

## Traditional medicines that are used to treat witchcraft-related diarrhoea among under-five children in northern Tanzania

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### Abstract

**Introduction:** Diarrhoea continues to be a severe public health concern, particularly in developing nations. The illness is caused by various bacterial, viral, and other physiological changes. Interestingly, it has also been perceived by the community that diarrhoea among under-five children could be due to witchcraft. In principle, all forms of diarrhoea can be managed with well-established contemporary therapies; nonetheless, it has been suggested that perceived witchcraft-related diarrhoea among under-five children can only be managed by traditional medicines. In northern Tanzania, the use of traditional medicines in the management of perceived witchcraft-related diarrhoea among under-five children is substantial. Yet, there are limited studies on this subject. The present study explored traditional medicines that are used to treat perceived witchcraft-related diarrhoea among under-five children.

**Methods:** A cross-sectional study using a qualitative research approach was carried out in Korogwe and Handeni districts in northern Tanzania. The study population included paediatric health workers, caretakers of under-five children, and traditional healers. In-depth interviews and focus group discussions served as the data collection methods. Thematic analysis was employed for data analysis.

**Results:** A total of 247 participants were enrolled, which included 127 males and 120 females. Most participants, especially caretakers and traditional healers, preferred the use of traditional medicines in treating diarrhoea among under-five children and held the belief that a specific form of diarrhoea among under-five children is caused by witchcraft. It was also revealed that traditional medicines are the only types of medication that can treat this form of diarrhoea among under-five children. Plants were the primary source of many traditional remedies that were purported to be capable of treating perceived witchcraft-related diarrhoea among under-five children.

**Conclusion:** Most participants believed that there is a specific form of diarrhoea among children that is caused by witchcraft, and they boldly stated that traditional medicines are the only treatment option for this form of diarrhoea. Thorough research on this topic is essential. If additional research confirms that traditional remedies effectively treat the illness, these treatment regimens should be extended to other serious illnesses the community suffers from.

**Key Words:** Traditional medicines, witchcraft-related diarrhoea, under-five children, northern Tanzania

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## Introduction

Public health is ruthlessly troubled by diarrhoeal ailments (Collaborators 2018). Around the world, 2.5 billion people lack adequate sanitation, which is believed to be the major determinant of diarrhoeal ailments, and 780 million people lack access to safe and clean drinking water (WHO 2017). It has been documented that diarrhoea kills more under-five children in certain places than all other illnesses combined, especially in poverty-stricken communities (Petri et al., 2008; Ugboko et al., 2020).

In low and middle-income nations, diarrhoea is the second leading cause of illness and death among under-five children (Mosisa et al., 2021). Consuming contaminated food, drinking contaminated water, and living in an unsanitary environment have all been found to be major contributing factors to the persistence of diarrhoeal diseases among under-five children (Mosisa et al., 2021). Moreover, the caretaker's age, the size of the household, the caretaker's state of employment and the household's proportion of under-five children have also been linked to contributing to the persistence of diarrhoeal ailments among under-five children (Agegnehu et al., 2019; Moon et al., 2019; Atnafu et al., 2020).

In a research that included most of the sub-Saharan countries (Demissie et al., 2021), it was found that the prevalence of childhood diarrhoeal morbidity during two weeks was 15.3%, much higher than the results of comparable research conducted in Vietnam (11%) and India (5%) (Gupta 2014; Lee et al., 2016). The potential grounds for these variations were believed to be the disparities in the availability of water, the presence and use of latrines, the presence of hand washing etiquette, and the waste disposal methods (Alebel et al., 2018).

Tanzania has a 12% overall prevalence of diarrhoea among under-five children (Edwin and Azage 2019). The study found that mother's age was allegedly one of the factors associated with the diarrhoeal illness experienced by the child or children of the mother in question. It has been demonstrated that as a mother gets older, her attentiveness rises, and her child or children have a reduced risk of succumbing to diarrhoea compared to a younger mother (Edwin and Azage 2019).

Even though children are more at risk of suffering from diarrhoea, there are established measures worldwide to treat or prevent the disease. These standardized measures include the right to use hygienic and risk-free water, exclusive breastfeeding for the first six months of life, enhanced sanitation practices, recommended diet, and vaccines for diarrhoea (rotavirus and cholera) (WHO 2017).

On the other hand, traditional medicines have also been used for a long time to treat diarrhoea. Traditional medicines can be defined as the "entirety of all the knowledge, abilities, and procedures derived from theories, convictions, and life experiences that are used to safeguard health as well as the prevention, diagnosis, and enhancement of physical and mental disorders" (WHO 2023). Despite the lack of comprehensive research to determine their safety and effectiveness, traditional medicines are nevertheless frequently used to treat diarrhoea among under-five children (Olisa and Oyelola 2009; Mwambete and Joseph 2010; Farag et al., 2013; Woldeab et al., 2018; El-Dahiyat et al., 2020).

It is believed that the increasing usage of traditional medicines that are useful for treating childhood diarrhoea is a vital part of the long-standing culture that communities have inherited from earlier generations (Uddin et al., 2015). Cultural connectivity, efficacy, safety, ambitions for self-care, accessibility, affordability, influence from senior family members and barrier-free use of the traditional medicines have been reported as the grounds that motivate their use (Ansari et al., 2012; Al Akeel et al., 2018; El-Dahiyat et al., 2020).

According to projections, up to 80% of people in non-industrialized nations rely on traditional medicines for their main healthcare (WHO 2019). In Tanzania, the use of traditional medicines is a practice well attached within the traditions and customs of varied communities (Maregesi et al., 2007; Smith 2019; Mujinja and Saronga 2022). As previously explained, living in an unhygienic environment, consuming contaminated food, and drinking polluted water can all contribute to diarrhoea; however, it has been documented that witchcraft can as well cause diarrhoea among under-five children (Ansari et al., 2012; Budhathoki et al., 2016). Studies have

been able to thoroughly describe and document the medications used to treat children's normal diarrhoea, but not the medications used to treat children's diarrhoea believed to be caused by witchcraft (Mwambete and Joseph 2010; Sibandze et al., 2010; WHO 2017; Liheluka et al., 2023b).

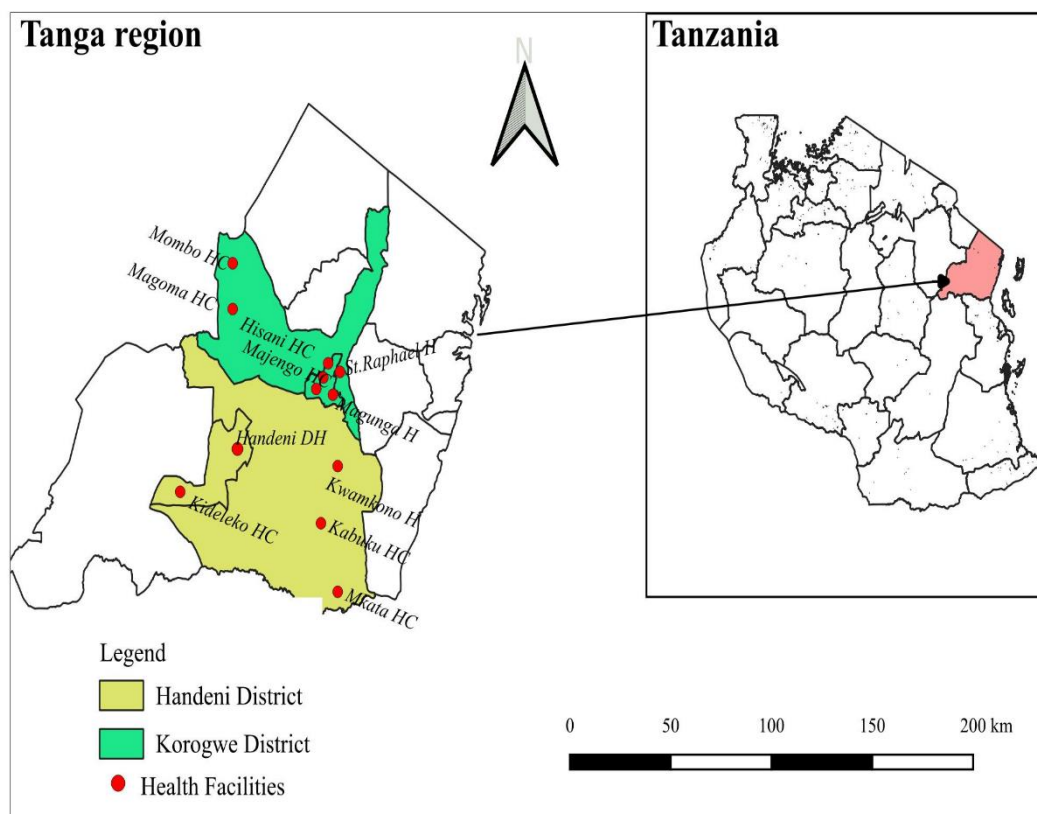
The present study was carried out in the northern Tanzanian districts of Korogwe and Handeni because the locals largely believe that witchcraft is the primary cause of diarrhoea among under-five children (Liheluka et al., 2023a). Furthermore, in these two districts, diarrhoea is a prevalent illness among under-five children. For example, according to data from the Korogwe District Health Information System (DHIS) books, the prevalence of diarrhoea among under-five children was 59%, 61%, and 65% in 2018, 2019, and 2020, respectively. In the Handeni District, the prevalence of diarrhoea among under-five children was 59% in 2018, 70% in 2019, and 70% in 2020 (Ministry of Health Community Development Gender Elderly and Children 2021).

Despite the widespread belief in the study setting that childhood diarrhoea can be due to witchcraft and that there are specific traditional medicines and methods to treat this form of diarrhoea, to the best of the authors' knowledge, there has been limited research conducted on this subject in Tanzania and other countries. Thus, the present study was conducted to explore traditional medicines that are used to treat the perceived witchcraft-related diarrhoea among under-five children in northern Tanzania. Having this data is vital when planning to establish effective diarrhoeal-related health interventions and policies that align with the widely accepted social and cultural norms of the relevant communities. Furthermore, the study findings may serve as baseline data for relevant, in-depth future investigations.

## **Methods**

### **Study area**

The present study was carried out from February 2023 to October 2023 in the northern Tanzanian districts of Korogwe and Handeni, Tanga Region (Figure 1). Korogwe District has an area of 3,544 square kilometers (PO-RALG 2024b), which is equal to 12.9% of the entire area of Tanga Region. Korogwe District has a population of 359,421 (NBS 2022). Handeni District has an area of 6,453 square kilometers, which is equal to 23.59% of the entire area of Tanga Region (PO-RALG 2024a). Handeni District has a population of 493,321 (NBS 2022). The districts of Korogwe and Handeni are divided into eleven divisions' altogether. The four divisions in Korogwe District are Mombo, Bungu, Magoma, and Korogwe; the six divisions in Handeni District are Chanika, Sindeni, Mkumburu, Magamba, Kwamsisi, and Mazingara (PO-RALG 2024b).



**Figure 1:** A map showing the study area and health facilities involved in the present study

### Study design and approach

A hospital and community based qualitative cross-sectional study design was used.

### Study population, inclusion and exclusion criteria

The target population included caretakers of under-five children who reside in the districts of Korogwe and Handeni who were visiting the 12 main healthcare facilities in each of the two districts. Others included paediatric healthcare providers working at the main healthcare facilities designated for this study and traditional healers who treat under-five children. Respondents who consented to participate in the study were included. The study excluded respondents who were unable to participate due to illness and those who failed to show up on the day of data collection.

### Data collection methods and tools

To facilitate data gathering, focus group discussions (FGDs) and in-depth interviews (IDIs) with semi structured open-ended questions from interview guides were used. The rationale behind the selection of FGD and IDI methodologies was their acknowledgment as sources of qualitative data in the field of health care (Green and Thorogood 2018).

### Selection of IDI participants

As previously stated, there are 10 divisions in the districts of Korogwe and Handeni. The two districts have a total of 12 main healthcare facilities. For the present study, participants were recruited in 10 divisions and 12 healthcare facilities in each of the two districts. The objective was to collect a diverse array of viewpoints from different stakeholders, including paediatric health workers, caretakers and traditional healers.

### **Selection of paediatric health workers for IDI**

A total of 24 paediatric health workers participated in this study, with one paediatric clinician and one paediatric nurse purposively chosen from each of the 12 health facilities. Following their selection, the study team tracked down the health workers and informed them of their inclusion in the study, two weeks prior to the scheduled interview date. After giving them a thorough explanation of the project, the research team set up a time for the health workers to be interviewed.

### **Selection of caretakers for IDI**

Out of the 12 health facilities, two caretakers (one male and one female) were purposively chosen, bringing the total to 24. The DHIS books were used to choose study participants. The participants were caretakers whose under-five children had visited one of the 12 health facilities for treatment of diarrhoeal illness within six months prior to the interview day of the present study. Numerous patient details are included in the DHIS books, including the patient's name, residence, gender, age, and the ailment that led to their visit to the health facility. The study team located the participants at their place of residence two weeks before the interview date and notified them that they had been selected to participate in the research. The research team scheduled an interview with the participant and provided a thorough explanation of the study.

### **Selection of traditional healers for IDI**

A minimum of five and a maximum of six traditional healers from each of the 10 divisions in the districts of Korogwe and Handeni were purposively chosen as IDI participants. At least five traditional healers from each division were chosen after consultation with the traditional healer coordinators of the Korogwe and Handeni districts, bringing the total to 52. Two weeks prior to the scheduled interview, the study team located the traditional healers and informed them that they had been chosen to take part in the research. After spending some time explaining the project goals in detail, the study team set up a time for interviews with the traditional healers.

### **Selection of FGD's participants**

Purposively, a minimum of six and a maximum of 10 caretakers (male and female) who brought their under-five children to the 12 health facilities were selected for this study, specifically those who brought children for treatment of diarrhoea within the previous six months as extracted from the DHIS books. The ultimate sample size for FGD participants was made up of 147 individuals. Two weeks before the interview date, the study team located the FGD participants in their neighbourhoods and let them know they had been chosen to participate in the research. The research team scheduled an interview and thoroughly explained the study's purpose to each participant.

### **Conducting IDI and FGD interviews**

After a study participant consented to take part and duly signed and dated the Informed Consent Form (ICF), the interview process started. An impartial witness was consulted before signing the ICF in cases where the study participant lacked literacy. When a participant gave permission, a digital audio recorder was used to capture data in addition to taking notes. Saturation points during interviews have been reported to occur, at least in the first 12 interviews (Guest et al., 2006). In light of this guideline, the IDI interviews comprised, as previously mentioned, a minimum of 24 paediatric health workers, 24 caretakers, and 52 traditional healers. According to the FGD literature, most qualitative studies can satisfactorily address their research objectives with a minimum of six FGDs (Guest et al., 2016). Based on the aforementioned knowledge, this study carried out 24 FGDs; 12 groups consisted of male caretakers and 12 groups consisted of female caretakers. Every interview was conducted in a location that was convenient for the study subject.

### Data management and analysis

Data were analyzed using thematic analysis, which is a widely used method for identifying themes in the qualitative research dataset. Initially, the data were collected in Kiswahili and later transcribed verbatim. Listening to audio recorded data and reading the transcripts, were done as part of data quality check to correct transcription errors. After that, the transcripts were translated into English. The data were scanned repeatedly by the principal investigator (PI) and the research team with the aim of understanding them. Codes were grouped into categories and during coding process, one researcher performed the initial coding, and then two researchers met to compare the codes versus the transcripts and reached a consensus on the final codes. Codes were categorized based on the study specific objectives. An inductive approach (concepts derived from the data) was used for data analysis by following the six phases of thematic analysis suggested by Braun and Clarke (2006): familiarization with the data, generating first-round codes, searching prospective themes, reviewing themes, defining and naming themes, and ultimately generating the report (Braun and Clarke 2006).

### Ethical approvals

The present study was submitted to the University of Dodoma Institutional Research Review Committee (UDOM IRRC) and received ethical approval (Reference number MA.84/261/02/, dated May 24, 2022). Prior to starting the research, the study team visited the village, district, and regional authorities where the study was conducted. These visits had the dual purposes of raising awareness and providing the officials with comprehensive information about the study. As previously mentioned, eligible study participants also received comprehensive study information prior to enrolment. Participants were made aware that participation in the study was entirely voluntary and that they could choose not to participate.

### Results

**Participants' socio-demographic characteristics:** Table 1 presents the socio-demographic characteristics of the study participants. A total of 247 participants were recruited, which included 127 males and 120 females. More than half (57%) of the study population were aged 18–40 years. One hundred participants took part in the IDI interviews, while 147 participants took part in the FGD interviews. Most caretakers and TH participants had primary education. The health professionals who took part in this study were nurses and clinicians. All of them had completed tertiary or higher education, and their ages ranged from 25 to 67. Of them, 29 (29%) were male.

#### Participants socio-demographic characteristics

Characteristics	Caretakers N= 171 (69%)	Health workers N= 24 (10%)	Traditional healers N= 52 (21%)
<b>District</b>			
Korogwe	102 (59.6%)	14 (58.3%)	21 (40.4%)
Handeni	69 (40.4%)	10 (41.7%)	31 (59.6%)
<b>Sex</b>			
Male	88 (51.5%)	7 (29.2%)	32 (61.5%)
Female	83 (48.5%)	17 (70.8%)	20 (38.5%)
<b>Age (In years)</b>			
18-40	114 (66.7%)	16 (66.7%)	10 (19.2%)
41 >	57 (33.3%)	8 (33.3%)	42 (80.8%)
<b>Data collection methods</b>			
IDIs	24 (14%)	24 (100%)	52 (100%)

FGDs	147 (86%)	0 (0%)	0 (0%)
<b>Level of education</b>			
No formal education	11 (6%)	0 (0%)	7 (13%)
Primary education	116 (68%)	0 (0%)	41(79%)
Secondary education	37 (22%)	0 (0%)	4 (8%)
Tertiary and higher education	7 (4%)	24 (100%)	0 (0%)

Upon data analysis, the following three key themes emerged: Participants understanding of the causes of diarrhoea among under-five children, traditional medicines and other methods for treating perceived witchcraft-related diarrhoea among under-five children, and the efficacy of traditional medicines in treating perceived witchcraft-related diarrhoea among under-five children.

### Participants understanding of the causes of diarrhoea among under-five children

The participants had different opinions when asked about the causes of diarrhoea among under-five children. Most caretakers and all traditional healers reported that, in addition to the known scientific causes of diarrhoea, the illness is largely caused by witchcraft. This is in contrast to health workers who explained the known scientific causes of diarrhoea, which include eating contaminated food or drinking contaminated water, although they did acknowledge that a significant portion of society still believes that superstitions are the primary cause of diarrhoea among under-five children.

Traditional healers had these to say:

*“Many individuals in our community think that diarrhoea among under-five children is the result of witchcraft” (Traditional healer, Male, 51 years).*

*“It is possible for the child to get diarrhoea due to bewitchment or from his/her mother's devils” (Traditional healer, Female, 70 years old).*

One caretaker had this opinion:

*“It is true that there are witches; a child who is suffering from diarrhoea may have been bewitched” (Caretaker, Female, 35 years).*

Health workers had these explanations:

*“A lot of caretaker’s cure diarrhoea with traditional medicines because they think it is caused by witchcraft. Their children end up in the hospital when such medications don't work” (Medical Doctor, Male 43 years old).*

One nurse said:

*“People in this community have a belief that witchcraft is the cause of a certain type of diarrhoea among children. They also think that traditional medicine is the sole way to treat this form of diarrhoea, and some individuals have recovered from it without even visiting the hospital” (Nurse, Female, 39 years old).*

### Traditional medicines and other methods for treating the perceived witchcraft-related diarrhoea among under-five children

In this theme, all sorts of participants shared their opinions, but compared to caretakers and healthcare professionals, traditional healers appeared to know more about treating children's

diarrhoea, which is thought to be caused by witchcraft. Although some traditional healers share some modest similarities, the traditional medications and treatments used to cure diarrhoea in under-five children vary from one traditional healer to another.

Traditional healers had the following to talk about:

*There is a medicine that is prepared by taking the fresh leaves of the "Mhasu" (a local language name) (Mahasu-microglossa – Family Acanthaceae) and mixing them with the leaves of the "Mlama mweusi" (a local language name) (Combretum molle – Family Combretaceae). You put them on fire until they are completely dry, and then you grind them. After that, you take a teaspoon of the powder, mix it with half a cup of warm water, and give it to the child only once a day. The child should only take half a cup a day until s/he recovers (Traditional healer, Male, 42 years old).*

*To make a remedy for diarrhoea in children caused by witchcraft, take the roots of the "Masuchemengi" (a local language name), (Strophanthus eminii - Family Apocynaceae), peel the barks, let them dry in the sun, and then grind them until they become powdery. A teaspoon of the powder must be taken and added to the porridge. For seven days, the child drinks it three times a day (Traditional healer, Female, 54 years old).*

Another traditional healer stated:

*“Another method that you can use to treat a child's diarrhoea caused by witchcraft is to take a broom made from the leaves of "Ukindu" (a local language name), (Phoenix reclinata - Family Arecaceae) and then use it to sweep the child's body from the chest down to the feet. You must sweep the child's body three times, from the chest to the feet, and then you repeat it three times in just one day. Then, when you finish sweeping the child, you quickly throw the broom down. This is the most common method that we employ. Following that, the child fully recovers” (Traditional healer, Male, 64 years old).*

Another traditional healer had this to elucidate:

*“To cure a child's diarrhoea caused by magical beliefs, you take seven leaves of "Ndulele" (a local language name) (Solanum incanum – Family Solanaceae) and mix them with the leaves of "Mzumbasha" (a local language name) (Ocimum suave – Family Lamiaceae), and leaves of the "Kongo" (a local language name), (Polyscias stuhlmannii - Family Araliaceae) dry them in the sun, and grind them. After that, you take a small amount, mix it with warm water, and then give it to the child only once. If the child was crying and had diarrhoea, s/he recovers immediately” (Traditional healer, Male, 32 years old).*

The majority of caretakers stated that they seek the advice of traditional healers if they suspect a child is experiencing diarrhoea related to witchcraft because they believe traditional healers have skills to treat such cases of diarrhoea. Although a small segment of caretakers was aware of how to treat diarrhoea caused by witchcraft, their levels of skills were inferior to those of the traditional healers. Some caretakers mentioned that the grandmothers of their children consistently prepare and administer the children's medications.

For example, one caretaker had this to say:

*“The caretaker has to take a normal broom used for sweeping and spit three times on the ground. After that s/he must sweep the child twice on the right side and twice on the left side of his body, starting from the head to the feet. Then the caretaker must throw the broom on the ground. Following that, the child's magical belief-related diarrhoea subsides” (Caretaker, Male, 33 years old).*



Another caretaker explained:

*“When my child has witchcraft-related diarrhoea, his/her grandmother makes medicine for him/her, which the child swallows and helps him/her to recover” (Caretaker, Female, 23 years old).*

Most health professionals did not know about the traditional remedies for treating diarrhoea among under-five children, which is thought to be caused by magical beliefs. One health worker did, however, briefly mention that his/her clients regularly tell him that they use a medication called "Makata" (a mixture of sodium carbonate and other traditional medicines) to treat a child's diarrhoea that is brought on by witchcraft.

Health workers had this to explain:

*“I always inquire about the medications given to children by caretakers prior to their arrival at the hospital when they bring them here for diarrhoeal treatment. Most of them used to tell me that they gave their children a traditional medicine called "Makata," (a mixture of sodium carbonate and other traditional medicines) because they believed children were bewitched” (Medical Doctor, Male, 35 years old).*

### **The efficacy of traditional medicines in treating the perceived witchcraft-related diarrhoea among under-five children**

Diarrhoea resulting from witchcraft is incurable with modern treatment; only traditional medicines can treat this form of diarrhoea, according to all traditional healers and most caretakers. Traditional healers and most caretakers believed that there are people in the community who are bewitching children to make them sick with diarrhoea just out of hatred or jealousy. It was clarified by traditional healers and caretakers that, children, not adults, are commonly bewitched to contract diarrhoea. The participants thought that children are more vulnerable to this form of diarrhoea because their bodies have not yet fully matured. Health professionals did not think that diarrhoea could be classified as either treating with contemporary medicines or using traditional medicines. In their opinion, the standard treatment guidelines ought to be followed for any diarrhoeal illness.

Traditional healers said:

*“Hospital medications, in my opinion, cannot treat a child's witchcraft-related diarrhoea, although they can treat other forms of diarrhoea. Children are especially susceptible to this form of diarrhoea since they are not fully mature” (Traditional healer, Male, 56 years old).*

Caretakers had this to narrate:

*“Many people believe that a child with diarrhoea must have been bewitched, so they prefer to start with traditional medicines” (Caretaker, Male, 31 years old).*

*“Many times, people turn to traditional medicines since hospital medications are unable to heal a child who might have been bewitched” (Caretaker, Male, 37 years old).*

Health workers reported:

*“They don't seem to heal diarrhoea in any way, in my opinion. Before a child is given medication for diarrhoea, s/he has to be tested to determine the exact cause of the illness” (Nurse, Female, 49 years old).*

*“Traditional medicines, in my opinion, are ineffective in treating any form of diarrhoea among under-five children even adults” (Medical Doctor, Female, 34 years old).*

A different health worker clarified:

*“From a medical perspective, several individuals get diarrhoea due to contaminated environments, resulting from consuming unclean food or drinking contaminated water. However, it is noteworthy that hospital medications play a crucial role in treating patients who are suffering from diarrhoea” (Medical Doctor, Male, 51 years old).*

In response to the question, "How do you know that a certain type of diarrhoea is caused by witchcraft and a certain type of diarrhoea is just normal diarrhoea?" the participants, particularly the traditional healers, clarified that the two key signs that a child's diarrhoea is specifically caused by witchcraft are persistent diarrhoea and foul-smelling stools.

Traditional healers had this to explain:

*“Normal diarrhoeal stools don't have a strong odour. You will know if the diarrhoea is caused by witchcraft if the child's stool smells very bad and the child has continuous diarrhoea” (Traditional Healer, Male, 64 years old).*

*“A pungent smell coming from the child's faeces is one of the signs of witchcraft-induced diarrhoea. The stool has a very strong smell that is unbearable; you can compare it to a rotten egg or carcass. Even if a child farts, the smell is awfully bad” (Traditional Healer, Male, 54 years old).*

## Discussion

The present study explored traditional medicines and other methods that are employed to treat the perceived witchcraft-related diarrhoea among under-five children in Korogwe and Handeni districts, northern Tanzania.

Overall, the participants had differing views and opinions regarding the causes and management of diarrhoeal illnesses among under-five children. While most caretakers and traditional healers thought that witchcraft was mostly to blame for children's diarrhoea, health professionals had a more scientific belief that children can contract diarrhoea, particularly if they consume contaminated food or drink contaminated water. Although they did acknowledge that a significant portion of the study area's population thinks that diarrhoea among under-five children is largely due to witchcraft.

In particular, most caretakers and traditional healers believed that children are more susceptible to witchcraft-related diarrhoea than adults. The participants believed that due to naïve immunity, children are more susceptible to this form of diarrhoea. On the other hand, medical professionals thought that if a person has consumed contaminated food or water, s/he can acquire diarrhoea, regardless of his/her age. This finding is not new; other studies have also shown that there are situations in which a child can contract diarrhoea due to witchcraft (Ansari et al., 2012; Budhathoki et al., 2016). People can better understand the causes of diarrhoea and the appropriate treatment for the illness by receiving sustainable health education (Gever and Ezeah 2020; Stelfefon et al., 2020). The key authorities should develop sustainable plans to reach out to these groups and educate them about health matters in order to lessen the potential harm to the children as a result of the negligence from their caretakers, who still believe that diarrhoea can be caused by witchcraft and that the only management is the use of traditional medicines. Similarly, a more thorough investigation is required to determine the science that is unwittingly performed by “black magic practices” to infect a child with diarrhoea. If the science behind this claim is confirmed by research, it ought to be applied to enhance rather than worsen children's health, as it is currently being done. According to study findings, some members of the community are intentionally inflicting diarrhoea on children by bewitching them out of jealousy or anger. It is wrong and should not be supported to intentionally injure someone out of envy or hatred.

Plants were the main source of many traditional medicines that were supposed to be able to treat perceived witchcraft-related diarrhoea among under-five children. The steps to prepare plant-based traditional medicines differ from one traditional healer to another, although some are similar. Such a discrepancy in preparation is possibly due to the lessons that the corresponding traditional healer's elder relatives or ancestors had given him/her and could have a significant effect on the efficacies based on the mode of preparation. Often, the relevant plant is picked and dried in the sun or by using fire, and after that, it is ground to get the powder that is used by the child either by mixing it in warm water or porridge. These methods of herbs preparation have also been documented in other studies conducted elsewhere (Mwambete and Joseph 2010; Semenya and Maroyi 2012; Jaradat et al., 2016; Woldeab et al., 2018).

The diarrhoeal diseases that are thought to be caused by witchcraft can be easily diagnosed, notably by traditional healers and experienced caretakers, based on the child's constant diarrhoea and the foul-smelling stool. Thus, the study's findings indicated that there are specific traditional medicines that are used to treat this form of diarrhoea. Health professionals generally clarified that they were unaware of the medications needed to treat the diarrhoeal illness, which is said to be caused by witchcraft. However, they acknowledged that they used to hear about traditional medicines being talked about in the community, and sometimes caretakers used to mention them when they came to the hospital to bring children for treatment. The formal knowledge that health workers received regarding health matters may have an impact on their attitude towards traditional medicines. Providing continuous education on a variety of health topics to community members, particularly those who look after under-five children can help them develop a comprehensive understanding of health issues and make informed decisions about the best course of action when it comes to treating their sick children (Gever and Ezeah 2020; Stellefson et al., 2020). Although research on issues related to superstition can be challenging, it is beneficial if the key authorities will do more research to find out the truth about whether these traditional medicines can cure perceived witchcraft diarrhoea diseases among under-five children. If the results of the same research support the traditional remedies' ability to treat the disease, these treatments and methods should be extended to other serious illnesses that afflict individuals in the community.

In reference to the curative potential of traditional medicines in treating diarrhoea which is thought to be caused by witchcraft among under-five children, the majority of caretakers and all traditional healers believed that traditional medicines are the only remedies capable of curing this particular form of diarrhoea. They also insisted that modern medications are unable to do so. Since this knowledge is not taught in any Tanzanian school or college, it was most likely passed down to them from their ancestors in the past. Therefore, it will be useful if this knowledge is further researched and documented for the benefit of future generations. In a study conducted in Nepal, participants reported using traditional remedies and other methods to treat diarrhoea that a child had contracted through evil spirits (Budhathoki et al., 2016).

In the present study, even though they were aware that the community considers traditional medicines to be the sole treatment capable of curing witchcraft-related diarrhoea among under-five children, the medical staff persisted in emphasizing that children with diarrhoea should only be treated in hospitals. They were of the view that at the health facility, patients will undergo the appropriate diagnostic testing and, in the end, be prescribed appropriate medication based on their specific medical conditions. This attitude of healthcare providers might be attributed to the formal training they underwent regarding the management of a patient with diarrhoea upon admission to the hospital.

The significance of bringing children to the hospital when they contract diarrhoea or other illnesses is emphasized in Tanzania's health policy (Ministry of Health Community Development Gender Elderly and Children 2017). As per Tanzania's health policy, in all government health facilities, health care for under-five children is provided free of charge (Ministry of Health Community Development Gender Elderly and Children 2017). In response to this call, the community should make use of the free medical services offered in government hospitals to

under-five children and abstain from the myth that diarrhoea is caused by witchcraft. Numerous studies have been able to describe the kinds of medications and immunizations that are efficient in treating and preventing any form of diarrhoea (Jani et al., 2018; Masanja et al., 2019). Consequently, communities should not have any worries or uncertainties regarding the hospital's therapies because they have been validated to be effective in curing all diarrhoeal illnesses among under-five children.

### **Strengths and Limitations of the study**

The main strength of this study is the use of both male and female participants with different backgrounds as data sources and both FGDs and IDIs as methods to collect the data. This allowed for the two data sources and methods to cross-validate each other, and, more importantly, it allowed for a deeper and more holistic understanding of the topic by providing different perspectives on it. Despite its strength, this research has certain drawbacks. First, since all assessments relied on participants' personal experiences, there may probably be biases in some of the data. Secondly, given that the present study was limited to two districts in the Tanga Region; it is likely that participants' perceptions cannot be generalized as may differ from those of other Tanzanian districts.

### **Conclusion**

In the districts of Korogwe and Handeni, northern Tanzania, the present study has revealed that most people, especially caretakers and traditional healers, preferred the use of traditional medicines and held the belief that a certain form of diarrhoea among under-five children is caused by witchcraft. The participants also reported that traditional medicines and other specialized traditional approaches are the only types of medication that can treat witchcraft-related diarrhoea among under-five children. Plants were the main source of many traditional medicines that were purported to be capable of treating perceived witchcraft-related diarrhoea. The herbs that were reported to be commonly exploited to treat witchcraft-related diarrhoea come from the families of *Rubiaceae*, *Solanaceae*, *Arecaceae*, *Asparagaceae*, *Acanthaceae*, *Loganiaceae*, *Vitaceae*, *Araliaceae*, *Combretaceae*, *Apocynaceae*, *Lamiaceae*, and *Amaryllidaceae*. Although research on issues related to superstition can be challenging, it is beneficial if the key authorities will do more research to find out the truth about whether these traditional medicines can cure diarrhoeal diseases that are thought to be caused by witchcraft. If the results of the same research support the traditional remedies' ability to treat the disease, these treatments should be extended to other serious illnesses that afflict lots of individuals in the community.

### **Recommendations**

The key government agencies should implement additional strategies to raise public awareness of the dangers of diarrhoeal illnesses among under-five children and the risks associated with utilizing traditional medicines in an effort to encourage more people to seek healthcare from health facilities. Caretakers should always consider taking their children to health facilities in case they exhibit signs of diarrhoea. They should also refrain from presuming that specific forms of diarrhoea can be caused by witchcraft. In addition to providing patient care, health professionals must educate their patients about the value of visiting a facility for testing and treatment and should dissuade them from taking traditional medications. Furthermore, it is not advisable for traditional healers to have excessive confidence in the effectiveness of traditional medicines in curing diarrhoea among under-five children. It is vital that traditional healers consistently counsel their patients to get treatment at a medical facility.

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