

Local perceptions of epidemics in Ethiopia: The case of the *Bayso* people of Gidicho Island, Southern Ethiopia

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Abstract

Local perceptions of health and disease significantly impact the health systems of rural communities by influencing health behaviors and treatment choices. This study examines the *Bayso* people's conceptions of health and disease, as well as the etiologies and healing mechanisms of epidemics, drawing on their local knowledge and resources. Ethnographic data from interviews, focus groups and observations reveal that most *Bayso* individuals believe health is a gift from supernatural forces and disease is a punishment for violation of the will of these forces and sociocultural factors. While some elderly *Bayso* remain committed to their traditional health system, the majority have recently experienced a shift in their perceptions of health and disease. This change is attributed to several factors, including the decline of their indigenous belief system, the expansion of modern education and urban lifestyles, the role of health extension workers, environmental degradation and the resulting loss of local resources, such as herbs and animal products vital for healing.

Keywords: Cultural beliefs, Healing practices, Shared experiences, Traditional

1. Introduction

Local perceptions of health/disease refer to a community's understanding and beliefs regarding health and illness. This includes the explanations that a community offers for the causes of diseases, the healing methods they employ and the factors that shape these perceptions (Kahissay *et al.*, 2017). Berkes (2009) also relates local perceptions of health/disease to the ability of individuals or groups to provide context-specific explanations based on their values, beliefs and traditions, which are passed down from ancestors and developed through years of experience. This implies that 'perception' is the process by which communities acquire knowledge through their senses and shape their understanding of the external world. This understanding is not merely a passive reception of stimuli, but rather an active construction influenced by cultural values, shared experiences and pre-existing beliefs.

Historically, local beliefs about disease and healing methods encompassing cultural and religious practices

have played a vital role in maintaining community health (Ng'ang'a *et al.*, 2025). These authors posited that such practices often influence disease management during outbreaks and illustrate the interplay between culture and healing, particularly in developing countries. Understanding how communities perceive health/disease is essential for effective healthcare interventions and disease management (Laith *et al.*, 2015). This knowledge helps to adapt health interventions and preventive strategies to be culturally appropriate and effective, address health inequalities and consider the impact of changing environments on community health (Laith *et al.*, 2015).

An epidemic is defined as an outbreak of a disease that affects a significantly larger number of people in a specific community or region than what is considered normal and this occurs over a limited period (Anomaly, 2014). To date, epidemics have resulted in more deaths worldwide than wars, famines and other disasters

combined (Shibru, 2021). The extent of the impact of epidemic diseases varies by nation, influenced by sociocultural, economic and technological factors. In regard to this, for example, while Africa has made notable health improvements, such as increased life expectancy and reduced infant and maternal mortality rates, the continent still faces significant challenges from infectious diseases (Whiteside and Zebryk, 2017). Studies like Bryan *et al.* (2010) and Whiteside and Zebryk (2017) have noted that several factors have contributed to the spread of epidemics in sub-Saharan Africa. For instance, population growth in this region has led to the exploitation of previously untouched natural resources, increased human-wildlife contact, inadequate healthcare infrastructure and financial challenges. Additionally, a shortage of healthcare workers has exacerbated the problem. Despite these challenges, many rural communities in sub-Saharan Africa are utilizing their local knowledge and resources to combat epidemics (James *et al.*, 2018).

The debate on traditional healing practices versus modern healthcare revolves around their respective strengths, weaknesses and approaches to health and well-being (Getachew *et al.*, 2002). For instance, according to Moshabela *et al.* (2016), traditional healing methods, grounded in cultural beliefs and holistic care, can be more accessible, affordable and culturally relevant, particularly in rural areas (Getachew *et al.*, 2002). However, some treatments lack scientific validation and standardized dosages (Moshabela *et al.*, 2016). On the contrary, modern healthcare provides precise diagnoses and targeted treatments based on scientific principles, but access can be limited by cost, infrastructure and personnel shortages (Moshabela *et al.*, 2016). This implies that rural communities that lack access to affordable modern healthcare may face a greater burden from epidemics if traditional healing mechanisms are not in place (Adraw *et al.*, 2023). In this study, 'local perception of health/disease' refers to the *Bayso* community's sociocultural understanding of health and disease, encompassing their explanations, etiologies and treatments derived from local knowledge and resources.

According to Epple (2016), the *Bayso* are the inhabitants of Gidicho Island and villages on the western shore of Lake Abaya, in the Southern Ethiopian Region. As one of the minorities in the region, they have their own traditional administrative and belief systems called *Wonno*, as well as marriage customs, land tenure and religious rites, among others. The *Bayso* indigenous belief system (IBS) shares virtually all the major tenets of African traditional religions as outlined in Appiah-Opoku (2007). In this regard, according to Fekadu *et al.* (2024), the major tenets of *Bayso*'s IBS include a belief in a Supreme Being called *Wa'a*, the creator of living things (*nefo kabo*) and non-living things (*nefo kaliki*), a belief in ancestral spirits (*gaarium en'tano*) believed to reside in burial sites and evil spirits such as *durisa*, an invisible kind of power believed to reside in the outskirts

of villages, burial sites, riverbanks and Lake Abaya. Likewise, there is a strong belief among followers of this religion in the power of individuals, including communal curses (*hiliko*) and blessings (Epple, 2016). Thus, they regard these forces as the source of life for themselves, their flocks and all living things (Fekadu *et al.*, 2024). Accordingly, doing anything against the will of these forces, such as disrespecting ritual leaders and elders and failing to make regular sacrifices and offerings, is believed to infuriate these forces and result in curses and punishments, including drought, pests and epidemics. Therefore, to obtain their mercy and maintain harmonious relations with these forces, they perform conciliatory rituals and sacrifices (Fekadu *et al.*, 2024). The practice of religious rituals involves animal products such as milk, blood, meat and the contents of animal stomachs (Epple, 2016). However, severe resource degradation and animal diseases have recently caused significant livestock losses, leading to a decline in their traditional practices (Fekadu *et al.*, 2024).

To date, there have been various studies focusing on different aspects of *Bayso* life and the geography of the study area since the dawn of the 20th century by both local and foreign scholars. For example, Hayward (1978), Brenzinger (1995), Hirut (2004), Sava (2011) and Lemi (2018) have studied the typology and structure of their language. Similarly, Braukmann (2012) and Epple (2016) have studied some aspects of the *Bayso* culture, while Abinet (2019) has studied the ecology and human-environment relationship of Gidicho Island and its lacustrine environment, reporting the severe resource degradation in the region. Others, such as Feseha (2008), Tadele (2014) and Mohamed and Teferi (2019), have studied the socio-economic and political history of the *Bayso* and have highlighted how the *Bayso* lost their indigenous administrative system. Recently, studies by Fekadu *et al.* (2024, 2025) reported how environmental change in the study area has affected the ritual system of the *Bayso*. The point is that while these studies have dealt with various aspects of *Bayso*'s life and the geography of the study area, their contribution to this study does not go beyond contextual information. This shows that no attempt has been made to study the local health practices of the study people. As a result, *Bayso*'s perceptions and understanding of epidemic diseases, local knowledge and the resources used to treat such diseases are not widely known and documented. Therefore, this study examined *Bayso*'s perception and understanding of epidemic diseases and the local mechanisms and resources that played an essential role in the protection, prevention and healing of infectious diseases.

2. Materials and methods

2.1. The study area

Gidicho is the name of the largest Island on Lake Abaya, located in the Southern Ethiopia Region, Gamo Zone, Mirab Abaya *Woreda* (Abinet, 2019). According to

Abinet, there are three villages in Gidicho: Shigma in the north, *Bayso* in the south and Haro on the eastern shore. Gidicho is inhabited by two communities, *Bayso* and Haro. The *Bayso* people, who speak a Cushitic language, occupy Shigma and *Bayso* villages, while the Haro people reside in the village also known as Haro (Epple, 2016). The population of the *Bayso* was 5491, of which 2760 (50.3%) were female and 2731 (49.7%) were male (Central Statistics Agency, 2008) and the current projection is 9800 (Joshua Project, 2023). The *Bayso* are one of the minorities in Ethiopia, who are endowed with unique cultural values, traditions and ritual systems. Currently, they are one of the three ethnic groups that constitute the Gamo zone administration (Epple, 2016). The *Bayso* had an indigenous administrative system, known as 'Wonno', led by a local ruler also called 'Wonno' (Fekadu *et al.*, 2024). According to this study, *Wonno* had both administrative and religious power until the inclusion of the *Bayso* into the Ethiopian empire under Emperor Menelik II at the end of the 19th century. After the inclusion, local governors (*balabats*) were assigned by a provincial governor of the emperor to bear the task of administration, while the spiritual role was left to a *Wonno* (ritual leader) (Epple, 2016). Epple adds that each *Bayso* village had its own *Wonno* and each *Wonno* was accountable for the well-being of the community, their herds and the environment through prayers, periodical rituals and sacrifices. The *Bayso* were known for their cattle wealth until the 1980s. However, due to the heavy drought that they experienced in 1984-85 and the spread of cattle diseases, they lost a significant part of their herds. Consequently, they were forced to switch to

agriculture as their main source of income (Fekadu *et al.*, 2024). The decline of their livestock not only affected their livelihood but also their ritual system, which underpinned all aspects of *Bayso*'s lives, including their traditional health system. In addition, the lacustrine environment posed a major challenge to the community as the area is known for its water-borne diseases such as malaria, diarrhoea and cholera (Epple, 2016).

2.2. Research methods

In the present study, Yin's (2014) explanatory case study method was used to examine the research problem. Data collection involved gathering documents, conducting interviews and making observations within the defined context. The document review focused on materials relevant to the research problem, such as reports, policy documents and archival records. The flexibility of the method in allowing multiple data collection methods and its potential for rigorous analysis were both highly beneficial.

2.2.1. Sampling techniques: As this was a qualitative study, purposive sampling was used to select study sites and informants. The three study sites, Alge, Gidicho and Mulato (Fig. 1), were chosen to represent different facets of *Bayso* life. Alge, the center of local *Bayso* administration and home to most of the *Bayso* on Lake Abaya's western shore, was selected for its political and demographic significance. Gidicho was chosen to represent the *Bayso* 'homeland' and the foundation of their culture and traditions. Mulato, where the *Bayso* share villages with other ethnic groups like the Gamo, exemplifies diversity.

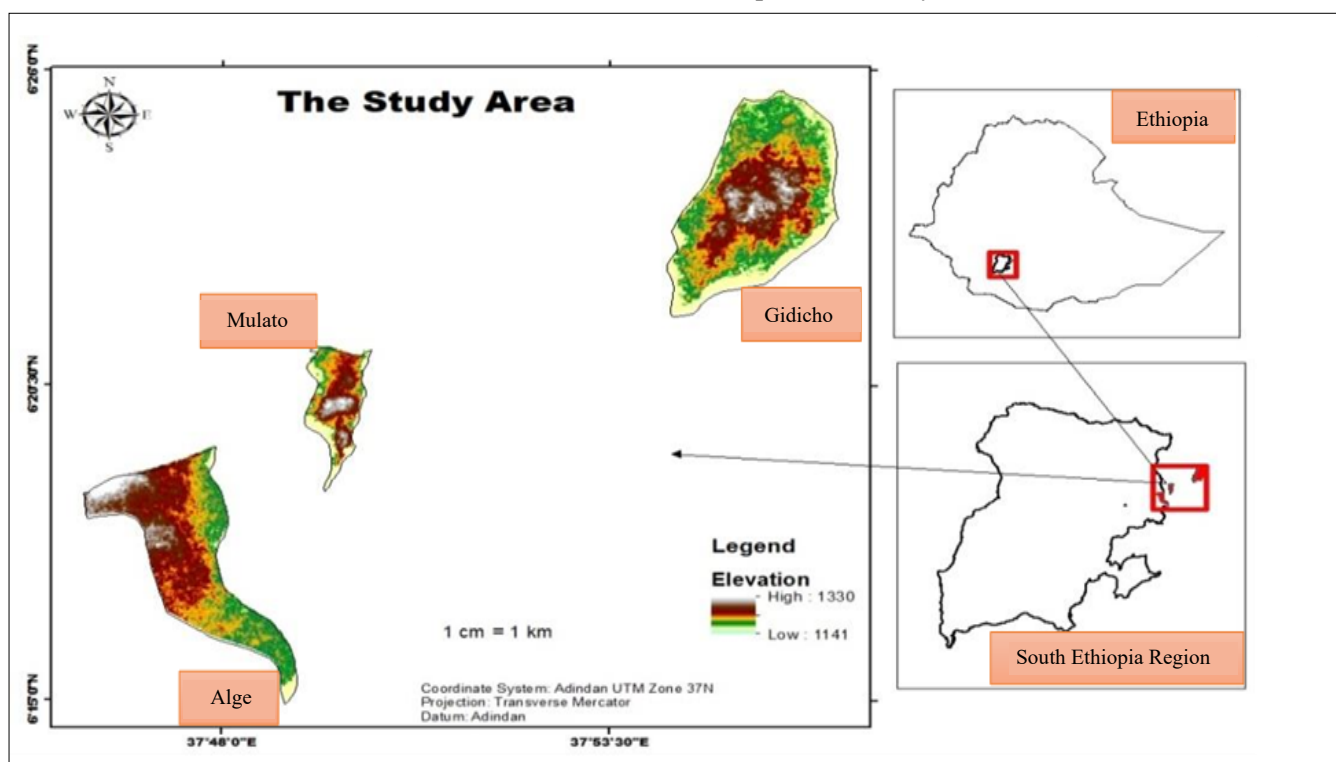


Fig. 1. Study area (Source: Adopted from Fekadu *et al.* 2024)

2.2.2. Data collection methods: Yin's (2014) explanatory case study (ECS) method was used to collect data from multiple sources and triangulate evidence. Qualitative data were gathered through interviews, focus group discussions (FGD), field observations and document analysis. The study employed multiple qualitative methods. Key informant interviews were conducted with seven traditional *Bayso* elders and healers (six men, one woman, aged 60-83). In addition, twelve in-depth interviews were conducted with knowledgeable officials, elders, young people and healthcare staff (seven men, five women, aged 21-57). FGDs were held with ten participants each (aged 25-67), with two FGDs in Alge and one each in Gidicho and Mulato, representing diverse *Bayso* groups.

Additionally, field observations in lacustrine environments, residential areas and water points provided firsthand information on how unhygienic conditions affected the well-being of the *Bayso*. Informal discussions with elders, youth and ritual leaders offered valuable insights into the causes of diseases and herbal remedies. Research assistants organized and recorded the interviews and group discussions while the corresponding author took notes. The interviews and FGDs were conducted in *Bayso* and translated first to Amharic by the research assistants and then to English by the author. To ensure a safe environment, interviews were conducted in participants' homes and group discussions took place in public spaces. Secondary data from books, journals, articles, dissertations, theses and official documents were collected and critically assessed for authenticity and accuracy.

2.2.3. Data analysis: According to Gunbayi (2023), qualitative data analysis systematically interprets non-numerical data to identify patterns, themes and insights. The data preparation process included transcribing and translating interviews and FGDs, as well as categorizing observation notes. After reviewing the data to understand its content and context, the data were categorized into themes. Then, the researcher analyzed the identified themes to discover relationships and noted any outliers for further examination. Also developed a narrative connecting these themes to the research questions and supported it with illustrative quotes, observational details and figures. This approach emphasizes the subjective nature of qualitative research, recognizing the researcher's influence on the findings. Potential limitations include biases in data collection and interpretation, which are addressed through reflexivity and triangulation.

2.3. Theoretical framework of the study

For this study, the researcher employed medical ecology, ethnomedical and interpretive models for analyzing the research problem. Medical ecology posits that epidemic disease is the result of environmental imbalance caused by intrusion into a local environment (Foster and Anderson, 1978). This model is instrumental

in studying the impact of the environment on human health because the health of an individual depends on the environment in which he or she lives (Ember and Ember, 2014). It considers adaptation a key mechanism involving changes, modifications and variations that increase inhabitants' chances of survival, reproductive success and general well-being in a given environment (McElroy and Townsend, 2009). This model disregards sociocultural explanations of 'health' and 'illness' as well as local mechanisms, experiences and resources for treating infections. However, it provides the rationale to examine how environmental conditions in the study area, including issues related to waste disposal, lack of health institutions and potable water and the lacustrine environment infested with waterborne diseases, have affected the health of the *Bayso*.

Conversely, the ethnomedical model is principally concerned with non-Western forms of healing and classifications of disease and illness, giving special focus to health beliefs, practices and values (Gogoi, 2014). This means that the ethnomedical model refers to the health beliefs, knowledge and practices derived from local cultures, as opposed to the conceptual and practical frameworks of medical ecology. Generally, this model focuses on studying societies' perspectives on what causes disease, how a specific community constructs health and illness and ways to sustain social well-being (Quinlan, 2011). As this model is based on the sociocultural and religious principles of cultural groups, it does not consider the impact of pathogens on human health and the significant role of modern medicine in this regard.

The other theoretical model used in this study is the interpretive approach. Studies suggest that medical anthropologists, drawing on the work of Claude Lévi-Strauss and inspired by the notions of phenomenology, hermeneutics and Geertz's plea for semiotic anthropology, have used the interpretive approach to study health, illness, care and healing mechanisms in sociocultural contexts (Van Der Geest, 2014). This approach emphasizes the importance of understanding and interpreting the subjective experiences and meanings of individuals within their context. It focuses on the idea that reality is socially constructed and that knowledge is shaped by people's interactions and interpretations (Miller, 2011). Thus, it argues that by using the emic (insider) approach, researchers can understand health and illness from the internal perspective of the subject rather than from the perspective of an outsider (etic) (Myers, 2007).

This approach has primarily been criticised for being subjective, which leaves room for bias and makes generalisation from the data difficult (Myers, 2007). However, the researcher found the ethnomedical and interpretive approaches appropriate for this study because they provide a contextual explanation of the *Bayso's* traditional health system, which is inextricably

linked to their religious beliefs, sociocultural values and traditions and is based on local knowledge and resources. Accordingly, the informants' perspectives, thoughts, religious rituals and contextual interpretations of 'health' and 'disease,' including causes of illness and healing mechanisms (local resources and knowledge), were analyzed considering the assumptions of the ethnomedical and interpretive models.

3. Results and discussion

3.1. Bayso's perceptions of health and disease

The study reveals that the Bayso people's understanding of health and disease is deeply rooted in their religious beliefs and is intertwined with their sociocultural values and traditions. The Bayso believe that supernatural forces, including *Wa'a* and ancestral spirits (*gaariun en'tano*), are vital sources of life for themselves, their livestock and the environment. To maintain a harmonious relationship with these forces, the Bayso regularly perform sacrifices and offerings. Accordingly, violations of religious principles, cultural values and moral standards are seen as causes of misfortune. Illness, therefore, is often interpreted as a sign of divine displeasure or ancestral dissatisfaction, prompting individuals to seek remedies through traditional healers and religious leaders. These practitioners diagnose ailments not only by examining physical symptoms but also by consulting divination rituals and spiritual insights. According to informants, healing strategies often involve prayers, animal sacrifices, herbal medicines and adherence to specific dietary or behavioral restrictions aimed at appeasing the offended supernatural forces and restoring balance within the individual and the community. This holistic approach underscores the interconnectedness of physical, spiritual and social well-being in the Bayso worldview.

This finding aligns with the interpretive theory, which posits that social reality, including traditional health systems, is shaped by beliefs, ideas and discourses rather than objective facts. The theory also explains how these factors influence actions within the health system. Similarly, the ethnomedicinal model corroborates the above finding, emphasizing the influence of experience-based practices and cultural health beliefs on traditional medicine use. Furthermore, Kahissay *et al.* (2017) reported similar findings. They found that perceptions of health and disease in rural communities across sub-Saharan Africa are significantly influenced by sociocultural and religious values. Their study revealed that beliefs in supernatural, natural and social elements greatly impact these communities' health systems. Studies by Fentimana and Nenibarini (2015) on the Igbo in Nigeria and by Verstraelen and Kariamu (2021) on the Shona in Zimbabwe observed similar findings that align with Bayso's conceptions of health and disease. The Bayso's religious principles, sociocultural values and norms shape their worldview, socio-economic and cultural lives, environmental relationships and

traditional healthcare system. Consequently, most Bayso people define health (*faya*) as the absence of disease or injury, the ability to fully participate in socio-economic, political and cultural activities, the well-being of their herds and the absence of natural disasters. This implies that the Bayso concept of 'health' is broader, linking it to the well-being of their environment and herds in addition to the mental and physical well-being of individuals. This differs from the standard definition of 'health' by the World Health Organization (World Health Organization, 2009), which relates health to the mental and physical well-being of individuals.

Similarly, the Bayso define disease (*dukkuba*) as a serious physical or mental dysfunction, as well as a calamity (e.g., drought, pests, or animal diseases) that threatens their natural resources (e.g., vegetation, air, soil and water) and herds. They also characterize epidemic disease (*hawami*) as a disease affecting a large number of people and livestock in a short period of time, causing fatal health problems. Conversely, some Bayso individuals who have exposure to education and modern health services define 'health' as being free from physical and mental illness and 'disease' as an infection or bodily disorder caused by pathogens.

3.2. Religious specialists of the Bayso

The study reveals that the Bayso had various specialists in their ritual system. These specialists included ritual leaders, such as *Wonno* and his wife, *Oriwonno*; ritual assistants, such as *Woycha* and *Oddobaddo*; and ritual experts, such as *Maganencho* and *Abbaddo*. These specialists played important roles in maintaining the well-being of the Bayso people and their herds, as well as preserving the richness of their environment until the end of the 1990s (Fekadu *et al.*, 2024). However, as discussed in the background of this study, the Bayso lost their IBS due to the decline of their herds, which were a source of animal products (e.g., milk, blood and meat) for religious and other cultural rituals. This decline was caused by resource scarcity (e.g., lack of grazing land) and the spread of cattle diseases resulting from heavy droughts in the region since 1984-85 (Fekadu *et al.*, 2024).

3.2.1. Ritual leaders - Wonno and Oriwonno: In the religious life of the Bayso, the *Wonno* was considered a head priest who mediated between the Bayso and *Wa'a*. Therefore, within their religious system, the Bayso considered a *Wonno* to represent *Wa'a* among them and during his office, they regarded him as sacred. Informants stated that the position of *Wonno* was assumed through election based on certain criteria, namely, the person had to be male, the firstborn of his family, have a reputation of being generous, wealthy (possess cattle) and have no physical or mental deformity. The term of office of a *Wonno* ranged between two and three years. Being at the top of the religious hierarchy, the *Wonno* was responsible for prayers, initiating public rituals and funerals, blessing

conformists and cursing transgressors. Regarding the role of *Wonno*s in their respective villages, a former *Wonno* Chumbaro Assef provided the following account. A summary of his interview is presented below.

As leading ritualists, we organized public rituals to promote the health of our people. For example, spattered *obooro*, a mixture of milk and honey, on everyone and everything arriving from nearby villages and markets to prevent the introduction of disease. Additionally, we were expected to periodically bless our respective villages, inhabitants and herds by spattering *obooro*. Similarly, during epidemics and other calamities, we performed a *hulluqaa* ritual.

(Chumabaro Assefa, Alge, Dec. 21, 2022)

In line with the above excerpt, Debalqo Amano, the last *Wonno* of the *Bayso*, emphasized the critical role of the *Hulluqaa* ritual in the *Bayso*'s efforts to combat epidemics.

During times of crisis, such as when epidemics strike, the *Wonno* needs to perform a *hulluqaa* ritual. This sacred practice involves tying a creeper between two trees on opposite sides to create a symbolic passageway. All villagers and animals are permitted to pass through it, except goats, who are believed to house a devil. As the villagers and animals emerge from this symbolic barrier, the *Wonno* sprinkles the blood of an animal sacrificed during the ritual over them. If the blood supply is insufficient, dung is also used, as it holds its own significance. The *Hulluqaa* ritual is a powerful symbol of how *Wa'a* guides the community through adversity. Due to its sacred nature, individuals who have committed wrongs hesitate to participate, fearing it could bring misfortune upon themselves or their families. Likewise, neglecting this important ritual leaves the community vulnerable to threats.

(Dabalqo Amano, Alge, Sept. 24, 2021)

The above finding supports the work of Ng'ang'a *et al.* (2025), who conducted a significant study in western Kenya highlighting the vital role of traditional and religious healers in combating infectious diseases. According to these authors, while such cultural practices contribute positively to community health, it is crucial to recognize that an over-reliance on traditional healthcare can delay timely treatment and jeopardize safe management, especially in the case of highly infectious diseases.

3.2.2. Ritual assistants - Woycha and Oddobaddo: The position of a *Woycha* was attained by periodic election and the chief criterion in this regard was cattle wealth since *Woychas* were expected to practice numerous rituals and sacrifices to *Wa'a* and spirits of different types. In the *Bayso* religious tradition, a *Woycha* was expected to assist his *Wonno* in organizing public rituals and sacrifices, particularly during calamities (e.g., epidemics) and in initiating funerals. A *Woycha* was also responsible for receiving patients who came to his home

seeking the healing services of *Maganencho* (his wife) and communicating her orders to patients. Similarly, *Oddobaddo* assisted his wife (*Abbaddo*) by receiving women and girls who came seeking her cleansing services.

3.2.3. Ritual experts - Maganencho and Abbaddo: In an interview in Alge, a former *Ori-Wonno* (Fig. 2) stated that, according to their religious beliefs, the *Bayso* attributed all kinds of diseases, reproductive health issues and environmental disasters, including droughts, floods and pest infestations, to transgressions and pollution. Therefore, they believed that the way out of such problems was to practice conciliatory rituals and sacrifices to *Wa'a* and spirits. Accordingly, they established a spiritual healing and cleansing system led by two women (*Maganencho* and *Abbaddo*), respectively. *Maganencho* had expertise in healing, while *Abbaddo* had expertise in cleansing impurities.



Fig. 2. Interview with a former Ori-wonno

(source: The researcher's photo, Alge village, Oct. 2023)

3.3. Perceived causes of diseases

Research on diseases classification indicates that there are different ways to classify diseases. For instance, WHO (2012) classified diseases as infectious, deficiency, hereditary and physiological. Others, such as Edemekong and Huang (2022), categorized them as communicable and non-communicable. The point is that such disease classifications are a result of a modern conception of disease, which reflects the notions of medical ecology highlighted in the theoretical framework of this study. In a related case, one of the former religious specialists in Mulato village elaborated on the *Bayso*'s tradition of disease classification. In this regard, she noted that customarily, they classified diseases by their causes. That is, diseases caused by supernatural forces and sociocultural factors. Informants who participated in the FGDs in Alge village also shared this point, emphasizing that their disease classification mechanisms stemmed from their sociocultural values and religious principles. This finding is supported by the research of Fosu (1981) and Tosam (2019), who highlighted the importance of classifying diseases based on their underlying causes. Fosu (1981) noted that, in rural Ghana, communities often define diseases through

on their underlying causes. Fosu (1981) noted that, in rural Ghana, communities often define diseases through a lens that includes supernatural, natural, or both factors. Conversely, some *Bayso* youth who possess some education and experience with modern healthcare systems have shifted their understanding and now categorize diseases as infectious or non-infectious. This shift in perception illustrates the impact of education and exposure on health beliefs and demonstrates a bridge between traditional and contemporary health concepts.

3.3.1. Supernatural factors: As discussed in the preceding pages, the *Bayso*'s perception of epidemic diseases and characterization of health and disease were usually associated with and mirrored through religious beliefs. Accordingly, they believe that supernatural forces, such as *Wa'a* and spirits, can cause disease as a result of individuals' wrongdoings. This can be resolved through conciliatory rituals and sacrifices, as discussed in the preceding pages. In times of calamities, for instance, the lay *Bayso* say *Wa'a ibadon kinggamera*, meaning *Wa'a* cursed his people, or *Wonno ibado kinggamera*, meaning *Wonno* cursed the people for their misdeeds. Likewise, the *Bayso* also believe that doing things at noon or midnight along the coast of Lake Abaya and in areas where ash is disposed of exposes individuals to the threat of a devil (*durisa*) because evil spirits such as *durisa* move in such areas mostly after dusk and at noon. In a related case, the following excerpt from the interview conducted with one of the key informants in Alge village illustrates how evil spirits, such as *durisa*, inflict harm on individuals. Taking the incident that happened to him in 1994 at the western shore of Lake Abaya, the informant provided details on how he was attacked by *durisa*:

As our farmlands are on the immediate coast of the lake, we usually take a bath after the hard work of the day. However, since we fear incidental attacks of evil spirits, we usually do things in the lake either early in the morning or late in the afternoon while the sun is down. Unfortunately, one day, around 2:00 PM, on my way home, I decided to have a bath in the lake. Then, after putting aside my clothes, I enjoyed the lake water under the blazing sun. Finally, when I picked up my clothes to dress, suddenly I saw a strange creature at about ten meters, which I had never seen before. Suddenly, my body started shivering with fear. Even though I attempted to shout for help, I produced no sound, for my mouth was frozen with fear. I do not remember what happened after that and how I reached home. The next day, I found myself in bed suffering from a fever and a severe headache. My spouse and relatives, who were terrified by my situation, communicated my case to a *maganencho* and they were told that I was afflicted by an evil spirit called *durisa*. Then, the *maganencho* ordered the slaughter of a goat at the lakeside. It was after this sacrifice that I recovered from the illness.

(Geremew Adane, Alge, May 21, 2022)

This excerpt confirms that failing to respect their religious principles and maintain the boundaries between themselves and evil spirits adversely affects their relationship with supernatural forces. Therefore, as can be deduced from the excerpt, they are punished by evil spirits for their misconduct. This finding is consistent with studies in other parts of Ethiopia and Africa. For example, Workeneh *et al.* (2018) among the Konso in southern Ethiopia, Mesfin *et al.* (2017) among the Tehuledere community in northern Ethiopia, Anizoba (2023) among the Igbo in Nigeria, Odoko (1998) in Kenya, White (2015) in Ghana, and Liddell *et al.* (2006) in South Africa found that rural communities mainly associated disease with supernatural forces.

3.3.2. Sociocultural factors: Informants posited that culturally, they believed that women's and girls' bodily fluids (e.g., menstrual blood, postpartum blood and breast milk) could pollute their families and homes. According to Kebebush Anja, a former *Abbaddo*, a single drop of blood from a miscarriage (*metebiaano*) was believed to contaminate the woman, her family and the land. Women who experienced such pollution were considered unclean (*tunne*) and were ostracized until they underwent an *Abbaddo* performed purification ritual (*elabo*). The following excerpt illustrates this practice:

When I was in the position, a family affected by a *metebiaano* reported their situation to my husband (*Oddobaddo*). The husband of the woman was expected to provide a sheep for the cleansing ritual. Together with the elders, I presented the case to a *Wonno* to obtain his blessing. After receiving approval, I joined the elderly women to visit the polluted woman. We blessed her by placing a handful of butter on her head while she held the sheep, saying, 'May the spirit of *Wa'a* be with you.' I then slaughtered the sheep and sprinkled its stomach contents throughout the house, particularly where the fluids had fallen. This ritual not only cleansed the woman but also reinforced our community's bonds and commitment to harmony.

(Kebebush Anja, Mulato, March 15, 2022)

Correspondingly, according to Pedersen (1999), in the Ethiopian Orthodox Church, a woman who gives birth is believed to be unclean until she receives the cleansing service of local priests and this allows the mother and her infant to attend church services; otherwise, it is believed that this may cause a curse or misfortune.

In general, the above two findings are consistent with the assumptions of the ethnomedical and interpretive models, which are principally concerned with non-Western forms of classifications of health and disease and healing, giving special focus to local health beliefs and practices. Therefore, it can be concluded that the way the *Bayso* understand and characterize sources of disease in terms of supernatural forces and sociocultural factors denotes that their traditional health system is a result of their religious thoughts, cultural values and traditions.

3.3.3. Environmental factors: The study also revealed that the majority of the *Bayso* youth and some adults, who have some education and exposure to modern health services and urban life, associate disease with poor sanitation, which includes environmental and personal hygiene and lack of infrastructure. This means exposure to vectors, such as germs, bacteria and viruses, is conceived as a cause of disease rather than supernatural and sociocultural causes mentioned by the lay *Bayso*. They also added that since there is no service sector, including potable water and a clinic in Gidicho, except for one elementary school, inhabitants are exposed to waterborne diseases. During the field stay, it was observed that fishermen throw the by-products of fish in the lake and inhabitants wash their clothes and water their cattle. Therefore, it can be assumed that the consumption of unsafe water and problems related to waste disposal have created favorable conditions for the proliferation of communicable diseases (e.g., cholera and diarrhoea) on the island. Similar studies among the Tehuledere community of Northern Ethiopia by Mesfin *et al.* (2017) and among the Guji people by Bartels and Greenough (2010) reported that pollution of water has caused waterborne disease among these communities. This finding is consistent with the assumptions of medical ecology, which associate disease with environmental and personal hygiene, arguing that the health of an individual is dependent on environmental hygiene. Therefore, it is presumed that the *Bayso* in Gidicho Island are exposed to infectious diseases since they are living in an unhygienic environment, where there are no health institutions and potable water. Besides, the lacustrine environment that creates an ideal place for pathogens to grow, facilitates outbreaks of water-borne diseases in the catchment and thus imperils their health.

However, as can be inferred from the above deliberations, there is a difference in perspectives between the lay and the literate *Bayso* and between the young and the elderly, on causes of disease and mechanisms of healing. This is mainly because of differences in the level of education, place of residence, age and exposure to modern health services. In this regard, the youth and a few adults opt for modern health services since, comparatively, they have some knowledge about modern health due to their exposure to modern education and urban life experience. Accordingly, they associate diseases with pathogens. Conversely, the lay and the elderly associate disease with supernatural forces and sociocultural issues. This implies that individuals' conceptions of health/disease are influenced by their level of education, place of residence, age and exposure to new ways of life.

3.4. Traditional mechanisms for managing epidemic diseases

The study revealed that throughout their history, the *Bayso* have suffered primarily from three major

epidemic incidents: Smallpox (*bagga*), cholera and malaria (*ummati*), in addition to some other infections such as diarrhoea and skin rashes, which are almost endemic to the study area. Academic works indicate that rural communities believe that supernatural forces are a source of health and these forces provide some individuals with special skills to heal infections using religious rituals and local resources (Al-Kuraishy *et al.*, 2022). Therefore, it is believed that different cultural groups in Ethiopia have distinct mechanisms and resources to manage infectious diseases (Kebede *et al.* 2024). In this regard, the *Bayso* have devised protective and preventive measures and healing mechanisms.

3.4.1. Protective measures: As can be deduced from the findings, the *Bayso* believe that protective measures keep them safe from disease. In this regard, they assume that, in addition to protective religious rituals (e.g., prayers and sacrifices), consuming foods high in protein (e.g., milk, meat and butter) helps build a robust body that could resist infections. Accordingly, they considered such foods to be protective agents. About four decades ago, when they had large herds and adequate farms, they produced large quantities of animal and crop products, which allowed them to live well and maintain their health. Kebede *et al.* (2024) reported that animal-source foods provide micronutrients (e.g., vitamins A and B12, calcium) that individuals cannot obtain in adequate amounts from plant-source foods alone. Similarly, Suzanne and Lindsay (2003) noted the importance of good nutrition for maintaining health in indigenous communities. Currently, however, due to drastic environmental changes in the study area causing grazing scarcity and agricultural land degradation, the *Bayso* have lost a significant portion of their herds and are experiencing a decline in crop production (Fekadu *et al.*, 2025). As a result, their survival itself is uncertain, let alone their access to quality food items. Therefore, one can imagine how much the decline in the *Bayso*'s livelihood has affected their local health system. Another important protective method identified in the study is the early warning system that helped *Bayso* carefully interpret their environment and predict what would happen in the near future. According to an elderly informant interviewed in Alge village, some individuals could decipher environmental conditions and predict their impact on the lives of the *Bayso* people. The following excerpt illustrates this:

In our rainy season (*badessa*), a small red worm named *ummati* appears. Culturally, its appearance has been taken as a sign of the outbreak of malaria. Therefore, individuals who have expertise in such cases inform the case to ritual leaders, since one of the local mechanisms for protecting against malaria is to make a plea for the red worm. Accordingly, ritual leaders offer a plea for the red worm, saying *ummati enaro kete*, which means *ummati*, please shield us from malaria.

(Badege Hordofa, Mulato, Oct. 12, 2022)

In the same way, an old lady (ex-*Oriwonno*), from Shigma village on Gidicho Island, explained that they previously had individuals who deciphered the onset of natural disasters by observing environmental features and this helped them maintain the well-being of their environment and themselves. The following excerpt illustrates this:

In our cultural life, we have individuals who predict the onset of drought by deciphering environmental features. For example, when *mayala*, a popular plant in our area, turns green amid hot and dry temperatures and the sky becomes foggy (*eyotte saare*) warns us to take cautious measures, including praying to *Wa'a* for rain and moving our herds (*gondossa*) to areas of better pasture. In this way, we tried to maintain the well-being of both our environment and our herds, believing that our health is closely linked to an environment that is conducive to living and herding and that cattle are the only source of products used in religious rituals to fight against infectious diseases.

(*Shangute Biramo, Gidicho, Feb. 11, 2022*)

3.4.2. Preventive measures: The other crucial point highlighted in the findings is that even though the *Bayso* employed different sociocultural methods to protect themselves from epidemic diseases, this does not mean that they were immune to such infections. The outbreak of smallpox, cholera and malaria confirms this. Therefore, following the outbreak of such infectious diseases, ritual leaders enforced the isolation of patients and a communication ban among villagers on Gidicho Island and between the *Bayso* and other communities in the catchment, to prevent the spread of infection. In this regard, Balamo Worba, a respected *Bayso* elder, during an interview in Alge village, explained that at the time of the smallpox outbreak, they isolated infected persons in a separate room within their family. A summary of his account is presented below:

During epidemics, such as those caused by smallpox, we isolate infected individuals for two key reasons. First, illness is often associated with the anger of supernatural forces, leading to the belief that the infected may carry a curse that could affect their families. Second, we believe that exposing patients to others could increase the spread of infection. Therefore, apart from one designated caregiver from the patient's family, other family members are not permitted to visit the patient.

(*Balamo Worba, Alge, Apr. 21, 2022*)

Equally, FGDs in Alge village pointed out that at the time of the cholera epidemic in Gidicho Island, ritual leaders concerned about the increasing number of infected persons implemented isolation of patients at the outskirts of the Haro village (then, the epicenter of the cholera epidemic). For this purpose, ritual leaders mobilized villagers to build shelters that hosted isolated patients and to provide provisions. Likewise, families who had a patient in the isolation center were

responsible for assigning a caretaker. These cultural practices emphasize the importance of isolation for spiritual and physical protection. Infected individuals are viewed as potential carriers of disease and unseen forces. In parallel, Kebede *et al.* (2006) and Shibru (2021) stated that, during times of epidemics, different communities in Ethiopia confined patients to their rooms in an attempt to halt the spread of disease.

The other preventive method that the *Bayso* employed was a communication ban among villagers on the island and communities along the coast of Lake Abaya. Informants reported that at the time of smallpox and cholera epidemics, *Wonnos* introduced a strict communication ban aimed at reducing the spread of the disease. Thus, movement from one village to another on the island and from the island to other villages in the catchment, or vice versa, was strictly forbidden without the permission of ritual leaders. Correspondingly, Patel *et al.* (2020) underlined the importance of controlling movement to halt the swift spread of epidemic diseases. Equally, Pankhurst (1965) in his study on the history of smallpox in Ethiopia found that the Harar Oromo peasants surrounding the city prevented everyone from traveling to and from the town to halt the spread of smallpox. However, it can be argued that a ban on communication during an epidemic may also disrupt the social fabric of communities in the aftermath, unless careful measures are taken to maintain these relationships through a systematic provision of resources, as in the case of the *Bayso*. What makes the *Bayso* case exceptional is that throughout the bans, supplies from the surrounding communities continued under the supervision of ritual leaders until the end of the smallpox and cholera epidemics. In this regard, one of the ex-*Wonnos*, *Wonno Chumbaro* (Fig. 3), provided the following account in the village of Alge about the efforts made to control the spread of epidemic diseases on the island of Gidicho without interrupting supplies from the surrounding communities. The following excerpt illustrates this:

At the time of the cholera outbreak, although we were under a strict communication ban, we maintained supplies without violating the restriction. Accordingly, our relatives living in the neighboring areas of Lake Abaya (e.g., Guji, Gedeo, Alge, Birbir town and Ochollo) sent supplies to their relatives on the island using traditional boats. In Gidicho at that time, it was customary for the inhabitants to wait for these boats in areas far from the harbor. Therefore, upon their arrival, the sailors would loudly call out the names of individuals and leave parcels on the shore of the lake. Then, when the sailors returned to their boats, the islanders who were waiting at a distance approached the harbor and collected their packs and if they had messages to their relatives, they communicated them to the sailors speaking loudly from a distance. In this way, we managed this risky situation.

(*Chumbar Assefa, Alge, April 13, 2022*).



Fig. 3. A former Wonno (Source: researcher photo, Alge village, Apr. 2022)

However, it should be noted that the implementation of both the isolation and the ban on communication, as well as the supervision of the care for patients and the provision of families and other inhabitants in the region, were the responsibilities of the ritual leaders and the *balabat* of the time. Moreover, the isolation and communication ban were revoked only if ritual leaders and the *balabat* believed that the transmission and infection rate of the epidemic had declined. In general, the findings imply that the disposition of the *Bayso* and others in the catchment to sustain provisions and care for patients has reinforced the social fabric of communities in the catchment in the aftermath of the epidemics. Importantly, although the *Bayso*'s efforts to control the spread of epidemic diseases (such as smallpox and cholera) through religious rites and sociocultural methods had some success, they were challenged by other factors that weakened their efforts and thus facilitated the spread of disease. In this regard, issues related to personal and environmental hygiene are some of the challenges that undermine such efforts. For example, during the cholera epidemic, those assigned to care for patients in isolation centers contracted the disease because of the unhealthy environment associated with the difficulty of waste management, as highlighted by one of the elderly teachers in Alge village.

3.4.3. Healing mechanisms: The study also reveals that in their traditional health system, the *Bayso* people used herbal and animal products to treat infectious diseases. For example, when dealing with smallpox, healers advised infected individuals to wash their bodies with sorghum water. This involved boiling sorghum and using the resulting water to cleanse the body, as it was believed that sorghum water could alleviate skin itching and provide relief. Parallel to this, a historical account from the early 19th century reveals that communities worldwide employed local methods to manage the effects of smallpox infection. For instance, Burckhardt (1891) noted in his book "*Travels in Nubia*" that the Sudanese utilized various cultural practices, including mass emigration from infected areas and traditional variolation, to prevent and treat smallpox. Similarly, according to an elderly woman from Mulato village, healers prescribed the following local medicines for

those infected with contagious diseases such as cholera and malaria. The following excerpt illustrates this:

In the 1960s, we were attacked by a deadly outbreak of cholera. Healers recommended that infected persons consume dried bread (*babbo*), as it was believed to absorb excess water in the intestines, helping to combat diarrhoea. Patients were also advised to take pepper or chili, lemon and *Katikala* (homemade alcohol) (Box 1), as these substances were believed to eliminate the harmful substances disturbing the stomach. In the case of malaria (*ummati*) infection, patients were encouraged to drink bitter substances, as it was believed that malaria did not thrive in the presence of bitterness. Two specific herbs were particularly noted: *Enqogo* and sisal. *Enqogo* is derived from the seeds of a tree known locally as *kosso* (*Hagenia abyssinica* (Bruce) J.F.Gmel.). Healers would grind the *Enqogo* seeds, mix them with goat urine and then give the concoction to the sick person. Alternatively, they would provide ground sisal (*Agave sisalana* Perrine) mixed with water. After consuming these remedies, patients often experienced severe vomiting and diarrhoea, which could be quite debilitating. In such cases, they would let the patient drink melted butter to aid in their recovery.

(Balgude Kalsa, Mulato, Nov. 20, 2022)

Box 1. Preparation process of *Katikala*, a traditional Ethiopian homemade alcoholic beverage

Ingredients and equipments

- Ingredients: Cereal crops: including maize/sorghum/ barley, Gesho (*Rhamnus prinoides* L'Hér.) leaves (bettering agent), water
- Equipment: Large traditional clay pot (*insera*), vessel made of earth/iron for water container (for condensation purposes), mortar and pestle for grinding *gesho*

Preparation Process

1. Prepare malt/ *bikil* by germinating cereal grains to produce enzymes, followed by sun-drying and grinding.
2. Sun-dry the *gesho* leaves and grind them to fine powder.
3. Prepare the mash (*yeareke-tinsis*) by mixing powdered *gesho* and *bikil*, typically at a ration of 1:2. Add sufficient water to maintain a thick consistency and allow the mixture to ferment for 6-7 days, producing a dense fermented brew.
4. Transfer the fermented mixture to a large traditional clay pot (*insera*) and heat it over a controlled fire.
5. Regulate the fire carefully to prevent overheating during distillation.
6. Condense the resulting vapor using a traditional cooling system consisting of a bamboo-pipe condenser (*mesabiya*) connected to the clay pot and a receiving vessel (*koda*) placed in a water-filled container. The condensed liquid is collected as *katikala*, a clear distilled beverage with a high alcohol content.

Source: Information obtained from Malame Shanko, Mulato (personal communication, 24 December 2023)

3.5. Bayso's challenges in maintaining its traditional health system

Informants, including laymen and women, nurses, health and agricultural extension workers and teachers who participated in the FGDs in the villages of Alge and Mulato, indicated that their traditional health system, in general and local healing mechanisms, in particular, are currently challenged by the following factors. First, traditional healers keep the knowledge of medicinal plants secret and the transmission of this knowledge is based on their willingness; therefore, when such knowledgeable persons grow old or die, their knowledge dies with them. Second, the study area has lost a significant part of its vegetation cover due to the expansion of cultivated land. Therefore, such damage to the vegetation cover has also destroyed plant species with medicinal value. Third, the negative attitude of some individuals (both from the Bayso and surrounding communities) towards traditional healers, including those with some education, Christian converts and, in some cases, government officials, has had a profound effect on the development of traditional medicine. Fourth, the decline of their IBS, which was the backbone of their traditional health system, has eroded its foundation. Fifth, the lack of an organized and efficient government institution to carry out clinical tests on herbs of medicinal value to verify their quality and determine appropriate dosages has reduced the effectiveness of local medicines, thereby undermining the confidence of the beneficiaries. Accordingly, there are noticeable changes in Bayso's perceptions of health and disease, as well as the mechanisms they employ to protect against, prevent and treat infections. In this context, an interview was conducted with a local official in the village of Alge. A summary of the interview is presented below:

At present, there are changes in the way our people define and interpret health/disease for the following reasons. First, the expansion of modern education and the role of health extension workers who have focused on the need to maintain environmental and personal hygiene. Second, the decline of our IBS, following the loss of a significant portion of our herds, which were desperately needed to provide animal products for the practice of rituals to protect against disease and heal infections. Third, after the introduction of Christianity, new converts denounced traditional healing practices as acts of the devil and ritual leaders and healers lost their former power and reputation. Fourth, the expansion of small towns and urban lifestyles in the vicinity over the last four decades has facilitated the spread of modern health ideas.

(Badege Bandura, Gidicho, June 19, 2022).

Similarly, a nurse who participated in the FGDs in Mulato village corroborated the views highlighted in the above excerpt, adding that the perception of the majority of the Bayso in this regard has undergone a remarkable

change due to their exposure to modern health services and the efforts of health extension workers in orienting each family to build toilets, maintain personal and environmental hygiene and methods for controlling infectious diseases. Accordingly, they tend to associate illness with infections caused by environmental and personal hygiene and prefer modern medicines. However, some of the elderly still believe that supernatural forces are a source of their well-being and prefer traditional healing mechanisms and local resources to sustain their health. This indicates that the elderly are reluctant to change and may be less willing to replace familiar ways of life that provide emotional security, as posited by (Cao, 2007).

4. Conclusion

The study revealed that the traditional health system of the Bayso stems from their religious beliefs, sociocultural values and traditions. Accordingly, their perception of health and disease and mechanisms of disease protection, prevention and treatment of infections, are linked to their religious principles and sociocultural values and traditions. Thus, the majority of the Bayso (the laypeople) associated disease with misfortunes caused by curses and punishment by supernatural forces and ritual leaders for their violation of religious values and cultural norms and they rely on local mechanisms of protection, prevention and healing. On the contrary, some of the Bayso, who have had exposure to modern education and health services, associate disease/illness with pathogens and prefer modern medicines. Even though some of the elderly Bayso still adhere to their traditional health system, there have been changes in the perception of health/disease of the majority of the Bayso (the laypeople), due to the decline of their IBS, which was the basis of their traditional health system, the expansion of modern education and urban lifestyles, the role of health extension workers, environmental degradation and the resulting loss of local resources (herbs and animal products) needed to treat infections. This implies that in the context of the Bayso, individuals' perceptions of health/disease and health behavior are influenced by changes in the level of education, exposure to urban lifestyles (e.g., use of toilets, keeping personal and environmental hygiene), modern health services and a shift in environmental conditions that have caused resource degradation and the introduction of Christianity. Thus, it is important to note that the decline of their traditional health system, in the absence of modern health facilities on Gidicho Island, has significantly compromised their health and health-seeking behavior. Therefore, addressing the need for health facilities should be the prime concern of the regional and federal governments. Besides, documenting traditional health values, mechanisms of protection, prevention and healing, as well as medicinal plants, would contribute to developing health strategies that

enable the alternative and complementary use of traditional healing mechanisms with modern ones. Furthermore, policymakers should design policy strategies that facilitate the development of traditional health systems.

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References

- Abinet, P. 2019. *Adaptations to a changing lacustrine environment: Ethiopian Bayso perceptions of and responses to ecological risks*. MA Thesis, Arba Minch University.
- Aderaw, Y., Getinet, N. and Bantayehu, A. 2023. Challenges to the availability and affordability of essential medicines in african countries: A scoping review. *Clinico Economics and Outcomes Research*. 15: 443–458. Available at: <https://pmc.ncbi.nlm.nih.gov/articles/PMC10276598/pdf/ceor-15-443.pdf> (Accessed 12 June 2024).
- Al Kuraishy, Hayder M., Al Fakhrany, Omar M., Elekhawwy, Ehab, Al Gareeb, Ali I., Alorabi, Mohammed, De Waard, Michel, Albogami, Saud M. and Batiha, Gaber E. 2022. Traditional herbs against COVID-19: Back to old weapons to combat the new pandemic. *European Journal of Medical Research*. 27(186): 1-11. <https://doi.org/10.1186/s40001-022-00818-5>. (Accessed 12 June 2023).
- Anizoba, Emmanuel C. 2023. Traditional and biblical concepts of marital infidelity among Igbo people of Nigeria in the face of COVID-19. *Pharos Journal of Theology*. 104 (2): 1-11. <https://doi.org/10.46222/pharosjot.104.212>. (Accessed 08 May 2025).
- Anomaly, Jonathan. 2014. What is an epidemic?. *The Journal of Law, Medicine and Ethics*. Available at: <https://ssrn.com/abstract=2481747> or <http://dx.doi.org/10.2139/ssrn.2481747>. (Accessed 06 April 2019).
- Appiah-Opoku, Seth. 2007. Indigenous beliefs and environmental stewardship: A rural Ghana experience. *Journal of Cultural Geography*. 24 (2): 79–98. <https://doi.org/10.1080/08873630709478212>. (Accessed 12 Sept. 2017).
- Bartels, Susan and Greenough, Greg. 2010. Investigation of a cholera outbreak in Ethiopia's Oromiya region. *Disaster Med Public Health Prep*. 4(4):312 - 317. Doi: 10.1001/dmp.2010.44. (Accessed 12 Oct. 2018).
- Berkes, Fikret. 2009. Indigenous ways of knowing and the study of environmental change. *Journal of the Royal Society of New Zealand*. 39 (4):151–156. <https://doi.org/10.1080/03014220909510568>. (Accessed 02 July 2019).
- Braukmann, Fabian. 2012. MARGINALIZED HUNTERS? Political and cultural challenges among the Haro of Lake Abaya (southern Ethiopia). *Paideuma: Mitteilungen Zur Kulturkunde*. 58: 181-196. <http://www.jstor.org/stable/23644460>. (Accessed 12 May 2022).
- Brenzinger, Matthias. 1995. The “Islanders” of Lake Abaya and Chamo Harro, Ganjule, Get’me and Bayso. Survey of Little-known Languages in Ethiopia.. *Linguistic Report*, 26, 2–36. <http://www.sil.org/silesr/1999/003> (Accessed 10 Dec. 2023).
- Bryan, Lowell, Conway, Mary, Keesmaat, Tessa, McKenna, Sarah and Richardson, Brendan. 2010. Strengthening sub-Saharan Africa’s health systems: A practical approach. <https://www.mckinsey.com/industries/healthcare/our-insights/strengthening-sub-saharan-africas-health-systems-a-practical-approach> (Accessed 14 September 2020).
- Burckhardt, John Lewis. 1891. *Travels in Nubia*. Available at: <https://devonandexeterinstitution.org/rescue-a-book/john-lewis-burckhardt-travels-in-nubia-1819/>. (Accessed 22 September 2021).
- Cao, Lan, 2007. Culture Change. *Faculty Publications. Paper 18*. <http://scholarship.law.wm.edu/facpubs/18> (Accessed 22 June 2026).
- Central Statistics Agency. 2008. *The 2007 Population and Housing Census of Ethiopia*. Addis Ababa. . Available at: www.csa.gov.et/pdf/Cen2007_firstdraft (Accessed 17 April 2022).
- Edemekong, Peter F. and Huang, Brenda. 2022. Epidemiology of prevention of communicable diseases. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK470303/> (Accessed 27 February 2024).
- Ember, Carol R. and Ember, Melvin. 2014. Health and illness in the world’s cultures, In: *Encyclopedia of Medical Anthropology*. New York: Kluwer Academic/Plenum Publishers.
- Epple, Susanne. 2016. *The Bayso people of Gidicho Island, Southern Ethiopia. An Ethnographic Sketch* Unpublished manuscript. Available at: https://www.academia.edu/25982635/The_Bayso_People_of_Gidicho_Island_Southern_Ethiopia_An_Ethnographic_Sketch (Accessed 23 November 2021).
- Fekadu, E., Hebo, M. and Emirie, G. 2024. Impact of environmental change on the indigenous belief system of the Bayso community of Gidicho Island, southern Ethiopia. *International Journal of Anthropology and Ethnology*. 8:16 <https://doi.org/10.1186/s41257-024-00117-3>. (Accessed 17 June 2025).
- Fekadu, E., Hebo, M. and Emirie, G. 2025. Trends and triggers of environmental change on Gidicho Island and its environs. *Island Studies Journal*. 20(2), 103-125. <https://doi.org/10.24043/001c.132185>. (Accessed 23 June. 2024).
- Fentimana, A. and Nenibarini, Z. 2015. Environmental degradation and cultural erosion in Ogoni land: A case study of the oil spills in Bodo. *The Extractive Industries and Society*. 2:615–624 <https://doi.org/10.1016/j.exis.2015.05.008>. (Accessed 15 Nov. 2024).
- Feseha, A. 2008. *A study on Nationalities in Ethiopia: Population, Identity and Settlement*. Addis Ababa.

- Foster, George M. and Anderson, Barbara Gallatin. 1978. *Medical Anthropology*. New York: John Wiley & Sons, Inc.
- Fosu, George B. 1981. Disease classification in rural Ghana: Framework and implications for health behavior. *Social Science and Medicine Part B: Medical Anthropology*. 15 (4): 471-482.
- Getachew, A., Dawit, A., Timotewos, G. and Kelbessa, U. 2002. Perceptions and practices of modern and traditional health practitioners about traditional medicine in Shirka District, Arsi Zone, Ethiopia. *Ethiopian Journal of Health Development*. 16(1) <https://ejhd.org/index.php/ejhd/article/view/745>. (Accessed 13 Dec. 2023).
- Gogoi, N. 2014. *Traditional Medicinal Systems: An Appraisal, Future Prospects of Ethno-Medicine*. Lakhimpur, Assam: Publication Cell, Lakhimpur Girls' College.
- Gunbayi, I. 2023. Data Analysis in Qualitative Research. *Journal of Action Qualitative & Mixed Methods Research*, 2 (2):1-11 DOI: 10.5281/zenodo.7763207. (Accessed 06 March 2025).
- Hayward, Richard J. 1978. Bayso revisited: some preliminary linguistic observations-I. *Bulletin of the School of Oriental and African Studies*. 3:539-570.
- Hirut, W. 2004. *A Grammar of Haro with Comparative Notes on the Ometo Linguistic Groups*. PhD Thesis. Addis Ababa University, Addis Ababa.
- James, Peter B., Wardle, Jon, Steel, Amie and Adams, Jon. 2018. Traditional, complementary and alternative medicine use in Sub-Saharan Africa: A systematic review. *BMJ Global Health*. 3(5): e000895 <https://doi.org/10.1136/bmjgh-2018-000895>. (Accessed 12 June 2023).
- Joshua Project. 2023. Baiso, Gedicho in Ethiopia. Available at: https://joshuaproject.net/people_groups/10580/ET (Accessed 7 June 2024).
- Kahissay, Melaku, Fenta, Tesfaye and Boon, Heather. 2017. Beliefs and perception of ill-health causation: a socio-cultural qualitative study in rural North-Eastern Ethiopia. *BMC Public Health*. 17 (124). <https://doi.org/10.1186/s12889-017-4052-y>. (Accessed 26 Oct. 2023).
- Kebede, D., Binyam, G., Yunis, M. and Alemayehu, A. 2006. A historical overview of traditional medicine practices and policy in Ethiopia. *The Ethiopian Journal of Health Development*. 20 (2) <https://www.ejhd.org/index.php/ejhd/article/view/602>. (Accessed 11 Nov. 2022).
- Kebede, F., Maledé, B., Adane, Y., Chemet, T., Desalegn, G., Bereket, B. and Belayneh, K. 2024. Medicinal Plants Traditionally used to Treat Human Ailments in Ethiopia: A systematic review. *Phytomedicine Plus*. 4(1):1-11. <https://doi.org/10.1016/j.phyplu.2023.100516>. (Accessed 12 Nov. 2025).
- Laith, H. A., Edward, F., Max, P., Kathleen, K. and Peter, B. 2015. Local perceptions of causes of death in rural south Africa: A comparison of perceived and verbal autopsy causes of death. *Global Health Action*. 8(1) <https://doi.org/10.3402/gha.v8.28302>. (Accessed 05 Jan. 2022).
- Lemi, K. 2018. Grammatical and Documentation of Bayso. PhD Dissertation. Addis Ababa University, Addis Ababa.
- Liddell, C., Barrett, L. and Bydawell, M. 2006. Indigenous beliefs and attitudes to AIDS precautions in a rural south African community: An empirical study. *Annals of Behavioral Medicine*. 32(3): 218-225 https://doi.org/10.1207/s15324796abm3203_7. (Accessed 10 July 2023).
- McElroy, Ann and Townsend, Patricia, K. 2009. *Medical Anthropology in Ecological Perspective*, 5th Edition. Boulder, Colorado: Westview Press.
- Mesfin, H. K., Teferi, G. F. and Boon, H. 2017. Beliefs and perception of ill-health causation: A sociocultural qualitative study in rural north-eastern Ethiopia. *BMC Public Health*. 17: 124. <https://doi.org/10.1186/s12889-017-4052-y>. (Accessed 12 Oct. 2023).
- Miller, Barbara. 2011. *Cultural Anthropology*. 6th Edition. Boston: Prentice Hall.
- Mohamed, S. and Teferi, H. 2019. A history of the people of Gidicho Island: An overview from 1520s to 1995. PhD Dissertation. Addis Ababa University, Addis Ababa.
- Mohammed, I. N. and Babikir, H. E. 2013. Traditional and spiritual medicine among Sudanese children with epilepsy. *Sudanese Journal of Paediatrics*. 13(1): 31-37.
- Moshabela, M., Zuma, T. and Gaede, B. 2016. Bridging the gap between biomedical and traditional health practitioners in south Africa. *South African Health Review*. 1: 83-92. Available at: http://www.hst.org.za/sites/default/files/Bridging_the_gap.pdf. (Accessed 25 Sep. 2022)
- Myers, David G. 2007. *Psychology*, 8th Edition. New York: Worth Publishers.
- Ng'ang'a, N. W., Momanyi, R. O., Chemirmir, C., Biwott, H., Ayodo, G., Orero, M., et al. 2025. The potential role of cultural and religious healing practices in shaping community vulnerability to highly infectious diseases in Western Kenya. *PLOS Glob Public Health*. 5(3).
- Odoko, S. A. 1998. The Influence of socio-cultural and economic factors on health seeking behavior: The case of measles in children in Rarieda Division, Siaya District. MA Thesis. University of Nairobi, Nairobi.
- Pankhurst, Richard. 1965. The history and traditional treatment of smallpox in Ethiopia. *Medical History*. 9(4): 343-355. <https://doi.org/10.1017/S0025727300030994>. (Accessed 03 July 2022).
- Patel, A., Patel, S., Fulzele, P., Mohod, S. and Chhandra, G. Kumar. 2020. Kumar. Is quarantine an effective mode for control of the spread of COVID-19? A review. *Journal of Family Medical Primary Care*. 9 (8): 3867-371
- Pedersen, K. S. 1999. Is the Church of Ethiopia A Judaic Church? Available at: <https://www.scribd.com/document/518305677>. (Accessed 19 June 2021).
- Quinlan, P. I. 2011. Ethnomedicine. In: *Merrill Singer and Pamela I. Erickson (Eds.), A Companion to Medical Anthropology*. Oxford: Wiley-Blackwell.
- Sava, G. 2011. Endangered Bayso (Cushitic): Interesting typological and historical aspects. In: *Luca Busetto, Roberto Sottile, Livia Tonelli and Mauro Tosco (Eds.), He Bitaney Lagge: Studies on Language and African Linguistics in Honour of Marcello Lamberti*. Milan: Qu.A.S.A.R., pp. 163-174.
- Shibru, T. 2021. *Worrashign (ወረሽኝ / Epidemics)*. Pp 1-1222, Addis Ababa, Ethiopia.
- Suzanne, M. and Lindsay, A. 2003. Nutritional importance of animal source foods. *Journal of Nutrition*. 133 (11): 3932-3935 <https://doi.org/10.1093/jn/133.11.3932S>. (Accessed 12 Feb. 2022).
- Tadele, T. 2014. *Ethno-history of the Gidicho people*. Hawassa: Southern Nations, Nationalities and Peoples Regional State Bureau of Culture and Tourism, pp. 29-128.
- Tosam, M. J. 2019. Human nature, disease diagnosis and health in traditional African medicine. Available at: https://polylog.net/fileadmin/docs/polylog/42/thema_Tosam.pdf (Accessed 24 September 2024).
- Van der Geest, Sjaak. 2014. Medical anthropology. In: *William C. Cockerham, Robert Dingwall and Stella R. Quah (Eds.), The Wiley Blackwell Encyclopedia of Health, Illness, Behavior and Society*, First Edition. Oxford: Wiley-Blackwell.
- Verstraelen, F. J. and Kariamu, W. A. 2021. Shona: History, religious systems change and rituals. In: *Vumbi Yoka Mudimbe and Kasereka Kawahirehi (Eds.), Encyclopedia of African Religions and Philosophy*, pp. 636-639.
- White, P. 2015. The concept of diseases and health care in African traditional religion in Ghana. *Theological Studies*. 71(3): 1-7.
- Whiteside, Alan and Zebryk, N. 2017. New and re-emerging infectious diseases in sub-saharan Africa. In: *Groth, Hans and May, John F. (Eds.), Africa's Population: In Search of a Demographic Dividend* Cham: Springer, pp. 299-313.

- Workneh, T., Emirie, G., Kaba, M., Mekonen, Y, and Kloos, H. 2008. Perceptions of health and illness among the Konso people of southwestern Ethiopia: persistence and change. *J Ethnobiology Ethnomedicine* 14 (18). <https://doi.org/10.1186/s13002-018-0214-y>. (Accessed 09 April 2021).
- World Health Organization. 2009. Basic Documents. 45th Edition. Available at: <http://www.who.int/governance/> (Accessed 22 April 2026).
- World Health Organization. 2012. What is the Deadliest Disease in the World? Available at: <http://www.who.int/features/qa/18/en/> (Accessed 8 June 2025).
- Yin, Robert K. 2014. Case Study Research: Design and Methods. 5th Edition. Thousand Oaks: Sage Publications.