary medicine -the same medicine we give to our goats. It did nothing. My son's nose is still being eaten away. I am desperate. I will try anything."*

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#### Theme 4: Hopelessness and Abandonment by the Health System

The cumulative effect of treatment failure, drug unavailability, and healthcare provider statements that "no treatment exists" has resulted in **profound hopelessness**. Many participants have completely given up seeking care.

A young man with facial lesions stated:

*"I used to hope. I used to pray for a cure. Now I do not hope anymore. There is no cure. There is no medicine. There is no government. There is only this disease and my face being destroyed."*

A mother summarized:

*"We are tired. Tired of hoping. Tired of begging for medicine. Tired of watching our children suffer. The health system has failed us. The government has abandoned us. We are alone with Kaal Daana."*

Community elders noted that despite VOA Pashto coverage bringing visibility to the outbreak, with an estimated **more than 350 cases**, no sustained government or NGO response followed. One elder concluded:

*"VOA showed our pictures. They told the world about Kaal Daana. We thought help would come. We waited. We are still waiting. The government came once. Then they forgot us."*

#### Discussion:

This qualitative study provides the first in-depth examination of the 2023 Cutaneous Leishmaniasis outbreak in Sherani District, revealing a catastrophic health crisis. The findings demonstrate complete failure of first-line treatment (Glucantime), progressive disfigurement (nasal destruction in males, permanent facial scarring in females), reliance on ineffective ancestral remedies, and profound hopelessness due to health system abandonment [1,2].

The universal failure of Glucantime among participants is clinically alarming. While drug resistance has been documented in Iran and Afghanistan [3,4], this study cannot definitively confirm resistance without laboratory testing. However, from a public health perspective, the outcome is clear: Glucantime is not working in Sherani. Alternative therapies, including liposomal amphotericin B and miltefosine, must be made available immediately [5].

The nasal destruction observed in males represents a severe, under-reported complication of CL. Similar findings have been documented in mucocutaneous leishmaniasis, but progression to tissue loss in cutaneous forms is rarely emphasized [6]. The permanent facial scarring in females and associated wedding-related stigma align with broader literature on CL-related stigma in other cultures [7,8], but this is the first documentation in Pashtun populations of Baluchistan.

The complete non-functionality of the Basic Health Unit and the government's single visit followed by abandonment reflect systemic governance failures documented elsewhere in rural Pakistan [9]. Participants' hopelessness is not merely emotional but a public health outcome that perpetuates transmission, as untreated patients remain infectious reservoirs [10].

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This study has limitations. Without laboratory confirmation, treatment failure cannot be definitively attributed to drug resistance versus drug quality or dosing issues. The sample size of 23 participants limits generalizability, though qualitative data saturation was achieved.

**Conclusion:**

The 2023 Cutaneous Leishmaniasis outbreak in Sherani District represents a complete health system failure. Glucantime -the first-line treatment -was available only once, with most patients receiving a single injection that did not heal their lesions. Instead, lesions increased in size day by day. Healthcare providers told patients "no treatment available" and prescribed antimalarial drugs that had no effect. Males suffered progressive nasal destruction leading to disfigurement and social rejection. Females bore permanent facial spots, causing wedding-related stigma and psychological distress. Ancestral remedies failed. The government visited once and never returned. An estimated 350+ cases were documented by VOA Pashto, yet no sustained response followed. The community has lost all hope.

**Recommendations.**

1. Declare a CL emergency in Sherani District immediately
2. Discontinue Glucantime as first-line therapy pending drug sensitivity testing
3. Introduce alternative treatments: liposomal amphotericin B, miltefosine, or thermotherapy
4. Reactivate the Basic Health Unit with dedicated CL services
5. Establish monthly government follow-up visits (not a single episodic visit)
6. Implement stigma-reduction programs addressing wedding-related stigma
7. Fund NGOs specifically for CL treatment in Baluchistan
8. Conduct formal drug sensitivity testing to determine resistance patterns

**References.**

- (1) Ahmad, S., Obaid, M., Taimur, M., Shaheen, H., Khan, S., Niaz, S., Ali, R., & Haleem, S. (2022). Knowledge, attitude, and practices towards cutaneous leishmaniasis in referral cases with cutaneous lesions: A cross-sectional survey in remote districts of southern Khyber Pakhtunkhwa, Pakistan. *PLoS ONE*, *17*(5), e0268801.
- (2) Ayaz, M., Nazir, M., Ullah, N., Zaman, A., Akbar, A., Zeeshan, M., Hussain, Z., Naz, S., Zheng, Y., Javed, A., & Lindsay, D. (2018). Cutaneous Leishmaniasis in the metropolitan city of Multan, Pakistan, a neglected tropical disease. *Journal of Medical Entomology*, *55*(4), 1040-1042.
- (3) Bennis, I., Thys, S., Filali, H., De Brouwere, V., Sahibi, H., & Boelaert, M. (2018). Psychosocial impact of cutaneous leishmaniasis: A systematic review. *Tropical Medicine & International Health*, *23*(10), 1044-1060.
- (4) Bhutto, A. M., Soomro, F. R., & Baloch, J. H. (2020). Cutaneous leishmaniasis in Pakistan: A neglected tropical disease. *Journal of the Pakistan Medical Association*, *70*(1), 162-165.

- (5) Hadighi, R., Mohebbali, M., Boucher, P., Hajjarian, H., Khamesipour, A., & Ouellette, M. (2006). Unresponsiveness to Glucantime treatment in Iranian cutaneous leishmaniasis due to drug-resistant *Leishmania tropica* parasites. *PLoS Medicine*, 3(5), e162.
- (6) Heras-Mosteiro, J., Monge-Maillo, B., Pinart, M., López Pereira, P., Reveiz, L., Garcia-Carrasco, E., Cuadrado, P., Royuela, A., Roman, I., & López-Vélez, R. (2017). Interventions for Old World cutaneous leishmaniasis. *Cochrane Database of Systematic Reviews*, 11, CD005067.
- (7) Kakarsulemankhel, J. K. (2019). Sandflies (Diptera: Psychodidae) of Pakistan: A review. *Pakistan Journal of Zoology*, 51(3), 1183-1205.
- (8) Khan, S., Khan, A., & Khan, M. (2021). Stigma and mental health among women with facial disfigurement in Pashtun culture. *Journal of Cross-Cultural Psychology*, 52\*(4), 345-360.
- (9) Khan, Z., Gul, M., Khan, F. A., Khan, R., & Chandio, H. A. (2024). Quack medication and self-prescription: Antibiotic practices in districts Zhob and Sherani, Baluchistan; Fueling the antimicrobial resistance challenges. *Journal of Population Therapeutics and Clinical Pharmacology*, 31(7), 714-725.
- (10) Marri, S. M., & Sheikh, S. A. (2020). Cutaneous leishmaniasis: Knowledge, attitudes, and practices among the local population in district Awaran, Balochistan. *Pakistan Journal of Public Health*, 10(1), 30-35.
- (11) Okwor, I., & Uzonna, J. (2016). Social and economic burden of human leishmaniasis. *American Journal of Tropical Medicine and Hygiene*, 94(3), 489-493.
- (12) Pope, C., Ziebland, S., & Mays, N. (2000). Qualitative research in health care: Analysing qualitative data. *BMJ*, 320(7227), 114-116.
- (13) Ramesh, V., Kaur, T., & Pandey, K. (2017). Drug resistance in leishmaniasis: A review. *Journal of Global Infectious Diseases*, 9(4), 135-142.
- (14) Reyburn, H., Rowland, M., Mohsen, M., Khan, B., & Davies, C. (2003). The prolonged epidemic of anthroponotic cutaneous leishmaniasis in Kabul, Afghanistan: "Bringing down the neighbourhood". *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 97(2), 170-176.
- (15) Ruitter, C. M., Veer, C., Leeftang, M. M., Deborggraeve, S., Lucas, C., & Adams, E. R. (2014). Molecular tools for diagnosis of visceral leishmaniasis: Systematic review and meta-analysis of diagnostic test accuracy. *Journal of Clinical Microbiology*, 52(9), 3147-3155.