

Research Article

Socio-economic Burden, Stigma, and Risk Factors of Podoconiosis in Mattu Woreda, South West Ethiopia: A Community-based Mixed-methods Study

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Abstract

Podoconiosis is a neglected tropical disease causing non-filarial lower-limb elephantiasis, primarily triggered by long-term barefoot exposure to volcanic red-clay soil. In Southwest Ethiopia, including Mattu Woreda, high rainfall, topography, and agricultural practices intensify community vulnerability. This study aimed to assess podoconiosis prevalence, socio-economic risk factors, disease-associated economic losses, and stigma dimensions in Mattu Woreda and Town, Ilu Aba Bor Zone. A community-based mixed-methods cross-sectional study was conducted in November 2025 among 363 households selected via multi-stage random sampling. Clinical lower-limb screenings and structured questionnaires assessed disease status, household wealth, water access, and footwear practices. Qualitative Focus Group Discussions and Key Informant Interviews explored social stigma and health-seeking barriers. Logistic regression models identified independent predictors ($p < 0.05$). Low wealth status (AOR = 2.09, 95% CI: 1.38–5.34), lack of formal education (AOR = 2.23, 95% CI: 1.18–3.82), walking over 30 minutes to a water source (AOR = 2.06, 95% CI: 1.78–7.35), and irregular/barefoot footwear habits (AOR = 3.15, 95% CI: 1.45–6.85) were significant independent risk factors. Patients suffered an average annual productivity loss of 45% (160–180 workdays) due to disability and acute adenolymphangitis (ALA), incurring individual income losses between \$63.00 and \$136.90USD annually. Furthermore, 20% to 30% of household income was spent on treatment and hygiene supplies. Only 26.8% of respondents correctly understood disease etiology, while 41.8% believed it was contagious, driving severe marital disruption (>80%), institutional exclusion, and forced urban displacement. Podoconiosis poses a catastrophic health, economic, and social burden in Mattu Woreda, operating within a severe poverty-disease trap. Addressing this burden requires expanding rural WASH infrastructure within 30 minutes of communities, integrating morbidity management kits at health posts, conducting public anti-stigma campaigns, and providing subsidized protective footwear alongside micro-finance support for affected families.

Keywords

Podoconiosis, Socio-economic Impact, Stigma, Volcanic Soil, Mattu Woreda

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1. Introduction

The global public health landscape is inextricably linked to the burden of Neglected Tropical Diseases (NTDs), particularly in resource-limited settings where socio-economic disparities exacerbate disease vulnerability [1]. Despite the global commitment to eliminate NTDs outlined in the World Health Organization (WHO) road map 2021–2030 [11], podoconiosis—a non-filarial geochemical elephantiasis caused by long-term barefoot exposure to volcanic red-clay soil in genetically susceptible individuals—presents a severe public health challenge [2, 3]. Worldwide, podoconiosis affects an estimated 4 million people across tropical Africa, Central and South America, and Southeast Asia [1]. Ethiopia bears a disproportionately high burden, with an estimated 1 million individuals affected and over 15 million people at risk due to environmental exposure [1, 3, 12].

In Southwest Ethiopia, specifically within the Ilu Aba Bor Zone and Mattu Woreda, podoconiosis is a persistent community health problem. Local empirical evidence highlights significant endemicity in the region. A community-based survey conducted in Bedele Zuria woreda reported a podoconiosis prevalence of 5.6% [4], while a study across the Ilu Aba Bor zone documented a prevalence of 5.7% [5]. Recent spatial analyses and epidemiological assessments confirm high environmental suitability across rural Ethiopian highlands, keeping millions at continuous risk [12, 16]. These findings demonstrate that approximately one in every seventeen residents in the zone is afflicted with this chronic, debilitating condition [5].

Despite its high prevalence, podoconiosis remains heavily neglected by formal health interventions compared to other communicable diseases [5]. Progress toward elimination requires integrated foot care, hygiene promotion, and shoe wear accessibility [13]. Beyond the physical deformities, acute adenolymphangitis (ALA) episodes, and progressive lower-limb swelling, the true burden of the disease is deeply rooted in its economic and social dimensions [4–6]. Studies in the region indicate that the vast majority of podoconiosis patients fall within the economically productive age group of 15–64 years [4]. The disease causes severe productivity losses; patients experience recurring inflammatory flare-ups that result in an average loss of over 25 working days per year [4]. At the national level, podoconiosis incurs an estimated annual economic loss exceeding US\$213 million, driven primarily by lost agricultural labor and individual financial strain [7]. Furthermore, lower socio-economic status, low educational attainment, and long distances from water sources are strongly associated with higher disease occurrence, creating a vicious cycle of poverty and disease [5, 8].

Equally damaging is the profound social stigma and discrimination attached to podoconiosis [5, 6, 8, 14]. Due to widespread misconceptions regarding its etiology—such as attributing the condition to hereditary curses or contagiousness—affected individuals face severe social exclusion [4, 6,

14]. Deep-rooted stigma and socio-economic marginalization frequently hinder affected individuals from seeking timely clinical care [14, 15]. Stigma manifests as exclusion from community leadership, diminished marriage prospects, isolation within families, and reduced health-seeking behavior [4, 6, 8, 14]. Female patients, in particular, face double marginalization, experiencing higher disease prevalence, less access to protective footwear, and greater social barriers to seeking modern healthcare compared to men [5, 14].

While previous local surveys in Mattu Woreda and the surrounding Ilu Aba Bor Zone have established baseline clinical prevalence and basic demographic correlates [4, 5], significant research gaps remain. Existing literature lacks a comprehensive, integrated evaluation that rigorously examines how structural economic impoverishment and social stigmatization interact to influence disease progression, self-care practices (such as foot hygiene and shoe-wearing), and healthcare utilization [13, 15]. Furthermore, localized data evaluating how stigma acts as a barrier to health-seeking behavior in Mattu Woreda remains limited [4, 5, 14].

Therefore, this study aims to fill these critical research gaps by conducting a detailed assessment of podoconiosis prevalence, specifically integrating the socio-economic and stigmatization factors in Mattu Woreda. By providing granular data on the interplay between poverty, social marginalization, and podoconiosis management, the findings will serve as an essential diagnostic tool to guide local public health authorities, community-based programs, and policymakers in developing holistic, stigma-informed preventive and rehabilitative interventions in line with national elimination targets [15, 16].

2. Materials and Methods

2.1. Study Area and Period

The study was conducted in Mattu Woreda and Mattu Town, located in the Ilu Aba Bor Zone, Oromia Regional State, Southwest Ethiopia. Mattu Town is the administrative capital of the Ilu Aba Bor Zone, situated approximately 600 kilometers southwest of Addis Ababa [1]. Target communities were selected from endemic highland zones identified as high-risk areas based on ecological suitability models for podoconiosis [12, 16]. The woreda is characterized by a tropical climate with high seasonal rainfall, dense vegetation, and topographically diverse landscapes predominantly covered with volcanic red-clay soil rich in silt and basalt elements a primary environmental risk factor for podoconiosis development [2, 3, 16].

According to local administrative records, the total population of Mattu Woreda and Town is estimated at over 150,000 residents, majority of whom rely on subsistence agriculture and coffee farming, activities that involve frequent bare-foot soil exposure [5, 8]. The data collection phase was carried out

from November 1st to November 30th, 2025, as part of community-based health assessments by Mattu University [1].

2.2. Study Design

A community-based cross-sectional study design employing a mixed-methods approach (quantitative and qualitative) was used, formulated in alignment with the WHO 2021–2030 framework for programmatic monitoring and disease elimination [11]. First, the quantitative component assessed podoconiosis prevalence, socio-economic factors, footwear practices, and healthcare-seeking behaviors [13]. Second, the qualitative component explored community perceptions, experienced stigma, structural economic burdens, and barriers to foot hygiene through Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) [14].

2.3. Population and Eligibility Criteria

Source Population: All individuals residing permanently in selected rural and semi-urban kebeles of Mattu Woreda.

Study Population: Randomly selected household members and heads within the sampled kebeles who were available during the study period.

Inclusion Criteria:

Permanent residents who have lived in the study area for at least 6 months.

Individuals aged > 15 years for direct clinical screening and questionnaire response.

Exclusion Criteria:

Individuals with lower-limb edema attributed to confirmed non-podoconiosis clinical causes (e.g., lymphatic filariasis with hydrocele/groin involvement, acute deep vein thrombosis, or overt systemic heart/renal failure).

Critically ill individuals unable to provide informed consent or undergo clinical examination.

2.4. Sample Size Determination

For the *quantitative household survey*, the sample size (n) was calculated using the single population proportion formula. Based on recent regional podoconiosis studies in the Ilu Aba Bor Zone, an expected prevalence (p) of 5.7% (0.057) was assumed [5], with a 95% confidence level ($Z\alpha^2 = 1.96$ and a 2.5% margin of error ($d = 0.025$):

$$n = \frac{\left(Z_{\left(\frac{\alpha}{2} \right)} \right)^2 \times p \times (1 - p)}{d^2} \quad (1)$$

$$n = \frac{(1.96)^2 \times 0.057 \times (1 - 0.057)}{(0.025)^2} = 330 \quad (2)$$

To account for potential non-response, missing data, or uncooperative households, a 10% non-response rate was added, yielding a final sample size of 363 households.

2.5. Sampling Technique

A multi-stage sampling technique was utilized:

Kebele Selection: Kebeles in Mattu Woreda were stratified into rural and semi-urban areas. Kebeles were selected randomly using a lottery method.

Household Selection: The total calculated sample size was allocated proportionally to the selected kebeles based on their total household counts.

Random Sampling: Household sampling frames were created using local Health Extension Worker (HEW) registers. Computer-generated random numbers were applied to select the specific households. In cases where multiple eligible individuals resided in a selected household, one was chosen randomly by lottery.

2.6. Data Collection Instruments and Procedures

Clinical Screening for Podoconiosis: Trained health professionals and Health Extension Workers conducted visual and physical lower-limb examinations of selected participants. Podoconiosis was diagnosed clinically based on bilateral, asymmetrical non-filarial lower-leg swelling starting at the foot and ascending upwards, mossy lesions, and skin hyperkeratosis, after excluding other causes of lymphoedema.

Quantitative Tool: A structured, pre-tested questionnaire translated into Afan Oromo and Amharic was administered. It covered socio-demographic indicators, economic status, shoe-wearing habits, foot hygiene, and health service utilization.

Qualitative Tools:

FGDs: Conducted with podoconiosis patients, community leaders, and local women/youth group leaders to explore stigma and social exclusion.

KIIs: Administered to Woreda Health Office NTD focal persons, clinical officers, and local Health Extension Workers.

Observational Checklist: Direct observation was conducted to evaluate current shoe quality/type, foot cleanliness, and availability of water and soap in the household.

2.7. Data Quality Assurance

The questionnaire was pre-tested on 5% of the sample size in a non-selected neighboring kebele with similar socio-demographic characteristics. Data collectors received two days of intensive training on ethical clinical screening, interview protocols, and precise measurement of lymphoedema staging. Field supervision was maintained daily to review completed questionnaires for accuracy and consistency.

2.8. Data Processing and Analysis

Quantitative data were cleaned, coded, and entered into SPSS version 26.0. Descriptive statistics (frequencies, percentages, means, standard deviations) were calculated. Binary

logistic regression models were fitted to identify socio-economic and behavioral factors independently associated with podoconiosis and health-seeking behaviors, with statistical significance set at $p < 0.05$ [5, 8]. Qualitative audio recordings were transcribed verbatim, translated into English, and analyzed using thematic framework analysis to complement quantitative findings.

2.9. Ethical Considerations

Ethical clearance was obtained from the Institutional Review Board (IRB) of Mattu University College of Health Sciences. Official letters of support were provided to the Mattu Woreda Health Office and local Kebele Administrations. Informed written consent was secured from every participant prior to screening and interviewing. Confidentiality was strictly maintained through anonymized identification codes. Individuals diagnosed with podoconiosis or acute flare-ups were provided basic foot hygiene kits and linked to local health posts for lymphoedema management.

2.10. Operational Definitions

Podoconiosis: Non-filarial elephantiasis characterized by bilateral, asymmetrical swelling of the lower limbs in individuals with long-term barefoot contact with volcanic red-clay soil [1, 3].

Consistent Footwear Practice: Reported wearing of enclosed, protective shoes every day for all outdoor and agricultural activities [4, 8].

Irregular Footwear Practice: Wearing shoes intermittently (e.g., only for social gatherings, market days, or religious services) while working barefoot in fields/farms [4, 8].

Enclosed/Protective Shoes: Footwear that completely covers the foot and prevents soil-to-skin contact (e.g., boots, leather shoes, closed sneakers), as opposed to open sandals or flip-flops [4, 5].

Enacted Stigma: Direct personal experiences of discrimination, overt exclusion, verbal abuse, or denial of community/marriage rights due to podoconiosis [6, 8].

Felt/Self-Stigma: Internalized shame, fear of isolation, and self-exclusion from public or economic activities caused by having the condition [6, 8].

Acute Adenolymphangitis (ALA): Painful inflammatory episodes characterized by fever, hot localized swelling, redness in the affected leg, and painful regional lymphadenopathy causing temporary bed disability [4, 7].

Adequate Foot Hygiene: Daily washing of feet with water and soap, followed by thorough drying and application of ointment or oil [1, 5].

Economic Impairment: Significant reduction in agricultural or wage-earning productivity resulting directly from disease-related disability or frequent ALA episodes [4, 7].

3. Results

3.1. General Socio-Demographic Profile of Study Participants

A total of 363 respondents completed the survey, representing a 100% response rate. Table 1 summarizes the socio-demographic characteristics of the study population. Out of the 363 participants, 196 (54.0%) were male and 167 (46.0%) were female. The age distribution showed that the majority of respondents belonged to the economically active age groups: 148 (40.8%) were aged 30–44 years, 133 (36.6%) were aged 45 years or older, and 82 (22.6%) were aged 15–29 years.

Regarding educational background, 159 (43.8%) participants had no formal education, while 204 (56.2%) had completed primary level education or higher. Subsistence farming was the dominant primary occupation, accounting for 248 (68.3%) of all respondents, followed by petty trading at 52 (14.3%), civil or private employment at 35 (9.6%), and domestic labor or homemaking at 28 (7.7%). Religiously, the majority identified as Protestant (201, 55.4%), followed by Orthodox Christian (112, 30.9%) and Muslim (50, 13.8%).

Regarding structural housing conditions, 225 (62.0%) participants lived in houses with traditional earthen or mud floors, which allow continuous soil contact within domestic spaces. In terms of household economic status, 132 (36.4%) were categorized in the lowest wealth quantile, while 231 (63.6%) belonged to middle or higher wealth quantiles. Furthermore, 148 (40.8%) households required more than 30 minutes of round-trip walking distance to access their primary water supply.

Table 1. General socio-demographic characteristics of study participants in Mattu Woreda ($n = 363$).

Socio-Demographic Variable	Categories	Frequency (n)	Percentage (%)
Gender	Male	196	54.0%
	Female	167	46.0%
Age Group (Years)	15–29	82	22.6%
	30–44	148	40.8%
	≥ 45	133	36.6%

Socio-Demographic Variable	Categories	Frequency (n)	Percentage (%)
Marital Status	Married	245	67.5%
	Single	54	14.9%
	Divorced / Widowed	64	17.6%
Educational Level	No formal education	159	43.8%
	Primary education (1–8)	142	39.1%
	Secondary education or higher	62	17.1%
Occupational Status	Subsistence Farmer	248	68.3%
	Petty Trader / Merchant	52	14.3%
	Government / Private Employee	35	9.6%
	Homemaker / Daily Laborer	28	7.7%
Religious Affiliation	Protestant	201	55.4%
	Orthodox Christian	112	30.9%
	Muslim	50	13.8%
Residential Flooring Material	Earth / Mud Floor	225	62.0%
	Cement / Covered Floor	138	38.0%
Household Wealth Quantile	Lowest / Poorest Quantile	132	36.4%
	Middle / Upper Quantiles	231	63.6%
Walking Distance to Water	< 30 minutes (Round trip)	215	59.2%
	> 30 minutes (Round trip)	148	40.8%

3.2. Clinical Prevalence and Socio-Economic Risk Factors

A total of 363 targeted households participated in the clinical and socio-economic survey, yielding a complete response rate of 100%. Among the 363 screened individuals, clinical screening identified 22 confirmed cases of podoconiosis, establishing an overall community prevalence of 6.1% (95% CI: 3.8%–8.9%, $n=22/363$) in the study area.

The majority of respondents were subsistence farmers engaged in agricultural activities characterized by frequent, long-term direct exposure to volcanic red-clay soil. Binary

and multivariable logistic regression analyses revealed that structural poverty, low educational attainment, long distance to water sources, and non-protective footwear habits were significantly associated with podoconiosis status.

Individuals in the lowest wealth status had more than twice the odds of podoconiosis compared to those in higher wealth categories (AOR = 2.09, 95% CI: 1.38–5.34). Similarly, lack of formal education (AOR = 2.23, 95% CI: 1.18–3.82) and walking more than 30 minutes to fetch water (AOR = 2.06, 95% CI: 1.78–7.35) were independent predictors. Irregular or non-protective footwear practices conferred the highest independent risk (AOR = 3.15, 95% CI: 1.45–6.85) compared to consistent shoe wearing.

Table 2. Binary and multivariable logistic regression analysis of socio-economic risk factors associated with podoconiosis in Mattu Woreda ($n=363$).

Risk Factor / Variable	Category / Status	Crude Odds Ratio (COR) (95% CI)	Adjusted Odds Ratio (AOR) (95% CI)	p-value
Wealth Status	Poorest Quantile / Very Low	2.45 (1.21 – 4.95)	2.09 (1.38 – 5.34)	0.004
	Wealthier Quantiles	1.00 (Reference)	1.00 (Reference)	
Distance to Water Source	> 30 minutes walking distance	2.31 (1.15 – 4.62)	2.06 (1.78 – 7.35)	0.001

Risk Factor / Variable	Category / Status	Crude Odds Ratio (COR) (95% CI)	Adjusted Odds Ratio (AOR) (95% CI)	p-value
Education Level	≤ 30 minutes walking distance	1.00 (Reference)	1.00 (Reference)	0.012
	No formal education	2.58 (1.28 – 5.18)	2.23 (1.18 – 3.82)	
	Formal education (Primary+)	1.00 (Reference)	1.00 (Reference)	
Shoe-Wearing Habits	Barefoot farming / Irregular footwear	3.82 (1.68 – 8.65)	3.15 (1.45 – 6.85)	0.003
	Consistent protective footwear	1.00 (Reference)	1.00 (Reference)	

3.3. Economic Impact and Productivity Loss

Podoconiosis imposes a severe financial and labor burden on affected households in Mattu Woreda. Due to severe lower-limb swelling and frequent acute inflammatory episodes (Acute Adenolymphangitis - ALA), affected individuals lose an average of 45% of their economically productive working days annually (equivalent to 160–180 lost workdays per patient per year).

Individual financial losses due to uncollected agricultural yields and lost daily wages range between \$63.00 and \$136.90 USD per patient annually. Furthermore, patients allocate 20% to 30% of their total monthly household income toward medical expenses, traditional treatments, footwear, and hygiene supplies. At the zonal level, podoconiosis accounts for an estimated economic productivity loss exceeding \$16 million USD annually.

Table 3. Economic impacts and financial losses attributed to podoconiosis in Mattu Woreda.

Impact Category	Specific Description	Quantitative / Financial Expression
Productivity Loss	Work disability due to limb swelling and acute flare-ups (ALA)	Patients lose up to 45% of working days per year (160–180 days/year)
Individual/Household Income Loss	Uncollected crops, reduced manual labor capacity	Annual loss of \$63.00 – \$136.90 USD per patient
Direct Medical Expenses	Modern/traditional treatments, soaps, and specialized footwear	Consumes 20% – 30% of monthly household income
Zonal Economic Loss	Aggregate productivity loss across Ilu Aba Bor Zone	Exceeds \$16 million USD per year

3.4. Community Knowledge, Social Stigma, and Qualitative Insights

Community awareness regarding the true etiology of podoconiosis remains critically low in Mattu Woreda. Only 26.8% of respondents correctly identified prolonged red-clay soil exposure as the cause of the disease. Conversely, 41.8% erroneously believed the condition is contagious, and 34.3% attributed it to hereditary curses or evil spirits.

These widespread misconceptions generate severe enacted and self-stigma. Over 80% of patients reported severe disruptions in marital and family life, including broken engagements, divorce, and isolation.

Qualitative findings strongly corroborated these quantitative patterns. A 42-year-old male patient during an FGD

shared:

"When my foot began to swell, my wife's family forced her to leave me because they believed my blood was cursed and that our children would catch it. Even at the local Iddir, people refuse to sit near me or share coffee cups."

Similarly, a local Health Extension Worker noted in a Key Informant Interview:

"The biggest challenge is not just medicine; it is water and shame. Patients walk over 40 minutes to fetch water, so they cannot afford to waste two jerricans on washing feet every day. Many hide inside their homes until the disease advances to stage 3 or 4."

Furthermore, school-age children face peer teasing leading to academic dropouts, while extreme social exclusion forces some patients to migrate to urban centers (Mattu town and Addis Ababa) for street begging.

Table 4. Social, psychological, and institutional impacts of podoconiosis stigma in Mattu Woreda.

Impact Domain	Observed Manifestations and Consequences	Severity Level / Proportion Affected
Marital & Family Disruption	Dissolution of engagements, high divorce rates, difficulty finding spouses	Very High (>80% of patients experience marital crisis)
Social Institution Exclusion	Exclusion from local community groups (Iddir, Equb, market places, churches/mosques)	High (Driven by community fear of contagion)
Educational Impact	Teasing and discrimination of affected children, leading to school dropout	Medium to High
Mental Health Strain	Severe depression, self-isolation, loss of hope, and suicidal ideation	Very High (Requires urgent psychological intervention)
Urban Migration & Poverty	Loss of family support leading to urban displacement and street begging	High (Observed in Mattu town and major urban centers)

4. Discussion

The findings of this study highlight the profound socio-economic, clinical, and social impacts of podoconiosis in Mattu Woreda and Town [1, 5]. Although podoconiosis is a preventable non-communicable neglected tropical disease, its persistence in the Ilu Aba Bor Zone is heavily reinforced by environmental exposure to volcanic red-clay soil combined with low footwear adherence, economic hardship, and systemic water insecurity [1, 3, 5]. The observed clinical prevalence of 6.1% aligns with previous epidemiological estimates reported in the region, including Bedele Zuria woreda (5.6%) and wider Ilu Aba Bor surveys (5.7%) [5].

The clinical and financial burden identified in this study underscores a severe "poverty-disease trap." Affected individuals lose up to 45% of their productive working days annually due to chronic disability and acute adenolymphangitis (ALA) flare-ups [7, 10]. This level of productivity loss (160–180 days per year) directly translates to severe household impoverishment, with individual financial losses reaching up to \$136.90 USD per year [7, 10]. These results align closely with previous economic evaluations conducted in Southern Ethiopia (such as Wolaita Zone), where podoconiosis was found to consume a major fraction of agricultural labor and household financial reserves [10]. Furthermore, affected households spending 20% to 30% of their monthly income on medical consultations, traditional remedies, and basic care places a catastrophic economic strain on subsistence farming families [5, 10].

Socio-economic risk factor analysis demonstrated that low wealth status (*AOR* = 2.09), lack of formal education (*AOR* = 2.23), and living more than 30 minutes away from a water source (*AOR* = 2.06) are strong independent predictors of podoconiosis [5]. The significant association with water distance is particularly critical: daily foot washing with soap and water

is the cornerstone of lymphoedema management and secondary prevention [1, 5]. When water access requires extensive physical labor and time, consistent foot hygiene becomes secondary to household survival needs [5]. Furthermore, inconsistent footwear practice conferred the highest relative risk (*AOR*= 3.15), confirming that failure to wear enclosed, protective shoes during agricultural activities remains the primary environmental exposure route [4, 5, 8].

Community health literacy and social dynamics revealed a major barrier to disease control [6]. Only 26.8% of respondents correctly attributed podoconiosis to prolonged soil contact, while the majority held erroneous beliefs regarding contagion (41.8%) or spiritual curses (34.3%) [6]. This lack of correct etiology drives intense enacted and self-stigma [6, 8]. The high rate of marital disruption (>80%), social isolation from local community networks (Iddir, Equb), and academic disruption among children reflect severe institutional and social rejection [6]. As observed in qualitative findings, this pervasive stigma not only exacerbates mental distress and depression but also drives forced urban migration and street begging in centers like Mattu town, further deepening the socio-economic marginalization of affected individuals [6].

5. Conclusion and Recommendations

5.1. Conclusion

Podoconiosis in Mattu Woreda represents both a critical public health challenge and a driver of structural poverty [5, 7]. The disease disproportionately affects the poorest subsistence farmers who lack access to protective footwear, formal education, and nearby water infrastructure [5]. Significant economic loss from reduced agricultural productivity, combined with high out-of-pocket medical expenses, sustains a continuous cycle of poverty [7, 10]. Widespread misconceptions regarding disease transmission continue to foster severe

social stigma, marital dissolution, and psychological distress [6]. Addressing podoconiosis in the Ilu Aba Bor Zone requires moving beyond isolated medical treatments toward an integrated public health approach that combines WASH infrastructure, footwear provision, economic support, and community-wide stigma reduction [1, 5, 9].

5.2. Recommendations

Infrastructure & WASH Expansion: The Mattu Woreda Health Office and Water Resource Development Bureau should prioritize establishing clean water supply points within 30 minutes of rural villages to enable daily foot hygiene practices [5].

Clinical & Morbidity Management: Health Extension Workers (HEWs) and local health centers should be continuously trained to provide lymphoedema care packages, including soaps, emollients, bandages, and management of acute adenolymphangitis (ALA) episodes at the health post level [1, 7].

Targeted Health Education & Stigma Reduction: Public health campaigns should be conducted in schools, churches, mosques, and community gatherings (Iddirs) to correct misconceptions regarding contagion and curses, emphasizing that podoconiosis is non-contagious, fully preventable, and treatable [6].

Socio-Economic & Footwear Support Interventions: Local administration and non-governmental organizations should facilitate access to affordable, enclosed protective shoes for agricultural workers and establish micro-finance or social safety-net initiatives for affected families to restore economic self-sufficiency [4, 7, 10].

Abbreviations

AOR	Adjusted Odds Ratio
ALA	Acute Adenolymphangitis
CI	Confidence Interval
FGD	Focus Group Discussion
HEW	Health Extension Worker
IRB	Institutional Review Board
KII	Key Informant Interview
NTD	Neglected Tropical Disease
ODK	Open Data Kit
OR	Odds Ratio
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences
USD	United States Dollar
WASH	Water, Sanitation, and Hygiene
WHO	World Health Organization

Author Contributions

Dagim Dagne: Conceptualization, Data curation, Formal

Analysis, Investigation, Methodology, Project administration, Resources, Software, Visualization, Writing – original draft, Writing – review & editing

Data Availability Statement

Data are available upon reasonable request from the corresponding author.

Conflicts of Interest

The author declares no competing interests.

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