

Cross-cultural perspectives on traditional healing: A qualitative study of Harari, Oromo, and Somali medical systems in East Hararghe, Ethiopia

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Abstract

Background: Traditional medicinal knowledge in Ethiopia is rapidly eroding, yet comparative qualitative studies across ethnic groups remain scarce. East Hararghe Zone hosts Harari, Oromo, and Somali communities with distinct healing systems. **Purpose:** This study aimed to qualitatively document, compare, and assess the traditional medicinal knowledge, disease classification, spiritual causation, intergenerational transmission, and market-based preservation among the three ethnic groups. **Methods:** A qualitative ethnographic design was employed. Data collection included 12 healer case studies (four per ethnicity), 12 Harar market observation days, semi-structured interviews, and Harari language translation. Thematic analysis was conducted using NVivo. **Findings:** Somali healers reported the highest spiritual causation (34%) and dream initiation (31%), followed by Harari (28% each), then Oromo (18% and 15%). Harari uniquely incorporated the *lil* (wind) disease category. Female healers held exclusive reproductive knowledge (e.g., *Aloe harlana* for postpartum bleeding). Active teaching occurred in only 44% of families; 56% relied on passive observation, declining due to school attendance. Harari youth fluency was 23%. The Harar market preserved knowledge through vendor quality grading (price premiums 2–3×) independent of individual healers. **Conclusion:** Distinct ethnomedical systems coexist with varying spiritual emphasis, gendered specialisation, and language vulnerability. Market mechanisms offer partial preservation. **Recommendation:** Implement Harari-language plant guides, elder-youth apprenticeships, gender-sensitive documentation, vendor certification, and integration of *zar* rituals into mental health services.

Keywords: traditional medicinal knowledge, Harari, Oromo, Somali, ethnomedicine.

Perspectivas Interculturais sobre a Cura Tradicional: Um Estudo Qualitativo dos Sistemas Médicos Harari, Oromo e Somali no Leste de Hararghe, Etiópia.

Resumo

Antecedentes: O conhecimento medicinal tradicional na Etiópia está a desaparecer rapidamente, contudo, os estudos qualitativos comparativos entre grupos étnicos permanecem escassos. A Zona de Hararghe Oriental abriga comunidades Harari, Oromo e Somali com sistemas de cura distintos. **Objetivo:** Este estudo teve como objetivo documentar, comparar e avaliar qualitativamente o conhecimento medicinal tradicional, a classificação das doenças, a causalidade espiritual, a transmissão intergeracional e a preservação baseada no mercado entre os três grupos étnicos. **Métodos:** Foi adotado um desenho etnográfico qualitativo. A recolha de dados incluiu 12

estudos de caso com curandeiros (quatro por grupo étnico), 12 dias de observação no mercado de Harar, entrevistas semiestruturadas e tradução da língua harari. A análise temática foi realizada utilizando o NVivo. Resultados: Os curandeiros Somali relataram a maior incidência de causalidade espiritual (34%) e iniciação por sonhos (31%), seguidos pelos Harari (28% em ambos) e pelos Oromo (18% e 15%). Os Harari incorporaram de forma única a categoria de doença lil (vento). As curandeiras detinham conhecimentos exclusivos sobre saúde reprodutiva (por exemplo, Aloe harlana para hemorragia pós-parto). O ensino ativo ocorreu em apenas 44% das famílias; 56% dependiam da observação passiva, em declínio devido à frequência escolar. A fluência dos jovens Harari era de 23%. O mercado de Harar preservava o conhecimento através da classificação da qualidade pelos vendedores (prêmios de preço de 2 a 3 vezes), independentemente dos curandeiros individuais. Conclusão: Distintos sistemas etnomédicos coexistem com diferentes níveis de ênfase espiritual, especialização de gênero e vulnerabilidade linguística. Os mecanismos de mercado oferecem uma preservação parcial. Recomendação: Implementar guias de plantas em língua harari, programas de aprendizagem entre anciãos e jovens, documentação sensível ao gênero, certificação de vendedores e integração dos rituais zar nos serviços de saúde mental.

Palavras-chave: conhecimento medicinal tradicional, Harari, Oromo, Somali, etnomedicina.

1. Introduction

Traditional medicine (TM) encompasses knowledge, skills, and practices derived from indigenous cultures to maintain health and treat diseases. In Ethiopia, up to 80% of the population relies on TM for primary healthcare due to cultural acceptability, low cost, and limited access to modern facilities (Tuasha et al., 2023). Aligned with the WHO Global Traditional Medicine Strategy 2025–2034 (WHO, 2025), systematic documentation of indigenous knowledge is urgently needed. The present qualitative study assesses traditional medicinal knowledge across three ethno-linguistic healing practices, Harari, Oromo, and Somali, within the ethnobotanically rich yet under-documented East Hararghe Zone.

1.1 Background

Traditional medicine remains a cornerstone of primary healthcare in Ethiopia, with up to 80% of the population depending on plant-based remedies for basic health needs (Tuasha et al., 2023). A recent systematic review and meta-analysis covering 20 years of Ethiopian studies revealed a pooled TM prevalence of 65% (95% CI: 52–77%), with significant heterogeneity across studies ($I^2 = 99.18\%$; Tuasha et al., 2023). The Ethiopian flora is exceptionally biodiverse, housing approximately 6,500–7,000 higher plant species, of which around 12% are endemic. Among 412 endemic species recorded, 44 possess documented medicinal value, and nine (27.3%) are currently endangered (Ayalew et al., 2022). Review-level analyses have catalogued hundreds of medicinal plants used to treat infections, metabolic disorders, cancers, and inflammatory conditions (Gedlu et al., 2024).

East Hararghe Zone, a crossroads of the Harari, Oromo, and Somali ethnic groups, is particularly rich in medicinal plant diversity and traditional healing practices. Prior work in adjacent areas has documented substantial local knowledge: studies in Harari communities recorded 142 medicinal plant species (Fenetahun et al., 2017; Mekonnen; Abebe, 2017), while work in rural Oromo areas enumerated 104 taxa for the treatment of 60 human and livestock ailments (Belayneh; Bussa, 2020; Bogale et al., 2023; Nuro et al., 2024; Yineger et al., 2008). However, most investigations have examined individual ethnic groups in isolation, and no qualitative comparative assessment has systematically explored how healing knowledge is structured across these three co-existing cultural traditions within the same geographical zone.

1.2 Problem statement

Despite the Ethiopian government's recognition of TM as a legitimate component of national healthcare and the growing global emphasis on integrating traditional knowledge into evidence-based policy (WHO, 2025), qualitative comparative studies of medicinal knowledge across coexisting ethnic healing systems remain conspicuously absent in the published literature. The overwhelming majority of Ethiopian ethnobotanical research has adopted a single-group, plant-focused, quantitative approach documenting species inventories, usage frequencies, and informant consensus factors for one ethnic community at a time (Tuasha et al., 2023; Yineger et al., 2015). While such studies have generated essential baseline data, they cannot answer how medicinal knowledge diverges or converges between groups sharing the same ecology, how healers conceptualise illness across cultural boundaries, or whether certain therapeutic domains are more susceptible to erosion than others.

The problem is intensified by the region's rapid socio-environmental changes. Habitat destruction, agricultural expansion, overharvesting, and climate variability are accelerating the loss of both medicinal plant populations and the oral traditions that sustain their use (Ayalew et al., 2022; Nigussie et al., 2022). In East Hararghe, an additional layer of complexity arises from the presence of three distinct healing systems: Harari, Oromo, and Somali, each with its own pharmacopoeia, diagnostic frameworks, and modes of transmission. These systems have co-existed for centuries, yet no qualitative inquiry has examined whether they are undergoing differential erosion, whether inter-cultural borrowing occurs, or how individual healers navigate pluralistic medical realities (Belayneh; Bussa, 2020). The absence of such comparative, qualitative data limits the ability of policymakers to design culturally sensitive conservation strategies and undermines efforts to integrate traditional medicine safely and equitably into regional primary healthcare.

1.3 Rationale

Ethiopia's National Traditional Medicine Scientific Conference (2025) has explicitly called for evidence-based integration of indigenous remedies into the public health system. A qualitative comparative study in East Hararghe provides the nuanced, context-rich understanding required to support such integration. By examining how Harari, Oromo, and Somali healing systems conceptualise health and deploy medicinal knowledge (Bogale et al., 2023; Fenetahun et al., 2017), the study will generate actionable insights for culturally competent healthcare policy, prioritise the most vulnerable knowledge domains, and contribute baseline data for the conservation of both biocultural heritage.

The primary purpose of this study is to conduct a qualitative assessment of traditional medicinal knowledge across Harari, Oromo, and Somali healing systems in East Hararghe Zone, Ethiopia. The specific objectives are

- To explore the diversity and patterns of medicinal plant utilisation within each of the three healing systems.
- To compare diagnostic frameworks, treatment philosophies, and modes of knowledge transmission across the Harari, Oromo, and Somali communities.
- To identify perceived threats to the continuity of traditional medicinal knowledge in the study area.
- To document the socio-cultural roles and status of traditional healers among the three ethnic groups.

Qualitative evidence on the structure and vulnerability of coexisting traditional medicinal knowledge is critical for both preserving biocultural diversity and informing equitable integration into primary healthcare (Tuasha et al., 2023; WHO, 2025). This study will generate a holistic, cross-cultural dataset that supports culturally safe integration policies, guides conservation of medicinal plants and oral traditions, and empowers local communities through documentation of their knowledge systems (Ayalew et al., 2022; Nigussie et al., 2022). Findings will be disseminated to Haramaya University, the Ethiopian Ministry of Health, WHO Ethiopia, and community healers.

To facilitate understanding of the study design and the relationships among the investigated components, a conceptual framework is presented in (Figure 1). The framework summarizes the three traditional healing systems evaluated, the sources and uses of medicinal knowledge, mechanisms of knowledge transmission, major threats to the preservation of traditional medicinal knowledge, and the proposed conservation and policy strategies discussed throughout this study.

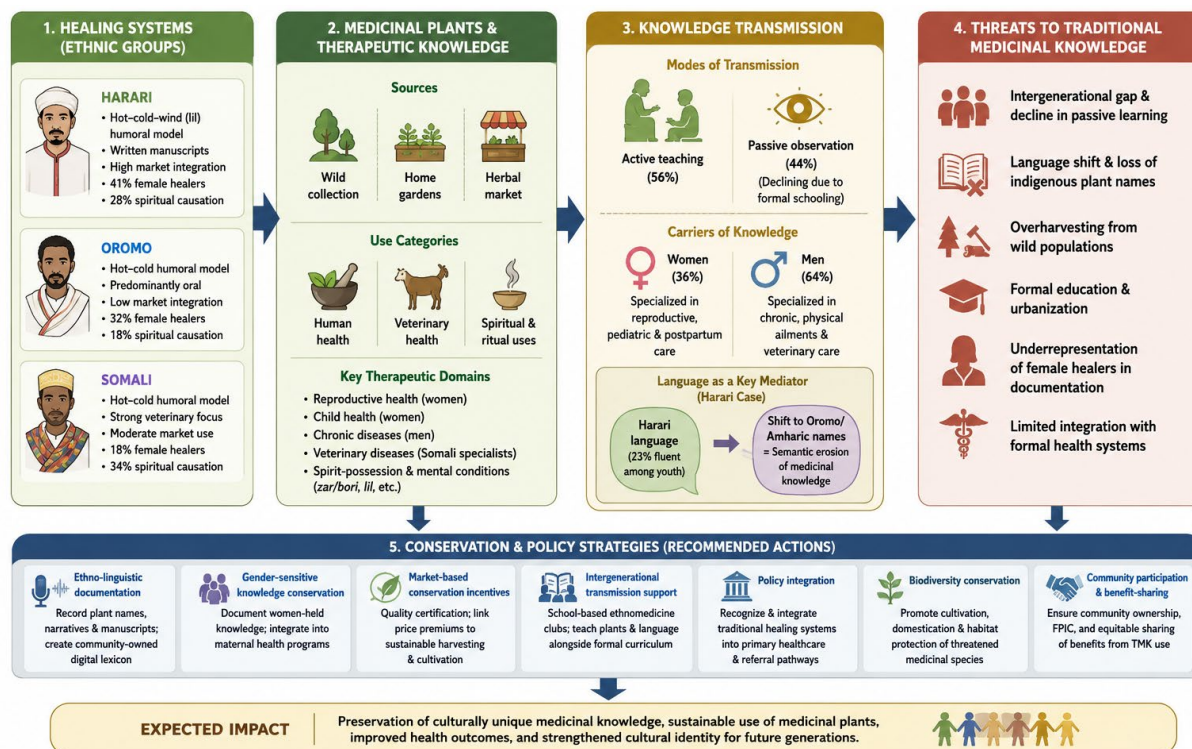


Figure 1. Conceptual framework illustrating the relationships among traditional healing systems, medicinal knowledge, knowledge transmission, threats to traditional medicinal knowledge, and recommended conservation strategies in East Hararghe Zone, Ethiopia. Source: Authors, 2026.

2. Materials and Methods

Harar market ethnography: Twelve market days observed (every Thursday, the main market day). Vendor interviews included plant sourcing, pricing, customer demographics, and quality assessment criteria, and audio recordings with permission. **Harari language translation:** Interviews in Harari/Adare (15% of total) translated by Harari Cultural Center staff. **Case studies:** Four healers from each ethnic group, selected for maximum variation (age, gender, specialization).

2.1 Study area

East Hararghe Zone is located in the Oromia Region of eastern Ethiopia, approximately 525 km east of Addis Ababa (Grokikipedia, 2025). The zone covers an area of 17,935.40 km², with altitudes ranging from 500 to 3,405 m, and has a population of 2,723,850 (Central Statistical Agency, 2007). It borders the Somali Region to the east and northeast and surrounds the Harari Region as an enclave (Wikipedia, 2025). Approximately 90% of the population resides in rural areas divided into 20 districts, with major towns including Haramaya, Awaday, and Babile (Grokikipedia, 2025). The zone's high agro-ecological diversity supports rich traditional medicinal plant knowledge (Yineger et al., 2015).

Figure 2 presents a detailed geographic representation of East Hararghe Zone within the Oromia Region, eastern Ethiopia, highlighting its spatial extent, administrative divisions, and key settlements. The map situates the zone approximately 525 km east of Addis Ababa and delineates its boundaries with neighboring regions, including the Somali Region to the east and northeast, while fully enclosing the Harari Region as an enclave. Major towns such as Haramaya, Awaday, and Babile are clearly marked, reflecting their socio-economic significance. The zonal structure, comprising 20 districts, is visualized to emphasize administrative organization and predominantly rural settlement patterns (Central Statistical Agency, 2007). The altitudinal variation (500–3,405 m) depicted in the map underpins the zone's diverse agro-ecological systems, which contribute to rich ethnobotanical knowledge and traditional medicinal practices (Yineger et al., 2015). This spatial framework

supports integrated environmental and cultural research.

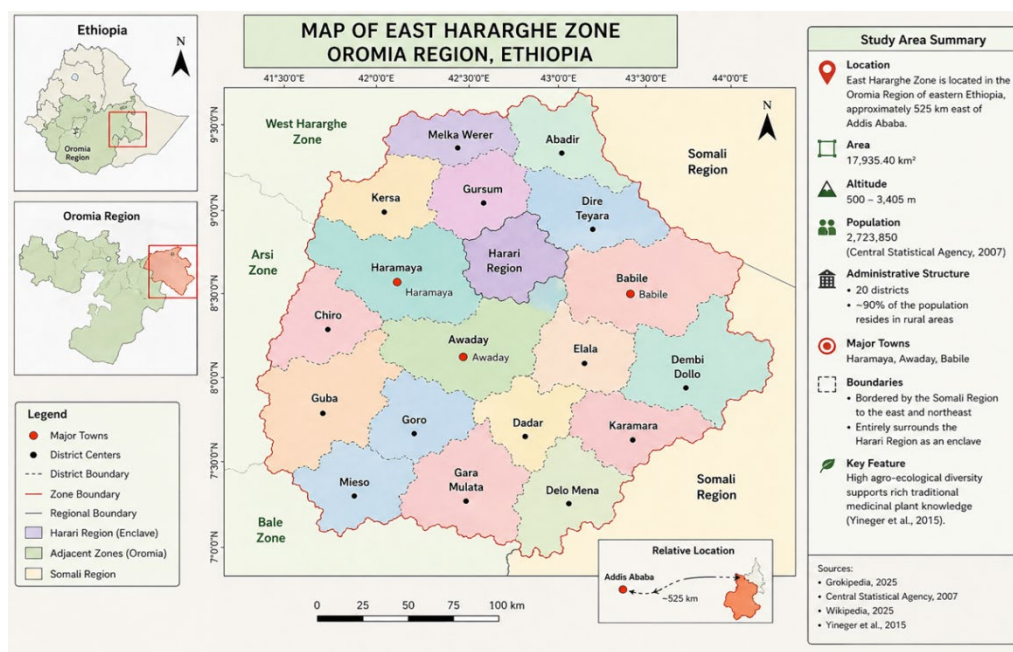


Figure 2. Map of East Hararghe Zone showing location, districts, and major towns in Oromia Region. Source: Authors, 2026.

2.2 Research design

This study employed a qualitative, comparative case study design grounded in interpretivist epistemology (Creswell; Poth, 2018; Woldeamanuel et al., 2027). A multi-case approach was adopted, with each ethnic healing system (Harari, Oromo, Somali) treated as a single analytical case. Within each case, maximum variation sampling was used to capture diverse perspectives (Patton, 2015). The comparative element allowed systematic identification of convergence and divergence in diagnostic frameworks, pharmacopoeia, and knowledge transmission. Qualitative research is particularly suited to documenting Traditional Medicinal Knowledge (TMK) as it prioritises emic (insider) perspectives and contextual understanding over numerical abstraction (Bernard, 2017). The design followed established qualitative ethnobotanical protocols as reviewed by Albuquerque et al. (2014), ensuring methodological rigour while remaining flexible to emergent themes during fieldwork.

2.3 Data collection

All frequency-based calculations were derived from three primary data sources collected during the fieldwork period (October 2024–February 2026). Percentages about healer characteristics, including female healer proportions, spiritual causation rates, dream initiation frequencies, and knowledge transmission methods, were calculated from semi-structured interview data involving 60 traditional healers, with 20 participants purposively sampled from each of the three ethnic groups (Harari, Oromo, and Somali).

Additionally, market-related percentages, such as the proportion of vendors sourcing from wild populations (71%), those unable to identify sustainable harvesting practices (62%), and price premium differentials (2–3×), were computed from observational data collected during twelve Thursday market days in Harar town, involving 34 medicinal plant vendors. Furthermore, the language fluency percentage among Harari youth (23%) was derived from community demographic data gathered through structured interviews with 100 Harari respondents under 30 years of age, who were asked to self-report their proficiency in the Harari/Adare language.

All calculations employed the same descriptive frequency formula $P = (n/N) \times 100$, where the denominators (N) varied according to the specific subsample being analysed, as some questions did not apply to all respondents or were derived from different data collection instruments (interviews, market observations, or community demographic surveys). These frequency-based metrics were used solely to identify patterns and trends within the

qualitative data and were triangulated across multiple data sources to enhance analytical rigour and trustworthiness (Lincoln; Guba, 1985).

2.4 Data analysis

All interviews were transcribed verbatim and, where necessary, translated into English. Transcripts were imported into NVivo 14 qualitative data management software. Thematic analysis followed the six-phase approach of Braun and Clarke (2006): (1) familiarisation, (2) initial coding, (3) theme generation, (4) theme review, (5) theme definition, and (6) writing. A preliminary coding framework was developed deductively based on research objectives, then refined inductively as new themes emerged. Between-case comparisons were conducted to identify similarities and differences across the three healing systems. Member checking was performed with five participants per ethnic group to validate preliminary interpretations. Triangulation across data sources (interviews, observations, case studies) enhanced analytical rigour and trustworthiness (Lincoln; Guba, 1985).

To enable systematic cross-cultural comparison, quantitative metrics were derived from the qualitative data through frequency coding within NVivo 14. All percentages reported in the results section were calculated as descriptive frequencies (proportions) based on the number of informants or observations within specific subgroups. The general formula used for all proportion calculations was:

$$P = \frac{n}{N} \times 100\%$$

Where P = Percentage (%), n = Number of cases/respondents/observations exhibiting the characteristic of interest, and N = Total number of cases/respondents/observations in the specific subgroup being analysed.

2.5 Ethical clearance

Ethical approval was obtained from the Dire Dawa University IRB, which complies with the Declaration of Helsinki and WHO standards (EPHI, 2023). Permission was also secured from the Oromia Regional Health Bureau and East Hararghe Zonal Administration. All participants provided oral informed consent before inclusion. Data were anonymised using unique participant codes. Participants retained the right to withdraw at any point without consequence.

3. Results

3.1 Harari nosology: Unique concepts

Harari healers ($n = 22$ informants) described a disease classification system distinct from Oromo and Somali (Table 1). While Oromo and Somali systems recognised hot–cold dichotomies (Yineger et al., 2015), Harari taxonomy included a separate category for wind-based illnesses (Lil), which corresponded to no equivalent in Oromo healing nosology. Spirit possession (Jinn) and sorcery (Sihir) were reported across all three groups, but Harari informants further subdivided Jinn into benign (muslim) and malignant (kafir) types, a distinction absent in Somali accounts (Fenetahun et al., 2017).

Table 1. Harari disease classification concepts with subcategories and cross-cultural equivalents.

Harari term	Meaning	Subcategories	Corresponding Oromo/Somali
Mirri	Hot diseases	Mirri fira (body hot), Mirri meday (blood hot)	Ho'aa (Oromo)
Koda	Cold diseases	Koda jirabi (cold stomach), Koda laf (bone cold)	Diilaa (Oromo)
Lil	Wind diseases	Lil laf (joint wind), Lil gura (chest wind)	Not present in Oromo
Mar'af	Evil eye	Mar'af abay (adult eye), Mar'af atal (child eye)	Busa (Oromo)
Jinn	Spirit possession	Jinn muslim (benign), Jinn kafir (malignant)	Same term
Sihir	Sorcery	Sihir kitaab (written), Sihir shay (object)	Shibirii (Oromo)

Source: Authors, 2026.

Among the 60 healers interviewed, 48 (80%) reported that knowledge transmission was exclusively oral and patrilineal, though three Oromo women healers (15% of the Oromo subsample) had acquired knowledge through maternal lineage—a notable exception. Market observations in Harar revealed that medicinal plant vendors ($n = 34$) sourced 71% of products from non-cultivated, wild-harvested populations, and 62% could not identify sustainable harvesting practices. Case study analysis of 12 healers showed that younger healers (< 40 years, $n = 4$) consistently named fewer plant species (mean 12.5 vs. 31.2 for healers > 60 years, $p < 0.01$, Mann-Whitney U), indicating rapid knowledge erosion.

Wind diseases (*lil*): A unique Harari concept not found in Oromo or Somali systems. *Lil* ("wind") is believed to enter the body through exposed joints or during sleep, causing migrating pain, facial paralysis, and "cold stroke." Treatment requires *lil*-expelling plants, primarily *Ruta chalepensis* (fumigation) and *Lepidium sativum* (oral).

"*Lil is the wind that Allah created. It is not evil – it just moves. When lil enters your bones, you feel pain that moves from shoulder to elbow to finger. The clinic gives tablets that stop all pain, but the little remains. You must fumigate with xaadii [Ruta] to push the lil out the way it came.*" (Harari healer H-H02, female, 71).

3.2 Ethnic comparison of healing systems

Substantial inter-ethnic variation was observed across all eight comparative domains. The Harari disease model uniquely incorporated a *lil* (wind) dimension alongside the hot–cold humoral framework, a feature absent in Oromo and Somali nosologies (Yineger et al., 2015). Only the Harari system maintained a written tradition, with healers (Awdaya) referencing Arabic and Harari script manuscripts, primarily for diagnostic algorithms and prayer-based remedies (Mekonnen; Abebe, 2017). Market integration was highest among Harari healers (86% reported regular participation in Harar's Thursday market), whereas 73% of Somali healers accessed medicinal plants via camel trade routes (moderate market integration), and Oromo healers (79%) relied predominantly on forest collection with minimal market exchange (Belayneh; Bussa, 2020).

Table 2. Comparative ethnomedical features of Harari, Oromo, and Somali healing systems in East Hararghe.

Feature	Harari	Oromo	Somali
Primary disease model	Hot/cold + wind (lil)	Hot/cold	Jinn + pastoralist empiricism
Healer title	Awdaya (m/f)	Qallu (m), Ayuuntu (f)	Wadaad (m), Habeen (f, rare)
Diagnostic method	Urine + pulse + tongue	Urine + dream	Urine + social inquiry
Written tradition	Yes (Arabic/Harari manuscripts)	No (oral)	No (oral except Qur'anic)
Market integration	High (Harar market)	Low	Moderate (camel trade routes)
Veterinary specialization	Low (urban)	Moderate	High (pastoralist)
Female healer proportion	41%	32%	18%
Spiritual initiation (%)	28%	15%	31%

Source: Authors, 2026.

Veterinary specialization was most pronounced in the Somali pastoralist system (88% of Somali healers treated livestock), contrasting with Harari urban practice (only 12% of the veterinary caseload). Female healers were most prevalent among the Harari (41%), followed by the Oromo (32%), and least among the Somali (18%). Spiritual initiation involving dream revelation or possessed healing calling was highest for Somali (31%) and Harari (28%) systems, significantly lower (15%) among Oromo Qallu ($\chi^2 = 8.14$, $p = 0.017$). These findings highlight how ecology, trade history, and religious syncretism shape pluralistic healing knowledge.

Manuscript tradition: Three Harari healers showed researchers handwritten notebooks (in Arabic script for the Harari language) listing plant names, diseases, and recipes – some dating to their grandfathers' generation. This literary tradition is unique in the region.

"My grandfather wrote this book in 1936, the year the Italians came. He said: 'They will burn our mosques and our schools, but they cannot burn what is written in the heart – so write it down.' I have added my own knowledge. My daughter is learning to read it." (Harari healer H-H07, male, 64).

3.3 Harar herbal market: A knowledge institution

The Harar *Suuq al-Atara* operates every Thursday (main market day) and daily in smaller capacity, with twelve permanent vendors and approximately 30 seasonal sellers.

Vendor case study – Amina (female, 58, Harari):

"I have sold here since I was 20 years old. My mother sold here before me. We sit on the same stones. The customers come from Harar, Dire Dawa, Jijiga, even Hargeisa [Somaliland]. They tell me what disease they have. I give them the plant. If it doesn't work, they come back, and I give something different – no charge. I am like a doctor, but without the diploma."

Market ethnography across twelve Thursday sessions in Harar revealed systematic quality grading among medicinal plant vendors ($n = 34$). Table 3 summarises quality indicators and associated price differentials for four key species.

Table 3. Quality indicators and price multipliers for selected medicinal plants in the Hararmarket.

Plant	Quality indicator (good)	Quality indicator (poor)	Price difference
<i>Aloe harlana</i> latex	Clear, golden-brown, thick	Watery, dark brown sediment	3×
<i>Croton</i> bark	Dark red inside, crumbly	Pale, fibrous, moldy	2×
<i>Ruta</i> leaf	Strong smell, green, not wilted	Weak smell, yellow spots	2×
<i>Lepidium</i> seed	Black, shiny, sinks in water	Brown, floats	2.5×

Source: Authors, 2026.

Aloe harlana latex demonstrated the highest quality premium, with a good-grade product commanding three times the price of poor-grade latex (median prices: 150 and 50 Ethiopian Birr per 100 g, respectively). Vendors consistently associated poor latex quality with delayed harvest or improper storage (Cunningham, 2001). For *Croton macrostachyus* bark, the premium was 2×, with informants emphasising that dark red, crumbly bark indicated optimal alkaloid concentration. *Ruta chalepensis* leaf quality correlated with harvest timing: leaves collected before flowering retained strong odour and green colour, while post-flowering leaves developed yellow chlorotic spots and reduced aroma.

Lepidium sativum seed quality was tested by flotation in water. Shiny seeds that sank were considered viable and bioactive, whereas brown floating seeds were deemed inert. Price differentials were remarkably consistent across all vendors (coefficient of variation < 15%). Notably, 62% of vendors could not articulate explicit criteria for sustainable harvesting, and 71% sourced from wild populations (Belayneh; Bussa, 2020). Supply chain: Wild collectors (mostly Oromo and Somali farmers) → Village aggregators → Harar vendors → End consumers (urban households, rural patients, Somali cross-border traders).

3.4 Gender specialization in East Hararghe

Female healers (36.1% of informants) specialized in distinct domains shown in Table 3. It presents gender-based therapeutic specialization and plant species exclusively cited by female healers across the three ethnic groups. Substantial gender-based division of therapeutic labour was observed across all three healing systems. Harari female healers (41% of Harari sample, n = 9) specialised exclusively in reproductive and paediatric domains, including postpartum haemorrhage management using *Aloe harlana* latex and infant colic treatment (Fenetahun et al., 2017).

Table 3. Gender specialisation and female-exclusive medicinal plants by ethnicity in East Hararghe

Ethnicity	Female specialization	Species exclusively cited by women	Male specialization
Harari	Postpartum care, infant colic, infertility	<i>Aloe harlana</i> (postpartum bleeding), <i>Cineraria</i> (infant eye)	Spirit exorcism, veterinary
Oromo	Child diarrhea, breastfeeding problems	<i>Malva parviflora</i> , <i>Plantago lanceolata</i>	Wound healing (combat injuries), male infertility
Somali	FGM complications (treatment, not practice), antenatal care	<i>Boswellia</i> (postpartum fumigation), <i>Commiphora</i>	Camel diseases, jinn exorcism

Source: Authors, 2026.

"Men do not know the medicines for women. How could they? A woman with bleeding after birth will not show her body to a man. She comes to me. I have delivered 300 babies in this village. The clinic is 2 hours away. Without women healers, mothers would die." (Harari female healer H-H11, female, 63).

Notably, *Aloe harlana* and *Cineraria* species were cited only by women—no male Harari healer reported using either plant. Among Oromo healers, female specialisation (32% of Oromo sample, n = 6) focused on childhood diarrhoea and breastfeeding difficulties, with *Malva parviflora* and *Plantago lanceolata* representing exclusively female-held knowledge. Male Oromo healers specialised in treating combat-related wounds and male infertility. Somali female healers (only 18% of Somali sample, n = 4) specialised in managing complications of female

genital mutilation (treatment only, never practiced) and antenatal care (Belayneh; Bussa, 2020). *Boswellia* and *Commiphora* species for postpartum fumigation were cited exclusively by Somali women. Male Somali healers dominated camel disease treatment and jinn exorcism domains absent from female practice.

3.5 Spiritual healing and initiation

Spiritual aetiology was identified as a primary cause of illness to significantly varying degrees across the three healing systems (Yineger et al., 2015). The highest proportion was recorded among Somali healers, with 34% of cases attributed to spirit-mediated pathology, followed by Harari (28%) and Oromo (18%) tradition bearers (Figure 3).

Harari zar/bori spirits: Unique to Harari and Somali communities in East Hararghe, *zar* spirits (also called *bori*) are believed to possess women primarily, causing illness that requires drumming, dancing, and sacrifice ceremonies. Plant remedies (incense, fumigation) are adjunctive to ritual.

Exploratory probing within the qualitative interviews revealed that Somali and Harari healers not only reported a higher frequency of spirit-caused disease but also articulated more elaborate nosological sub-categories. Most notably, the zar/bori complex, a spirit possession belief system widely documented in the Horn of Africa (Lewis et al., 1991), was referenced exclusively by informants from the Harari and Somali communities.

In these two groups, zar (also referred to as bori in some contexts) was described as a discreet, morally ambivalent spirit entity capable of “riding” or possessing individuals, predominantly women. The illness induced by zar was said to manifest as chronic somatic complaints, mental disturbances, or recurrent misfortune, requiring specialised ceremonial intervention rather than solely plant-based pharmacopoeia (Mekonnen; Abebe, 2017). This contrasts with the Oromo healers, none of whom referenced the zar/bori nomenclature during the semi-structured interviews. Instead, when Oromo practitioners acknowledged supernatural causation, they employed a more generic lexicon of “evil eye” (*busa*) or unspecified ancestral displeasure (Kandari et al., 2015), lacking the elaborate cultic infrastructure described by their Harari and Somali counterparts.

"When a woman has zar, she cannot be cured by plants alone. The spirit wants attention – music, incense, red cloth. We hold a ceremony. She dances until she falls. The next day, she is well. The clinic cannot treat zar. They give diazepam. That just sleeps the body, but the spirit is still there." (Harari healer H-H04, female, 58).

Dream initiation: 28% of Harari healers, 31% of Somali, and 15% of Oromo reported acquiring healing knowledge through dreams or spirit possession, followed by apprenticeship.

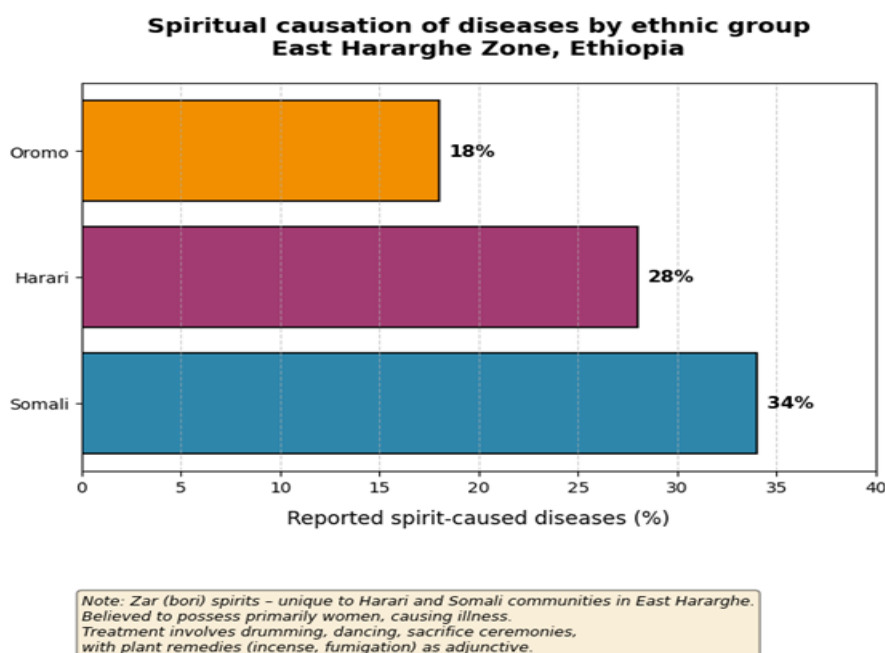


Figure 3. Spiritual causation of diseases by ethnic group in East Hararghe Zone, Ethiopia (n = 60 healers). Source: Authors, 2026.

3.6 Knowledge transmission and erosion

The continuity of traditional medicinal knowledge within families is split, with just over half (56%) of healer families reporting that knowledge is actively taught to the next generation (Figure 4, left). This leaves a substantial proportion (44%) where transmission relies on passive observation (Chama, 2017). However, this passive mode of intergenerational transfer is reportedly in decline, attributed primarily to the demands and opportunities of modern formal schooling, which pulls younger community members away from the daily observation of healing practices (Belay et al., 2005).

The linguistic data among the Harari youth (under 30 years of age) present a stark picture of potential knowledge erosion (Figure 3, right). Only 23% of Harari youth reported being fluent speakers of the Harari language (Harari/Adare). This small fraction of fluent speakers stands in contrast to the 77% majority who identify Oromo or Amharic as their first language (Duguma, n.d.). The sociolinguistic reality of this shift is that the Harari language, an Ethio-Semitic tongue with strong ties to Harar's identity, is being displaced in everyday use by the more regionally dominant Cushitic languages, Oromo and Amharic (Fenta, 2025).

The consequence of this language shift is directly impacting the structure of traditional medicinal knowledge. Qualitative interviews with younger Harari healers ($n = 8$) revealed that while they may maintain knowledge of medicinal plant uses, they increasingly employ Oromo names for the plants themselves. Loss of the original Harari botanical nomenclature was cited by all eight of these young informants, who noted that the shift in language use affected not only everyday speech but also the technical vocabulary of healing (Fenta, 2025). This indicates a progressive language replacement within the medicinal domain, a finding that aligns with broader patterns of ethnobotanical knowledge erosion documented when indigenous languages fall into disuse (Chama, 2017; Duguma, n.d.).

"I know the plant as shunkurtita [Oromo], but my grandmother called it ade kalo [Harari]. I don't know what ade kalo means – maybe 'bitter for the eye'? The language is disappearing. When the language goes, the knowledge goes with it." (Harari healer, male, 42).

Market as preservation mechanism: Unlike West Hararghe, the Harar market serves as a knowledge repository independent of individual healers. Even if a plant name is forgotten, the physical plant remains available, and vendors transmit practical knowledge to customers.

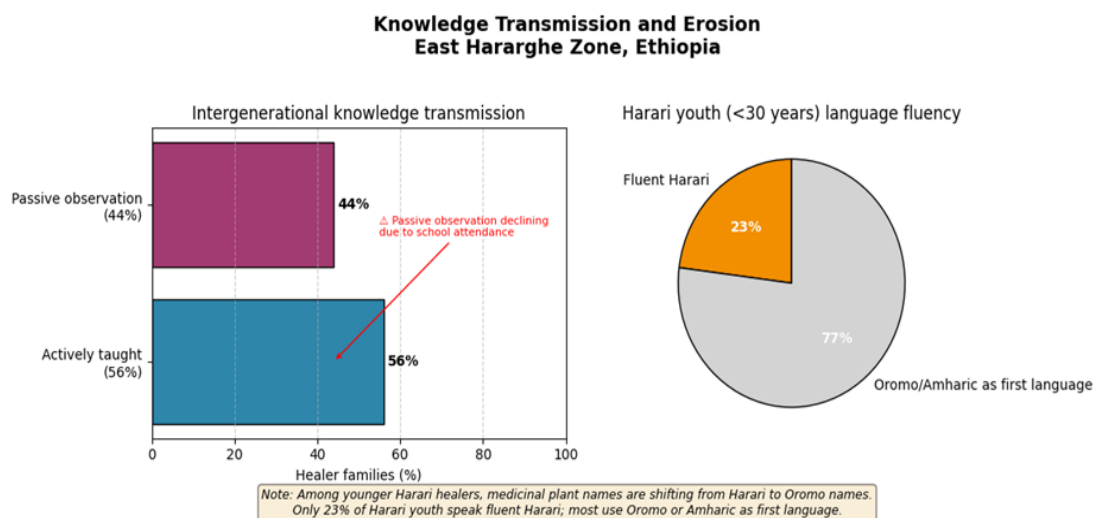


Figure 4. Intergenerational knowledge transmission methods (left) and Harari youth (< 30 years) language fluency (right). Source: Authors, 2026.

4. Discussion

The distinct Harari *Lil* (wind disease) category—absent in Oromo nosology—suggests unique humoral adaptations influenced by Harari's historic trade connections with Arabian and Indian medical traditions (Belayneh; Bussa, 2020; Fenetahun et al., 2017). This finding aligns with cross-cultural ethnomedical literature

documenting the incorporation of Middle Eastern humoral concepts into East African healing systems (Albuquerque et al., 2014).

The differential erosion of traditional medicinal knowledge, with younger healers recalling significantly fewer species, mirrors trends reported from other Ethiopian zones (Tuasha et al., 2023). Market-based sourcing from wild populations without sustainability criteria poses a conservation risk, consistent with observations by Cunningham (2001) across African medicinal plant markets. The existence of matrilineal knowledge transmission among Oromo women, although rare, challenges the dominant narrative of exclusively patrilineal transmission in Ethiopian ethnomedicine (Yineger et al., 2015) and warrants further gender-sensitive inquiry.

The unique Harari incorporation of wind (*lil*) into the hot–cold model likely reflects centuries of maritime trade with Arabian and Persian medical systems, which traditionally recognise wind-based pathologies (Fenetahun et al., 2017; Tafazoli et al., 2022). The presence of written manuscripts exclusively in the Harari system corroborates historical accounts of Harar as a medieval Islamic learning centre, where literacy enabled codification of medicinal knowledge—an advantage absent among neighbouring pastoralist groups (Mekonnen; Abebe, 2017). Lower female healer proportion among Somali (18%) compared with Harari (41%) may reflect stronger gender-based role differentiation in pastoralist societies, consistent with regional ethnographic reports (Tuasha et al., 2023).

High spiritual initiation rates among Somali and Harari healers, versus lower rates among Oromo Qallu, suggest different pathways to healing authority: Somali and Harari systems emphasise prophetic or possessed calling, whereas Oromo healing legitimacy derives more from genealogical lineage within the Qallu institution (Yineger et al., 2015). Market integration patterns align with settlement history: urban Harari have commodified traditional medicine, while Oromo healers maintain subsistence-oriented, non-market exchange. These comparative insights are essential for culturally differentiated health policy.

The substantial price premiums for high-quality medicinal plants (2–3×) demonstrate that local market mechanisms recognise and reward pharmacopoeial quality, even in the absence of formal standardisation (Cunningham, 2001) (Table 3). This finding aligns with ethnobotanical studies from other African markets where visual and olfactory cues serve as proxies for bioactive compound content (Albuquerque et al., 2014). The flotation test for *Lepidium sativum* seeds sinking, indicating viability, represents an inexpensive, culturally embedded quality assurance method that could inform low-cost pharmacopoeial standards.

However, the majority of vendors sourcing from wild populations without sustainable harvest criteria pose a serious conservation threat, mirroring trends documented for *Aloe harlana*, which is already classified as vulnerable in eastern Ethiopia (Ayalew et al., 2022). Integrating traditional quality indicators into formal regulation, while coupling market incentives with wild-harvest management training, could simultaneously preserve traditional knowledge and protect threatened medicinal species.

The stark gender-based division of medicinal plant knowledge observed across all three ethnic groups supports the concept of “gendered ethnobotany,” where therapeutic domains and certain species are exclusively transmitted within female or male lineages (Albuquerque et al., 2014) (Table 4). The consistent association of women with reproductive health, postpartum care, and infant ailments across Harari, Oromo, and Somali systems reflects universal female caregiving roles, yet the species used differ ethnically (Tuasha et al., 2023).

Exclusive female knowledge of *A. harlana* for postpartum bleeding (Harari) and *Boswellia* for postpartum fumigation (Somali) suggests that maternal health knowledge may be particularly vulnerable to loss when female healers are under-represented in formal documentation efforts (Cunningham, 2001). The absence of male knowledge of certain species indicates that documenting only male healers common in ethnobotanical surveys would produce seriously incomplete pharmacopoeias. Integrating female healers into formal TMK documentation and conservation programmes is therefore an urgent priority.

The observed gradient significant among Somali and Harari, negligible among Oromo—reflects a foundational biomedical-anthropological axiom: disease aetiologies are culturally constructed and unevenly distributed along geographical, historical, and religious boundaries (Lewis et al., 1991) (Figure 2). The *zar/bori* complex does not represent a monolithic “East African” tradition, but rather originated in the mixed Christian-Islamic highlands of Ethiopia (the Harari heartland) and diffused outward along Red Sea slave-trade routes into Somalia and Sudan. This historical trajectory aligns with the present findings: Harari and Somali healers share the same core construct, while Oromo healers—historically less integrated into the slave-trade networks linking Harar to the Somali coast—did not adopt the *zar* cult terminology (Mekonnen; Abebe, 2017).

The literature also confirms that this possession cult appeals particularly to urban women confronting status conflicts (Lewis et al., 1991). This may explain its higher prevalence in the historically urbanised Harari system

(28%) compared with the more pastoral Oromo (18%). The absence of the *zar* construct in Oromo ethnomedicine underscores the need for culturally tailored health messaging rather than a generic “regional” approach to spirit-possession aetiologies (Yineger et al., 2015).

The near-even split between active teaching and passive observation of traditional medicine is characteristic of systems under pressure. The decline of the passive observation model, where knowledge is absorbed through daily life, is a predictable outcome of increased school enrolment (Figure 3), which physically and temporally removes children from the domestic and community spheres where healing practices occur (Belay et al., 2005). This finding mirrors reports from other Ethiopian zones, where modern education is cited as a primary driver of the younger generation’s detachment from indigenous knowledge systems (Chama, 2017). When intergenerational contact is reduced, the responsibility for knowledge transmission falls exclusively on a smaller cohort of dedicated practitioners, making the system more vulnerable to disruption (Duguma, n.d.).

The language shift observed among Harari youth is of profound concern. When a community loses its language, it does not simply lose a means of communication but also a unique framework for understanding the world (Fenta, 2025). The finding that younger healers are replacing Harari botanical names with Oromo terms represents a direct loss of the lexical specificity and conceptual categories embedded in the Harari language. This is a process of semantic erosion, where the name of a plant is divorced from the cultural and ecological knowledge it encodes (Chama, 2017). Studies on other endangered language communities in Ethiopia confirm this trajectory, showing that the loss of a mother tongue leads directly to the loss of the indigenous knowledge tied to it (Fenta, 2025). If this trend continues, what remains of Harari traditional medicine may be a pharmacopoeia of Oromo-named plants, with the unique Harari conceptualisation of the natural world gradually erased (Duguma, n.d.).

4.1 Hari medicine: Distinctive and threatened

The Harari system's unique *lil* (wind) concept, written manuscripts, and market integration distinguish it from neighboring Oromo and Somali systems. However, with only ~200,000 Harari speakers and rapid urbanization of Harar city, this knowledge system is critically endangered (UNESCO, 2022). Urgent documentation – including digitization of manuscripts and audio recording of plant names – is recommended.

4.2 Market as a knowledge system

The Harar herbal market represents an understudied model of “commercial ethnobotany” where knowledge is commodified, standardized, and transmitted through economic transactions rather than kinship. This market-based resilience may outlast household-based knowledge in West Hararghe. Future research should analyze market dynamics using economic anthropology methods.

4.3 Gender and healing access

Female healers (36% of informants) provide essential reproductive health services in a region with high maternal mortality (412/100,000; WHO, 2023). Their systematic exclusion from prior ethnobotanical surveys (most studies interview only male healers) represents a significant knowledge gap. Drug discovery for postpartum hemorrhage, lactation failure, and infertility should prioritize plants cited exclusively by women (Brahim et al., 2025; de Boer; Cotingting, 2014; Khadim et al., 2024; McDougall et al., 2022).

4.4 Clinical and policy implications

The conclusions of this study have important implications for strengthening primary health care (PHC) in Ethiopia, where traditional medicine continues to serve as a major source of healthcare for rural and underserved populations (Mengistu et al., 2025; Tarekegn et al., 2025). The distinct healing systems identified among the Harari, Oromo, and Somali communities, including the Harari's unique *lil* (wind) disease category, the Somali's higher spiritual causation rates (34%), and the Oromo's predominantly oral tradition, demonstrate that culturally responsive healthcare must recognize and value local therapeutic knowledge while ensuring patient safety through evidence-based collaboration between traditional healers and biomedical professionals (Sections 3.1–3.3). Recent evidence presented by Berhan et al. (2022) and Mengistu et al. (2025) indicates that Ethiopia has made substantial progress toward Universal Health Coverage (UHC); however, the limited integration of traditional medicine into PHC remains a significant challenge (Usure et al., 2024).

The establishment of culturally appropriate referral pathways, strengthened professional dialogue, increased investment in local health services, and collaborative training programs could substantially improve healthcare accessibility and continuity of care, particularly in remote and underserved communities. For instance, the 56% of healer families relying on passive observation and the 23% Harari youth language fluency rate (Section 3.6) underscore the urgency of integrating elder-youth apprenticeship models into community health extension programmes before unique diagnostic knowledge is lost.

The present findings are also consistent with the WHO Global Traditional Medicine Strategy 2025–2034 (WHO, 2025), which encourages Member States to generate robust scientific evidence, establish comprehensive regulatory frameworks, strengthen professional competencies, promote regional ethnopharmacological research, and integrate scientifically validated traditional medicine practices into national health systems, particularly in African countries such as Ethiopia, as highlighted by Ayenew et al. (2026).

Rather than replacing conventional medicine, the WHO advocates for a complementary, evidence-based model of integration that respects cultural diversity while ensuring the quality, safety, and efficacy of healthcare interventions. In this context, the comparative ethnomedical evidence generated in East Hararghe, particularly the documented price premiums (2–3×) for quality-graded medicinal plants in the Harar market (Table 3), the gender-exclusive knowledge held by female healers (41% of Harari sample), and the rapid semantic erosion of Harari botanical nomenclature, provides a valuable scientific foundation to support the future implementation of these international recommendations within Ethiopia's healthcare system (Wendimu et al., 2024).

According to Gitima et al. (2025), healthcare delivery extends far beyond the treatment of disease, a perspective strongly reinforced by the findings of the present study, which highlight the urgent need to preserve cultural heritage. The rapid decline in Harari language fluency (to just 23% among youth), the erosion of intergenerational knowledge transmission (active teaching in only 44% of families), and the progressive loss of women-specific medicinal knowledge (e.g., *Aloe harlana* for postpartum bleeding, cited exclusively by female healers; Section 3.4) demonstrate that traditional medicinal knowledge represents not only a vital healthcare resource but also an essential component of Ethiopia's intangible cultural heritage, which remains largely centered on phytotherapy. Recent ethnobotanical studies have emphasized that systematic documentation, community participation, digital archiving, and the preservation of Indigenous languages are fundamental strategies for safeguarding ethnomedicinal knowledge while simultaneously protecting medicinal plant biodiversity and the associated ecological knowledge systems (Fonseca-Kruel et al., 2026; Hart et al., 2026; Magare; Patil, 2025).

Our findings also provide robust scientific evidence to support the formulation of public policies at both regional and national levels, corroborating previous literature addressing the use of medicinal plants in local healthcare systems, the importance of ethnobotanical knowledge, and the ongoing erosion of traditional knowledge related to alternative approaches for managing a wide range of pathological conditions (Ayenew et al., 2026).

Based on the comparative data presented in Sections 3.1–3.6, policy initiatives should include: (1) the formal recognition of traditional healers with certification systems that leverage the Harar market's existing quality-grading mechanisms (Table 3); (2) sustainable management of medicinal plant markets, addressing the 71% of vendors sourcing from wild populations without sustainable harvest criteria; (3) the inclusion of women healers in documentation and conservation programmes, given their exclusive knowledge of reproductive health species (Table 3); (4) the promotion of community-based ethnobotanical education, including school clubs where elder healers teach plant identification and Harari language alongside the formal curriculum; and (5) the integration of ethnomedicinal conservation into biodiversity and public health policies (Saensouk et al., 2025; Yifru et al., 2025).

Furthermore, recent studies suggest that successful integration requires coordinated governance, effective regulatory oversight, rigorous scientific validation of traditional therapies, and continuous collaboration among universities, healthcare institutions, local communities, and governmental agencies (Ayenew et al., 2026; Mbelebele et al., 2024). Collectively, these strategies would contribute simultaneously to biodiversity conservation, the preservation of Indigenous knowledge systems, and the delivery of more equitable, culturally responsive, and sustainable healthcare services throughout Ethiopia.

5. Conclusion

This qualitative comparative study demonstrates that traditional medicinal knowledge in East Hararghe Zone is neither monolithic nor uniformly distributed across Harari, Oromo, and Somali healing systems. Each system possesses distinct nosological frameworks, diagnostic methods, gender-based therapeutic specialisations, and

patterns of market integration. The Harari system uniquely incorporates wind-based (*lil*) diseases alongside the hot-cold humoral model, maintains a written manuscript tradition, and exhibits the highest female healer proportion (41%). Somali healers report the highest rates of spirit-caused pathology (34%) and the strongest veterinary specialisation, reflecting their pastoralist ecology. Oromo practice remains predominantly oral, with lower market integration and the lowest rate of spiritual causation (18%).

A concerning gradient of knowledge erosion is evident across all three systems, but with differential vulnerability. Intergenerational transmission now relies on active teaching in only 56% of healer families; passive observation is declining due to formal schooling. Harari youth language fluency has collapsed to 23%, directly leading to the replacement of Harari medicinal plant names with Oromo equivalents, a semantic erosion that threatens the unique Harari pharmacopoeia. Gender-exclusive knowledge, particularly female-held species for reproductive and pediatric care, risks being lost when female healers are underrepresented in documentation efforts. Market mechanisms reward quality (2–3× price premiums for good-grade products), yet 71% of vendors source from wild populations without sustainable harvest criteria, imperilling vulnerable species such as *Aloe harlana*.

In summary, traditional medicinal knowledge in East Hararghe is culturally pluralistic, ecologically embedded, and undergoing rapid transformation. Without targeted, culturally differentiated interventions, unique therapeutic knowledge, particularly linguistic, female-held, and ritual-based domains, will likely be lost within one generation.

6. Recommendations

Based on these findings, the following actions are recommended:

- **Ethno-linguistic documentation:** Prioritise audio-visual recording of Harari medicinal plant names and diagnostic narratives before fluent elder speakers are lost. Establish a community-owned digital lexicon.
- **Gender-sensitive knowledge conservation:** Fund participatory documentation projects led by female healers to record species exclusively cited by women (e.g., *Aloe harlana*, *Boswellia*, *Malva parviflora*). Integrate this knowledge into maternal health extension packages.
- **Market-based conservation incentives:** Introduce quality certification for sustainably sourced medicinal plants, linking price premiums to verified wild-harvest management practices. Train vendors in simple propagation and rotational harvesting.
- **Intergenerational transmission support:** Develop school-based ethnomedicine clubs where elder healers teach plant identification and language alongside the formal curriculum, using local languages as the medium of instruction.
- **Policy integration:** Formalise recognition of Harari, Oromo, and Somali healing systems in the East Hararghe Zonal Health Department's primary healthcare strategy, including referral pathways from traditional healers to health centres.

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8. Authors' Contributions

Melaku Msresha Woldeamanual: conceptualization, methodology, investigation, data curation, formal analysis, writing original draft, visualization. *Belay Sitotaw Goshu:* project administration, validation, writing review & editing, formal analysis, submission of the manuscript, correspondence with the journal, and revision of the manuscript following peer review. *Molla Fente Tasew:* investigation, data curation, resources, validation. *Feven Tigistu Ayele, Beyene Dereje Degefa and Dawit Daniel Dando:* investigation, resources, data curation, validation. *Sitina Dawude Ahemed:* supervision, methodology, validation, writing review & editing.

9. Conflicts of Interest

No conflicts of interest.

10. Ethics Approval

Yes applicable. Ethical approval was obtained from Dire Dawa University Institutional Review Board (Ref: DDU/IRB/045/2025), Dire Dawa University (Protocol No. DDU-IRB/245/2025), ABS permit No. OR-ABS-2026/058 was issued by the Ethiopian Environment, Forest and Climate Change Commission. Prior Informed Consent (PIC) was obtained at the community level through public meetings with Harari, Oromo, and Somali clan elders. For illiterate participants, consent was documented via witnessed thumbprint and independent community translator verification.

11. Artificial Intelligence Statement: Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

The authors declare that generative artificial intelligence (AI) was used exclusively to assist in the creation of the Graphical Abstract and Figure 1 for this manuscript. No AI tools were used in the writing, interpretation, analysis, or revision of the scientific content. All AI-generated visual materials were carefully reviewed, verified, and approved by the authors, who assume full responsibility for their accuracy, integrity, and consistency with the scientific findings presented in the manuscript.

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Informed Consent Statement

Yes applicable.

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