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Language mixing in traditional medicine manuscripts: public access to health knowledge and practices in Indonesia

Ellyana Hinta[a], Mirna Yusuf[b], Asna Ntelu[a], Muassomah[c] and Rasuna Thalib[d]

[a]Department of Indonesia Language and Literature, Universitas Negeri Gorontalo, Angola, Indonesia; [b]Department of Social Development and Walfare, Universitas Gadjah Mada, Yogyakarta, Indonesia; [c]Arabic Language Education, Maulana Malik Ibrahim State Islamic University of Malang, Angola, Indonesia; [d]Department of English Language, Universitas Negeri Gorontalo, Angola, Indonesia

ABSTRACT
This study examines the intersection of linguistics and traditional Indonesian medicine, focusing on traditional medical manuscripts. The prevalence of code-switching in these texts impacts indigenous medical knowledge across diverse linguistic communities, enabling wider comprehension and utilization for health purposes. This research explores the grammatical and linguistic features embedded within these manuscripts, highlighting their role in enhancing accessibility and understanding of traditional healing practices among various linguistic groups. Driven by the limited existing research on how traditional grammatical styles are preserved and adapted within the manuscripts to convey medical knowledge, this article offers a comprehensive qualitative analysis of the linguistic mechanisms underlying language mixing. Data were collected through manuscript reviews and interviews, analyzed through restatement, description, and interpretation to achieve a holistic understanding of the language mixing patterns. The analysis identifies key linguistic elements—lexical choices, sentence structures, and figurative language—that contribute to the manuscripts' comprehension. Findings reveal that the integration of multiple languages not only enriches medical terminology but also significantly facilitates the dissemination and acceptance of traditional medical practices. This research contributes substantially to the field by demonstrating the critical role of linguistic practices in shaping the accessibility, preservation, and transmission of traditional medical knowledge.

1. Introduction

The study of language mixing in traditional medical texts holds both academic and practical significance, given its profound impact on the accessibility and comprehension of medical knowledge across diverse linguistic communities. The intersection of linguistics and traditional medicine presents a rich domain for scientific inquiry, offering insights into how linguistic diversity influences the transmission and reception of health-related information. Language mixing, often occurring in the form of code-switching and lexical borrowing, can either facilitate or hinder public access to medical knowledge, depending on the socio-linguistic context in which it takes place (Fishman, 1972). This phenomenon is particularly relevant in multilingual societies, where traditional medical texts are typically composed in a blend of local languages, Arabic, and Malay, reflecting the intricate linguistic landscape of these communities. Understanding the mechanisms of language mixing in these texts is essential for developing effective strategies to enhance knowledge dissemination, ensuring that traditional medical information remains comprehensible and applicable to diverse linguistic groups.

While existing research on language mixing has predominantly focused on sociolinguistic and multilingual education contexts, there remains a critical gap in understanding its role within traditional

CONTACT Ellyana Hinta ✉ ellyana.hinta@ung.ac.id ▢ Department of Indonesia Language and Literature, Universitas Negeri Gorontalo, Angola, Indonesia.

medical texts. Notably, Myers-Scotton (1993) examined the structural and social aspects of code-switching, emphasizing its functions and motivations. However, these studies do not adequately address the unique challenges posed by language mixing in traditional medicine, where linguistic hybridity is not merely a communicative tool but also a medium for the preservation and transmission of indigenous health knowledge. Similarly, Auer (1998) investigated conversational aspects of code-switching, yet little attention has been given to its implications for textual comprehension and knowledge accessibility in medical manuscripts. This gap necessitates a focused investigation that not only identifies patterns of language mixing in traditional medicine manuscripts but also critically evaluates its impact on knowledge accessibility and public health communication.

To establish a robust theoretical foundation, this study integrates three key perspectives. Code-switching and code-mixing theories (Gumperz, 1982; Pop Lack, 1980) provide a framework for analyzing how linguistic hybridity facilitates cross-linguistic communication in medical texts. The sociolinguistic theory on language and knowledge accessibility (Fishman, 1972) explains how multilingual practices shape public engagement with health knowledge. Additionally, medical anthropology perspectives (Sarwit & Rahayu, 2023; Tilley, 2021) offer insights into how linguistic diversity in traditional medicine manuscripts preserves, adapts, and disseminates indigenous medical knowledge. These theoretical perspectives guide our analysis of language mixing as both a linguistic and socio-cultural mechanism that influences the accessibility of health knowledge.

This study aims to examine the phonological, lexical, and figurative elements of language mixing in traditional medical manuscripts. Through a comprehensive analysis, it seeks to elucidate the underlying linguistic mechanisms that shape the clarity and efficacy of traditional medical knowledge transmission. Furthermore, this research investigates how various linguistic combinations impact comprehension, assessing their role in enhancing or restricting knowledge accessibility for multilingual audiences. By identifying key language mixing patterns, this study contributes to a broader understanding of how traditional health knowledge is preserved, communicated, and applied across different linguistic and cultural contexts.

To achieve these objectives, this study employs established theoretical frameworks and integrates scholarly insights from linguistics and medical anthropology. The analysis draws upon code-switching theories such as those proposed by Gumperz (1982), which emphasize the social and communicative functions of language mixing. Specific examples from traditional medicine manuscripts are examined to illustrate the linguistic patterns and their implications for accessibility, offering a nuanced understanding of the role of language hybridity in public health knowledge transmission. Through this rigorous examination, this study aims to contribute to the broader discourse on language and health, emphasizing the crucial role of linguistic practices in shaping the effectiveness of traditional medical knowledge dissemination.

Studies on traditional medicine manuscripts from diverse cultural backgrounds provide valuable insights into historical health practices and indigenous knowledge systems. Research on Bengkulu manuscripts demonstrates their function in documenting and preserving cultural medical knowledge, including information on diseases, medicinal plants, and treatment methods. Similarly, Susena et al. (2013) have examined herbal formulas and healing techniques, offering a contextual understanding of disease concepts within indigenous cosmologies. Further investigations into Javanese, Balinese, Malay, and Sundanese medical manuscripts reveal detailed descriptions of diseases, therapeutic techniques, and herbal remedies, highlighting the rich medical heritage embedded in these texts. These manuscripts serve as indispensable sources for identifying effective traditional treatments and alternative therapies (Shafri & Nazarudin, 2022), as well as providing historical perspectives on disease mitigation strategies

This study holds significant implications for both academic and practical domains. From a theoretical perspective, it extends code-switching research by applying it to an understudied area—traditional medical texts—offering new insights into the intersection of linguistic diversity and health knowledge transmission. From a practical standpoint, its findings contribute to public health initiatives, particularly in multilingual communities where linguistic barriers may hinder access to traditional and contemporary medical information. By bridging the gap between academic inquiry and applied knowledge, this research not only advances sociolinguistic theory but also informs culturally inclusive health communication

strategies, ensuring that traditional medical knowledge remains accessible and relevant in modern healthcare contexts.

2. Literature review

2.1. Traditional medicine manuscript

Traditional medicine encompasses treatment modalities that have been passed down through generations, serving as a fundamental aspect of cultural heritage (Alqanatish et al., 2023; Gakuya et al., 2020). The preservation of these practices is essential for maintaining cultural identity and serves as a benchmark for measuring societal changes and deviations . Traditional medicine also reflects gender roles, as women often play a central role in implementing healing practices within family healthcare systems. Additionally, it relies on the utilization of herbal plants and animals, which continue to support traditional healing methods despite the expansion of modern public health sectors and urbanization (Candelise & Kernen, 2023; Lozoya, 1994). In some regions where traditional medicine remains prevalent, it is estimated that 90% of the population consumes approximately 3,500 tons of medicinal plants monthly (Che et al., 2023). Consequently, traditional medicine can be considered a microhistorical phenomenon, forming an integral part of cultural identity and retaining relevance for treating specific diseases (Tilley, 2021).

Traditional medicine manuscripts serve as repositories of historical healing knowledge, documenting medicinal formulas and healing procedures that have evolved within specific regional cosmologies (Grace et al., 2020). These manuscripts provide insights into the diverse philosophical approaches used to understand diseases and treatments, incorporating descriptions of herbal medicine collections alongside spiritual elements such as recitations, mantras, wafak (talismans), isim (symbols), and azimat (amulets) (Hidayatullah, 2019). Some studies suggest that traditional medicine manuscripts can serve as references for developing environmentally sustainable natural products, demonstrating their continued relevance in contemporary society (Hanani, 2023; Rochmiatun, 2013). Beyond their cultural and economic value, these manuscripts have been adapted for use in the creative industries, preserving traditional medical knowledge while simultaneously fostering local innovation (Hanani, 2023).

2.2. Language mixing in local medical knowledge

Language mixing, or language absorption, arises from the interaction of two or more cultures, resulting in the integration of diverse linguistic elements (Hsu, 2024). As Peters (2024) notes, this blending of languages can convey a wealth of information, reflecting interactional structures, social contexts, and speaker identities. This process is often a consequence of trade, migration, colonization, or other forms of cultural exchange (Meneghello et al., 2006). The Indonesian language, for example, demonstrates this phenomenon through its incorporation of numerous words from Sanskrit, Arabic, Portuguese, Dutch, and English—a direct reflection of its extensive history of interaction with various nations (Harun, 2019). Harun further argues that language absorption not only enriches vocabulary but also serves as a mirror to the social, economic, and political dynamics of the society in question. Moreover, this linguistic integration facilitates intercultural communication, accelerates the dissemination of knowledge and technology, and fosters stronger relationships among global communities. Language mixing, therefore, is not merely a linguistic phenomenon but a powerful indicator of cultural exchange and societal development.

In the context of traditional medicine manuscripts, language absorption reflects the evolution of cultural and medical knowledge across various societies (Zhang et al., 2004). These manuscripts frequently contain terms and concepts borrowed from multiple languages, indicating intercultural interaction and knowledge exchange (Yuan et al., 2016). For example, traditional Javanese medical manuscripts exhibit significant influence from Sanskrit and Arabic due to contact with Indian and Middle Eastern cultures. Similarly, traditional Chinese medicine incorporates terminology from Tibetan and Mongolian languages. This linguistic absorption not only enriches medical vocabulary but also aids in the dissemination and acceptance of medical practices across different regions. Consequently, traditional medicine manuscripts

serve not only as medical documents but also as historical records of cross-cultural interactions that enhance global medical knowledge (Tan et al., 2021).

2.3. Accessibility of medicine

The accessibility of traditional medicine plays a crucial role in public health, particularly in rural and remote areas, where modern healthcare services are often limited (Triratnawati, 2010). Many communities continue to rely on traditional healing methods due to their affordability, ease of access, and deep-rooted trust in the natural efficacy of the materials used (Kostrzewa et al., 2019). Moreover, traditional medicine remains an integral part of cultural heritage, passed down through generations and fostering a sense of confidence and familiarity among community members. These traditional systems take a holistic approach to health and disease, utilizing whole plants or combinations of plant extracts and herbs as treatment preparations (Singh et al., 2016). The presence of phytochemicals—biologically active secondary metabolites found in roots, leaves, flowers, stems, and bark—enables diverse pharmacological functions within the human system, further supporting the continued use of traditional medicine (Singh et al., 2016).

The role of language mixing in enhancing medical accessibility is evident in multilingual traditional medicine manuscripts, which allow diverse linguistic groups to comprehend, adapt, and apply traditional healing practices. The historical significance of medical knowledge transmission is also reflected in ancient manuscripts from China, India, Egypt, and Greece, which contain a wealth of recipes, medicinal concoctions, and treatment methods that have been passed down through generations (Jia et al., 2024; Murtini et al., 2019). These manuscripts have enabled literate healers and the general public to access documented medical knowledge, facilitating the dissemination and preservation of traditional health practices (Dong, 2013). Although direct access to these manuscripts was historically limited, healers and medical experts served as intermediaries, ensuring that medical knowledge was transferred to a wider audience (Zhou et al., 2022). Consequently, traditional medicine manuscripts remain invaluable resources, preserving and disseminating medical knowledge across linguistic and cultural boundaries, thereby contributing to global health knowledge and cultural heritage (Jia et al., 2024).

3. Methodology

This research focuses on language mixing in traditional medicine manuscripts as the primary unit of analysis. This focus is predicated on the central role of traditional medicine in community life, which can be accessed through local knowledge embedded in texts. Traditional medicine manuscripts serve not only as a medium connecting communities with healthcare practitioners but also as a conduit linking people with one another. Understanding language mixing in these manuscripts is essential for comprehending both the local or regional identity expressed through language mixing and for facilitating public access to medical knowledge and practices. The selection of traditional medicine material in this study was based on several criteria: high humanitarian and cultural value, reflection of the linguistic and traditional uniqueness of the local community, and continued use by the community irrespective of social status. In ensuring the validity of these criteria, manuscripts were cross-referenced with archival records, ethnographic documentation, and expert reviews to establish their authenticity and relevance.

This study focuses on the linguistic features found in traditional Indonesian medical manuscripts, specifically analyzing lexical elements, sentence structure, and figurative language. The research incorporates data from ten informants selected to represent a diverse range of backgrounds and geographical locations within the community, all possessing knowledge of traditional medicine. Informants were chosen based on their expertise in interpreting traditional medical texts and their direct involvement in traditional healing practices. These practitioners provide valuable insights into the interpretation and application of language mixing in medical manuscripts, allowing for a deeper contextual understanding of how traditional medical knowledge is disseminated.

This study employs a qualitative research design to examine language mixing in traditional medicine manuscripts. A qualitative approach was chosen for its capacity to elucidate the meaning and context of language inherent in these manuscripts. Data collection methods include field observations,

manuscript analysis, and in-depth interviews. The qualitative approach offers several advantages in understanding the preservation of language as a community identity marker, ensuring that the study captures not only linguistic patterns but also the socio-cultural dimensions of medical knowledge transmission. Furthermore, this method facilitates flexibility in adapting research techniques, allowing the study to incorporate historical and contemporary perspectives in analyzing language mixing within traditional medicine texts.

This research utilizes data from texts/manuscripts and field interviews as primary sources of information (Figure 1). These data serve to map the prevalence of traditional medicine manuscripts and their utilization for community benefit, as well as to explore the community's understanding of traditional medicine. The collected data is categorized into three linguistic groups based on language mixing: local language, Arabic, and Malay. These languages are analyzed through three key elements: (1) Lexical elements (diction): Examining word choices that reflect cultural and medical terminologies; (2) Sentence structure: Identifying syntactic patterns that contribute to the accessibility of medical knowledge; and (3) Figurative language (tropes): Analyzing metaphors, alliteration, and symbolic expressions in traditional medical texts.

To strengthen the credibility of these sources, manuscript authenticity was validated through archival references, expert reviews, and comparative analysis with previous studies on traditional medical texts. This ensures that the linguistic and medical knowledge analyzed in this study is derived from credible and well-documented sources. Data collection in this research employs both expert interviews and document analysis methods. The documents in question are traditional medicine manuscripts, which allow for direct observation of how languages used in these texts facilitate access to health knowledge. The aspects observed in these manuscripts include lexical elements, sentence structure, and the use of figurative language.

The data collection process proceeds in several stages: (1) Identifying manuscripts to obtain information about their location, material condition, and content; (2) Selecting specific manuscripts for detailed mapping based on linguistic and cultural significance; (3) Verifying authenticity through expert consultation and archival validation; and (4) Conducting in-depth interviews with selected informants who are well-versed in traditional medical knowledge and manuscript interpretation.

This study employs a three-pronged data collection approach to ensure comprehensive analysis: (1) Document Analysis: Traditional medical manuscripts were photographed, transcribed, and categorized based on linguistic elements; (2) Observations: Field observations were conducted in communities where traditional healing practices remain active, allowing researchers to analyze how linguistic elements are applied in real-life medical practices; and (3) Interviews: Informants provided detailed explanations about the meaning, function, and historical evolution of linguistic features in traditional medicine manuscripts. By integrating these methods, the study ensures a balanced and multi-perspective approach to data collection, reinforcing the validity of findings through cross-verification with multiple sources.
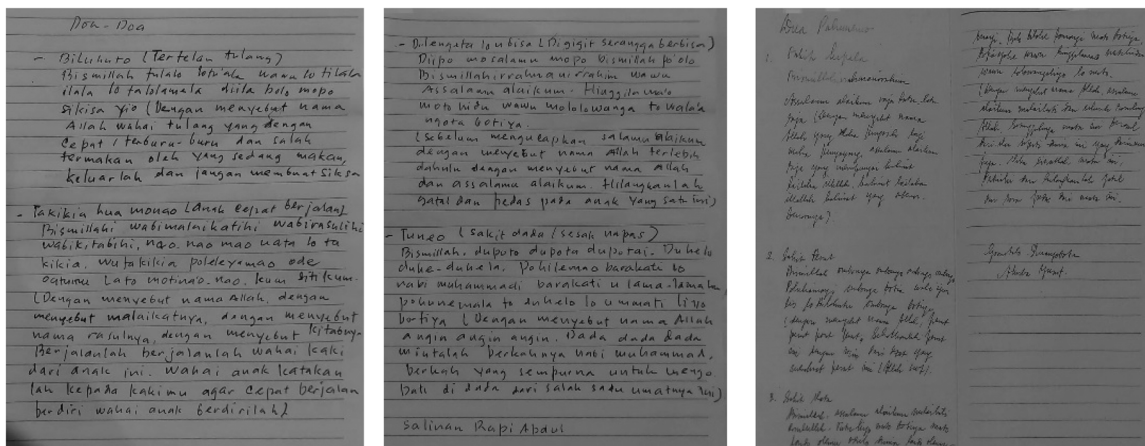

Figure 1. Traditional medicine manuscripts of Gorontalo.

This study employs an interpretive analysis method to elucidate the collected data, ensuring that the contextual meaning of linguistic elements is fully explored. The interpretation process follows three analytical stages: (1) Restatement: Data is systematically categorized to ensure accurate representation of linguistic patterns; (2) Description: Observational and interview data are mapped to identify linguistic structures within traditional medical manuscripts; and (3) Interpretation: Findings are contextualized within the broader discourse on linguistic accessibility in traditional medicine. The analysis process is iterative, meaning data is revisited, categorized, and re-evaluated multiple times to ensure depth and precision in findings. Additionally, critical interpretation is applied to mitigate potential researcher bias, ensuring that the conclusions drawn are grounded in empirical evidence.

To address concerns about manuscript reliability and methodological rigor, this research implements several validation strategies: (1) Triangulation of data sources – Ensuring consistency between manuscript analysis, field observations, and informant interviews; (2) Cross-referencing with previous studies—Validating findings against existing literature on traditional medicine and linguistic practices; and (3) Expert verification—Consulting linguistic and medical experts to confirm interpretations of language mixing patterns. Through these measures, the study ensures that language mixing patterns identified in traditional medicine manuscripts align with their practical applications and historical authenticity.

4. Results

4.1. Lexical elements (word choice) in medical language

The language of medicine, with its lexical elements, refers to the specific vocabulary and word choices used to convey medical information accurately. Understanding the lexical elements in the mixed language of traditional medicine can be seen in Table 1 below.

The lexical choices in the multilingual context of traditional medicine manuscripts predominantly convey instructions and prohibitions related to specific actions. Instructional diction employs terms such as 'transfer,' 'request,' and 'sleep,' guiding readers to perform actions believed to alleviate their ailments as part of the therapeutic process. Conversely, prohibitive diction serves to restrict certain behaviors, often utilizing words like 'avoid,' to prevent actions considered detrimental to recovery. Both instructional and prohibitive language in traditional medicine manuscripts direct individuals and communities towards behaviors and practices believed to cure illnesses, constituting an integral component of the healing paradigm.

4.2. Sentence elements (how sentences are put together) in medical language

The complexity of language mixing in traditional medical texts is evident through the sentence elements that construct their linguistic structure. These sentence structures play a crucial role in shaping communication within traditional medicine. An analysis of medicinal manuscripts reveals distinctive patterns in the usage of sentences in traditional medical language.

Table 2 illustrates that the sentence elements employed in traditional medical language are deeply rooted in their cultural context. For instance, the sentence 'O ruler of all angels, King *Maula Kum* (I use) to fight the king *Malela Kum*' reflects the community's spiritual beliefs and convictions regarding the etiology of illness. Similarly, the sentence 'Light of Allah, light of Muhammad. By Allah's guidance, remove the heat' further exemplifies this phenomenon. These examples demonstrate how sentences in traditional medical texts often invoke belief systems and supernatural powers, which are perceived to play a significant role in the healing process.

4.3. Figurative language structures (use of descriptive or symbolic language) in medical manuscripts

The structure of figurative language in language mixing serves as a rhetorical device to convey meaning and evoke emotions in traditional medical manuscripts. This function can be seen in Table 3:

Table 1. Lexical elements in manuscript.

No	Lexical elements	Code	Source
1	Treating heart disease: *Assalamu'alaikum ujala- ujulila nyawa/Kuli-kulia putu'u, limbatolioma'o/ode putu lilo'uwola […] wau putulio limbatamay ode ola'u.* Translation: Safety to you, O soul/Observe my heart, transfer it/to [name]'s heart and move their heart to me.	'Limbatolioma'o' (transfer there) means transferring the disease from one person to another, and conversely, transferring health from another person to oneself, which is expressed as 'limbatamayi' (transfer there).	Suleman Pomolango, 61, from Asparaga Subdistrict, Gorontalo Regency, Gorontalo Province
2	Treating boils: *Wanu patu pohuwalingama'o ode dulahu/wanu huhulo pohuwalingama'o ode dupoto* (Local Language/LL) If it's hot, return it to the sun/if it's cold, return it to the wind.	Boils (abscesses), if caused by heat, are hoped to be returned to the sun, and if caused by cold, to the wind. Therefore, the diction 'pohualingama'o' (return) is the main term in this sentence.	Maryam, 70, from Limba U1Village,Kota Selatan Subdistrict, Gorontalo City, Gorontalo Province
3	Treating body aches: *Bismillahirrahmanirrahiim/ Allahumma inni as'aluka afiyah Fiddunya wal-akhirah* (read seven times). (Arabic Langugage/AL) In the name of Allah, the Most Compassionate/O Allah, grant me well-being in this world and the hereafter (read seven times).	The diction 'mohon' (request) and 'keafiatan' (well- being) are the main hopes in this prayer, recited when a patient suffers from body aches.	Suleman Pomolango
4	Treating headaches: *Bangu- bangu nyawa/ Bangu-bangu diri/Asati tawu bangu tabiya/ Patila to delomiyo ola'u bulemengiyo.* Rise, rise, o souls/Rise, rise, o self/As humans rise for prayer/In it you, beside it me.	The diction 'bangu' (rise), 'nyawa' (soul), 'shalat' (prayer) are core words for healing headaches.	Suleman Pomolango
5	Treating asthma: *Allah luli- luli/Allah nuli-nuli/ Ilah yihi kum.*(AL + LL) Allah heals/Allah makes healthy/Allah strengthens all.	'Allahluli-luli' means 'Allah heals'.	Suleman Pomolango
6	Treating extreme chest pain: *Wahi-mewahi lati pelahi wahi/Mawahia/Lati pelahiya.* (LL) Go away, go away, demon, go far away/Stay away/ The demon should be kept away.	The diction 'walahi' (go away/avoid), 'mawahia' (stay away), and 'pelahiya' (be kept away) are markers to command spirits (demons) not to disturb humans. Conversely, humans are also expected not to engage in behaviors that attract demonic temptations.	Suleman Pomolango
7	Treating chest pain: *Bismillah, dupoto dupota dupotai/Duhela duhe- duhela, pohilema'o barakati lo nabi Muhammadi/barakati u lama-lamahu pohunemala to duhelo lo ummati liyo botiya.* (LL) In the name of Allah, wind wind wind/Chest chest chest, seek the blessing of Prophet Muhammad/ perfect blessing for healing the chest of one of his followers.	The diction 'dupoto' (wind), 'duhelo' (chest), 'barakati' (blessing), 'Berkah Allah' (blessing of Allah),'mengobati umatnya' (healing his followers) are the main elements for treating chest pain.	Akuba Yusuf,70, from Huangobotu Village, Dungingi Subdistrict, Gorontalo City, Gorontalo Province
8	Treating eye pain: *Bismillah, assalamu alaikum malaikati rasulullah/Tutu liyo tutu, mato botiya mato londo oleMu odelo dunia londo oleMu mayi/Bolo bilohe lomayi mato botiya, po'opiyohewawu hinggilama'o u motohidu wawu lolowangaliyo lo mato.* (LL) In the name of Allah, peace be upon you angels and all messengers of Allah/This eye is from You as the world is from You/Therefore, look at this eye, fix and remove the itch and pain from this eye.	The diction 'dunia dari-Mu' (world from You), 'mata dari-Mu' (eye from You), 'lihatlah mata ini' (look at this eye), 'perbaikilah' (fix), 'hilangkanlah' (remove), 'sakitnya' (pain). These words represent the hopes for those suffering from eye pain, asking Allah to heal their eyes from itchiness and pain.	Akuba Yusuf

As illustrated in Table 3, the figurative language employed in the multilingual context of traditional medicine utilizes several rhetorical devices, primarily comparison, emphasis, and repetition. These devices aim to provide figurative expressions related to traditional medical concepts and practices. Firstly, comparison is evident in sentences such as 'If hot, return it to the sun. If cold, return it to the wind,' which use metaphorical language to elucidate medical concepts. Secondly, emphasis is employed to reinforce the importance of specific treatment recommendations. Thirdly, repetition involves the implicit reiteration of certain sentences, enhancing their significance within the text. These three figures of speech function to highlight the importance of paying attention to the treatment recommendations in the medical manuscript text.

Table 2. Sentence elements in medical language.

No	Sentence elements	Code	Source
1	Prayer for foot massage: *Lindidu potulidu/Duhu potiduduhu/Tapu poti tatapu*. Straighten the veins/Smooth the blood flow/Let the flesh align properly.	These sentences are prayers recited when starting to massage the body.	Suleman Pomolango
2	Bathing a baby: *Tarakun tarakuna boti moto teyopu / Wuwate mopopiwale kum*. (LL) Bathe, bathe (my child), you are on my lap/Iron (becomes a) support (to make you strong).	These sentences are recited when bathing a baby, so the baby becomes healthy and strong.	Suleman Pomolango
3	Treatingdemonic disturbances:*Menggeya lenggeya dilamayi/Hetile-tileyalo lipumu diila teeya*. (LL) *Menggeya lenggeya*, do not peek here/This is not your place.	This sentence is recited as a treatment for children disturbed by evil spirits.	Suleman Pomolango
4	Treating high fever: *Allahumma shalli 'alaa nabiyyina Muhammad*. (AL) O Allah, bestow mercy on our Prophet Muhammad.	This Arabic *salawat* sentence is used to treat people with high fever.	Ratna Talib, 74, fromTapa Subdistrict, Bone Bolango Regency, Gorontalo Province
5	Treating a stubbed toe: *Abu leduni bikum poma'i jawaliya/ Janji januru kabulu kawasani ba'ajali/Gawusu alimu*. (ML) Earth dust be thrown to the *jawaliya* earth/(It is the) promise of the Light of the Ruler of the Path/The Ruler of the Universe.	This sentence is used when someone stubs their toe on a stone.	Suleman Pomolango
6	Returning sorcery to the perpetrator: *Illa hali yi'o dilata de tambatimu/Dilata ilahula Ilale yi'o teyi alomo/ Pepehuwalingo de tambatimu, alomo*. (LL) Illaha(Allah). (Meanwhile) you (spirit), this is not your place/ Not ordered by Illaha (Allah), you are *alomo/*Return to your place, *alomo*.	When someone is affected by sorcery, this sentence is recited to return the sorcery to the perpetrator.	Suleman Pomolango
7	Treating neck pain due to swallowing a bone: *Bismillah, tulalo lotu'ala wawu lo tilala ilala lo talolamela diila bolo moposiksa yi'o*. (LL) In the name of Allah, o bone, quickly/accidentally and wrongly swallowed by the eater, come out and do not cause pain.	This sentence is recited to treat neck pain due to swallowing a bone.	Rapi Abdul, 63, Libuo Village, Dungingi Subdistrict, Gorontalo City, Gorontalo Province
8	Treating headaches: *Assalamualaikum/Longga, longga, longga/Simongga longga manongga/Tahi-tahi'a longga*. (AL+ML) Peace be upon you/Head, head, head/Hopefully the headache will go away/Lift the headache.	The last two sentences are used as remedies or cures for headaches.	Agus Pantui, 52, from Bulotalangi Village, East Bulangi Subdistrict, Bone Bolango Regency, Gorontalo Province
9	Treating hot fever: *Nurullah sirullah nur Muhammad* (AL)/*Yati yatullah pahutama'o patu* (LL). Light of Allah, light of Muhammad/By Allah's guidance, remove the heat.	This sentence is used to treat hot fever.	Akuna, 85, from Paris Village, Mootilango Subdistrict, Gorontalo Regency, Gorontalo Province
10	Treating burns: *Buruh dani tasalehe te Ibrahima*. (LL) 'A servant of the pious (Prophet) Ibrahim.'	This sentence is used for one affected by heat (fire orhot water).	Ratna Talib

5. Discussion

Research on language mixing in traditional medicine manuscripts plays a crucial role for practitioners, academics, and policymakers, particularly in enhancing the accessibility of medical knowledge. This study found that language mixing, incorporating local language, Arabic, and Malay, facilitates the absorption and transmission of traditional medical knowledge through the introduction of diverse linguistic elements. The three main patterns analyzed—lexical elements, sentence structures, and the use of figurative language—all contribute to facilitating access to traditional medicine. Understanding these linguistic elements in the context of language mixing in traditional medicine manuscripts offers new opportunities to preserve traditional healing practices, particularly in multilingual communities. The findings of this research provide insights not only for linguistic scholars and medical anthropologists but also for traditional medicine practitioners and policymakers seeking to integrate indigenous medical knowledge into modern healthcare systems.

This research demonstrates that language mixing in traditional medical manuscripts plays a crucial role in facilitating community understanding of medical information. The three main linguistic patterns identified illustrate how linguistic integration strengthens the conveyance of medical knowledge within multilingual communities, enabling wider accessibility among diverse language groups. The role of language mixing as a cultural bridge ensures that traditional healing practices remain relevant and

Table 3. Figurative language structures in medical manuscript.

No	Figurative language	Code	Sources
1	To help a child start walking: *Bismillahi wabimalaikatihi* *wabirasulihi wabikitabihi/Na'o na'o-ma'o u ata lo ta kiki'a/Wu ta kiki'a poleleyama'o ode ? O'atomu lato motina'o-na'o, kum siti kum.* (LL) In the name of Allah, in the name of His angels, in the name of His messenger, in the name of His book/ Walk, walk, o the feet of this child/O child, tell your feet to walk quickly/Stand up, oh child, stand up.	The figurative language structure in this sentence uses alliteration. This figure of speech is used to enhance rhythm, intensify feelings, or provide other special effects. It is characterized by the repetition of similar words or phrases.	Rapi Abdul
2	Treating stomach ache: *Bismillah./Ombonga ombongo, ombongo ombonga/Poluliamayi ombonga botiya wolo ijini liyo lo Talohutu ombongo botiya.* (LL) In the name of Allah/Stomach, stomach, stomach, stomach/Heal this stomach with the permission of the Creator of this stomach.	This sentence structure uses parallelism. This figure of speech emphasizes information by using repeated words. It is usually employed to define something considered important to repeat. The repetition of words at the beginning of a sentence is called anaphora, and at the end of a sentence is called epiphora.	Akuba Yusuf
3	Treating through massage: *Assalamualaikum/Lindi, lindi, lindi/Moluliya, u motoluliya /* *U lala U nana pohuwalingo loma'o/To asali lo duhu/ Duhu boti lumelo duhu moisomo/Pohalinga loma'o to asali lo lindidu.* (LL) Peace be upon you/Veins, veins, veins/Heal, heal/Pus, pus, return to pus/To the origin of blood/This blood is black blood/Return to the origin of veins.	The figure of speech in this prayer structure is repetition. Repetition is a figure of speech created to emphasize by using the same word repeatedly in a sentence.	Mohamad Ichsan, S.Pd., 52, from Tapa Subdistrict, Bone Bolango Regency, Gorontalo Province
4	Treating asthma: *Allah luli-luli* */ Allah nuli-nuli/Allah yihi kum.* (AL + LL) Allah heals/Allah makes healthy/Allah strengthens all.	The repetition of words in this sentence structure indicates the use of the repetition figure of speech.	Suleman Pomolango
5	Treating headaches: *Assalamualaikum/Longga, longga, longga/Simongga longga manongga/Tahi-tahi'a longga.* (AL+ML) Peace be upon you/Head, head, head/Hopefully the headache will go away/Lift the headache.	The figure of speech in this sentence is alliteration. This can be seen in Table 3, point 1.	Agus Pantui
6	Treating itch from insect bites: *Diipo mosalamu mopo bismillah po'olo/ Bismillahirrahmanirrahim wawu assalamu alaikum/ Hinggila ma'o motohidu wawu mololowanga to wala'a ngota botiya.* (LL). Before saying *assalamu'alaikum*, mention the name of Allah first/In the name of Allah and *assalamu'alaikum/*Remove the itch and pain from this child.	The figure of speech in this sentence structure is anaphora. Anaphora is an emphatic figure of speech like repetition.	Akuba Yusuf
7	Praying for oneself: *Assalamu'alakum bindhengi'u/ Patarani'u nabi patarani- dehuta/Tonulola wawu wa'utohupo-de alipo/Mohuango wawa'o mehuwango.* (LL) Peace be upon myself/My behavior follows the Prophet (Muhammad) to the ground/Everything hidden to the skin/Collapse, the body will collapse.	The sentence structure here uses inversion, where the predicate comes before the subject.	Suleman Pomolango
8	Bathing a baby: *Tarakun tarakuna boti moto teyopu/ Wuwate mopopiwale um.* (LL) Bathe, bathe (my child), you are on my lap/Iron (becomes a) support (to make you strong).	The figure of speech in this sentence structure is metaphor or analogical comparison, where the expression is made directly through comparison. The use of words is not in their literal meaning but as a comparison or similarity.	Suleman Pomolango

accessible despite shifts in linguistic landscapes. Moreover, these findings emphasize the importance of linguistic adaptation in preserving and revitalizing indigenous medical traditions, particularly in regions where traditional health knowledge is at risk of being lost due to modernization and language erosion.

The analysis indicates that language mixing in traditional medicine manuscripts is vital for simplifying public comprehension of medical information. The use of local languages and appropriate sentence structures enhances the effective delivery of medical knowledge, while an understanding of local cultural contexts enriches the practice and preservation of traditional medicine. This research provides valuable insights into how language can be utilized to disseminate medical knowledge to the public more effectively. Existing studies corroborate that language mixing in traditional medicine manuscripts allows various stakeholders to access knowledge and medical practices as part of local wisdom (Anggerainy et al., 2017; Sumarlina et al., 2022; Triyono et al., 2018; Wahyuni, 2021). This study further enhances the

sociolinguistic perspective, building upon Pop Lack's (1980) framework, which emphasizes the significant role of social relationships in shaping language development and code-mixing. The findings support theoretical discussions on language contact phenomena, positioning traditional medical manuscripts as both linguistic and medical resources that facilitate knowledge continuity across generations.

Language plays a crucial role in ensuring the accessibility and effectiveness of traditional medical knowledge, yet significant challenges arise in the linguistic aspects of these manuscripts. These challenges can be addressed through a deeper understanding of language mixing elements, thereby enhancing accessibility—particularly in multilingual communities where traditional texts often incorporate various languages. This linguistic diversity reflects the richness and complexity of traditional medical knowledge systems. Furthermore, the multilingual nature of these manuscripts facilitates broader integration of local knowledge and medical practices, enabling access for diverse stakeholders (Amien, 2023; Nissa et al., 2022; Prabawangi et al., 2021; Purwanti, 2020). These findings are particularly relevant for policymakers seeking to develop culturally inclusive health strategies that recognize and integrate traditional healing knowledge into public health systems.

The accessibility of medical treatment through understanding language mixing has two significant implications. Firstly, local knowledge in traditional medical manuscripts becomes more comprehensible through linguistic insights, enabling wider public engagement with traditional medical practices. Secondly, language mixing enriches understanding for multilingual communities, ensuring that medical texts remain interpretable across linguistic boundaries. These aspects illustrate the nuanced impact of language mixing on the accessibility of traditional medical knowledge. Various concepts of ailments and treatments become more comprehensible through the synergy of language, culture, and medicine (Triyono et al., 2018). The intricate relationship between language, culture, and medicine warrants further investigation to fully comprehend the dynamics of knowledge access in diverse cultural and linguistic settings. Additionally, this study offers a framework for future research into how digitalization and modern health communication strategies can integrate traditional linguistic resources to enhance accessibility in multilingual healthcare settings.

Studies on language mixing in traditional manuscripts represent a complex phenomenon influenced by various sociolinguistic factors. Byers-Heinlein et al. (2022) posit that language mixing, including code-switching and code-mixing, is shaped by social dynamics such as speaker relationships, audience expectations, and thematic content. In the context of traditional medicine, language mixing exhibits unique characteristics that distinguish it from other linguistic contact phenomena. Understanding these characteristics is essential for maximizing the utilization of traditional medicine and ensuring broader access to local medical knowledge (Sari et al., 2023). However, there remains a lack of research focusing specifically on linguistic aspects of traditional medical manuscripts, necessitating a more in-depth investigation into how language functions as a knowledge transmission tool.

Analysis of the impact of language mixing in traditional manuscripts reveals that this knowledge can be better understood by recognizing linguistic elements within the social and medical context of traditional healing practices. This contextual knowledge provides a comprehensive understanding of the social and communicative functions of language mixing in traditional communities and its relevance in modern society. Traditional communities that have produced health-related knowledge and treatment methods serve as an essential foundation for contemporary health systems. By highlighting the role of linguistic hybridity in medical manuscripts, this study offers a new perspective on the intersection of language and health communication, demonstrating that language plays a crucial role in knowledge transmission beyond written texts.

Research on language accessibility in traditional medical manuscripts requires a comprehensive action plan, incorporating linguistic analysis, knowledge preservation, and policy recommendations. This plan should prioritize: (1) The systematic identification and analysis of language mixing patterns in traditional medical texts; (2) The development of training initiatives to ensure that linguists, medical practitioners, and policymakers are equipped with linguistic proficiency for interpreting traditional medical manuscripts; (3) The translation and dissemination of traditional knowledge in a multilingual context, ensuring accessibility for diverse linguistic groups.

Linguistic proficiency is necessary not only for linguists but also for medical practitioners, given that traditional medical knowledge remains an essential part of public health strategies in many communities.

Therefore, cross-sector collaboration is crucial to ensure that traditional medical knowledge remains accessible and valuable in modern healthcare contexts (Djasri, 2020; Purwanti, 2020).

6. Conclusion

This study demonstrates the crucial role of language mixing in traditional medicine manuscripts in facilitating public comprehension of medical information. It provides valuable insights into the effective dissemination of medical knowledge through linguistic means. Linguistic elements such as diction, sentence structure, and figurative language significantly influence the comprehension and acceptance of medical information. Consequently, this research not only offers a profound understanding of language mixing in traditional medicine manuscripts but also contributes significantly to the academic and practical fields of linguistics, health, and culture.

The examination of the relationship between linguistics and traditional medicine contributes to the broader discourse on language and health, particularly in elucidating how linguistic practices affect the accessibility and efficacy of traditional medical knowledge. Linguistic diversity can enrich traditional medical practices and reinforce the interconnection between language, culture, and health. Cross-sector collaboration between linguists and medical practitioners is essential for ensuring the accessibility of traditional medical knowledge in modern society, addressing the challenges of language use in traditional medicine manuscripts.

This research opens avenues for further investigation into linguistic adaptation within broader medical contexts, including public health communication and digital health literacy. Furthermore, integrating linguistic approaches into the development of traditional medicine resources offers a promising strategy for preserving cultural relevance and expanding health information accessibility across diverse communities. This approach aims to synergize the preservation of tradition with innovation in inclusive and sustainable medical information dissemination.

About the authors

Ellyana Hinta and Asna Ntelu are senior lecturers at Gorontalo State University. Their extensive experience in Indonesian language and literature, coupled with their diverse sub-specialties (including anthropological linguistics and forensic linguistics), provides a strong foundation in the linguistic analysis of the study.

Mirna Yusuf brings a social science perspective through her doctoral work at Gadjah Mada University focusing on social development and welfare, adding a crucial element of societal context to the research.

Muassomah, as a professor specializing in Arabic language and literature, contributes expertise valuable for interpreting elements within the manuscripts.

Rasuna Thalib, senior lecturer at Gorontalo State University with a linguistics doctorate, enhances the team's expertise in language analysis and teaching, particularly in the application of linguistics to curriculum development and English language instruction. Collectively, their combined experience and perspectives create a comprehensive approach to studying the complexities of language mixing.

The five authors—represent unified team with complementary expertise.

Disclosure statement

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