

# Traditional healers' perception on scabies causation and management in Ghana

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## Abstract

**Introduction:** Scabies is an underdiagnosed skin infestation caused by the *Sarcoptes scabiei* mite. The infection causes severe itching and a skin rash but can be effectively treated using topical or systemic drugs. Scabies outbreaks are commonly reported in resource-poor countries, including Ghana. Traditional healers play an important role in primary care in rural areas. The role of these traditional healers in the management of scabies has so far not been explored. The aim of this study was therefore to investigate the perceptions of traditional healers regarding the causation and management of scabies.

**Methods:** A phenomenological qualitative approach was employed. Traditional healers in the Asante Akim North and Central districts in Ghana were approached with an interview request. Using a semi-structured interview protocol, 15 traditional healers were interviewed. The results were coded and analysed, after which seven themes were extrapolated.

**Results:** Scabies infections were frequently reported by traditional healers. Itching and skin rash were unanimously regarded as the major symptoms of scabies. The majority acknowledged the infectious nature of scabies, but no participant reported the causative organism. A dichotomous disease classification was noted, consisting of 'natural' and 'spiritual' variants each with a unique disease profile and management requirements, as reported by the traditional healers. All but two traditional healers reported to treat scabies using almost exclusively herbs and spiritual rituals.

**Conclusion:** The majority of traditional healers were open to collaboration with allopathic healthcare providers. Collaboration could broaden the primary care network in rural areas, but mistrust and lack of transparency form potential barriers to collaboration. We, therefore, emphasise the need for additional efforts to investigate strategies for future collaboration.

## KEYWORDS

Ghana, perceptions, scabies, traditional healers

## INTRODUCTION

Scabies is a parasitic skin infection caused by the *Sarcoptes scabiei* mite, resulting in significant morbidity worldwide.

Scabies is a transmissible condition and spreads through direct or indirect contact with an infected individual [1]. The yearly cumulative prevalence is estimated around 400 million people, particularly affecting children and elderly [2]. Intensive close personal contact, such as sexual activity, or prolonged contact with infected clothing and

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bedding facilitates transmission. The most prominent symptoms include severe itching (pruritus) and a pimple-like rash, often involving the interdigital spaces and flexure creases [3]. Scabies is primarily diagnosed based on clinical signs and symptoms, and can be confirmed by visual identification of the mite, its eggs or faecal matter [4].

Scabies is considered a neglected tropical disease (NTD) by the World Health Organisation (WHO) since 2017 and is common in resource-poor tropical regions in West Africa [2, 5]. Scabies outbreaks within village communities are recurrently reported in these countries, including Ghana. Poverty, overcrowding and limited access to healthcare are integral problems precipitating the high prevalence of scabies [6]. Furthermore, delayed health-seeking behaviour is common among scabies patients, providing an extended time window for transmission [7].

Scabies can be effectively treated with ivermectin or topical application of permethrin [8]. Alternative topical regimens consist of benzyl benzoate or sulphur, which are low in cost but may cause skin irritation [9]. In endemic communities, mass drug administration with oral ivermectin targeting all community members irrespective of disease status is highly effective in decreasing the scabies prevalence [10]. Additionally, several herbal products have a proven acaricidal effect against the scabies mite [11]. Prolonged scratching may lead to chronic skin damage. If left untreated, a scabies infestation may be complicated by secondary infections and impetigo [12].

Especially in rural areas, the majority of the population turn to traditional healers (THs) for care due to their availability, affordability and deep-rooted cultural significance [13]. Also, THs far outnumber university-trained physicians, serving on average 400 community members. In comparison, a single university-trained physician serves on average 8300 individuals [14]. Overall, more than 70% of the Ghanaian population utilise traditional healing [15]. Traditional medicine, according to the WHO, refers to 'knowledge, skills and practices based on theories, beliefs and experiences indigenous to different cultures, used in the maintenance of health and in the prevention, diagnosis, improvement or treatment of physical and mental illness' [16]. THs in Ghana are consulted for a variety of ailments, including both physical and mental disorders [17, 18]. They primarily rely on herbal remedies and incorporate spirituality into their practice by consulting deities and performing rituals. The extent and contents of spiritualism are often related to the religious beliefs of the TH [19].

There is a paucity of data on the extent to which people in endemic regions turn to THs specifically for the treatment of scabies. Most individuals affected by scabies in Ghana tend to seek care from the formal health system; however, the use of local herbal remedies and the services of TH have also been reported [7]. In a previous study from Guinea Bissau, 9.3% of respondents reported a TH as preferred care provider if a household member had scabies with 10.7% identifying 'trust in traditional medicine' as a reason for their choice of treatment [20].

The disease burden of scabies is high, not only consisting of physical complaints but also psychological and social consequences [5, 20, 21]. Scabies remains an underdiagnosed condition at the clinical and public health level in Ghana and as of today, little is known about the role of THs in the management of scabies [7]. The perceptions of Ghanaian THs on scabies have not been investigated before. The findings of this study may provide a deeper understanding of the role THs serve in promoting health of individuals affected by scabies in Ghana. Therefore, the aim of this study was to investigate the perceptions of THs regarding scabies causation, transmission and management in the Asante Akim North and Central districts, Ghana.

## METHODS

### Ethics statement

Ethical clearance was obtained from the Committee on Human Research and Publication Ethics, Kwame Nkrumah University of Science and Technology, Ghana (CHRPE/AP/671/19) and from the Medical Ethical Committee of the University Medical Centre Groningen, The Netherlands (nr. 2019/579). The study was conducted in accordance with the ethical principles on research involving human subjects as set out in the Declaration of Helsinki.

After being informed about the aims and procedures of the study in the local language, written informed consent was obtained. Participation was entirely voluntary and withdrawal from participation was possible at any point. After completion of the interview, THs were offered GHC 50 ( $\pm$  €4.00) for their time.

### Study design

A phenomenological approach was employed in this study, as we were not seeking to generalise the standpoints of participating THs but rather to understand their views and opinions on scabies [22]. Qualitative investigators' preconceptions, values, experience and prior knowledge may play a role in the design of the interview. The interview protocol was therefore drafted with attention to the formulation of open and non-suggesting questions, to ensure validity of the results and minimise bias introduced by the researchers.

### Study setting and population

A convenience sampling technique was employed to identify and select THs in the Asante Akim North and Central districts in the Ashanti region, central Ghana for inclusion in the study. These districts are endemic for NTDs including scabies and the study team has previously identified and treated scabies among the population of these districts [7]. Local researchers and community members brought the

practising workplaces to our attention, after which the THs were approached during a visit with an interview request until data saturation was achieved. Inclusion of 15 participants (with a minimum of 10) was set as the predefined target.

## Data collection

THs were interviewed in April and May 2023 using a semi-structured interview guide. The interview guide was discussed in a focus group with local researchers and healthcare workers (JMT, IAV, RK, MKT, KMA, SOM, CBA, JKAP, YAA and YS), subsequently tested during a pilot interview with a TH and finalised afterwards. The interview guide was open to adjustments, following an iterative approach (Table S1).

The following topic domains were included in the interview guide: (1) knowledge on scabies, (2) personal and professional experience with scabies, (3) perceptions of scabies causation, (4) scabies management, (5) social and physical consequences of scabies and (6) referral and collaboration with allopathic healthcare workers. Demographic variables that were collected during the interviews included: (1) sex, (2) age, (3) practising location, (4) religion, (5) level of education, (6) years' experience as TH, (7) distance to nearest hospital, (8) other occupations and (9) symbols of scientificity (observing for materials typically used in allopathic care such as white coats, medical books or certificates).

Interviews were preferably conducted in the practising environment of the TH to ensure a familiar and safe discussion environment. Interviews were conducted in teams of three researchers, of whom one was familiar with the local language Twi. All interviewers were male. THs were shown photos of scabies lesions during the interview process. Eight interviews were conducted by SOM, JMT and IAV, while the other seven interviews were conducted by KMA, RK and MKT. Answers by the THs were immediately translated into English by the interviewer and transcripts were subsequently written based on audio recordings. Verbal interview data were supplemented by written field notes. With verbal consent of the TH, pictures were also taken of the practising workplace and remedies. Interviews lasted 45–60 min.

Recordings, interview transcripts and demographic variables were marked with anonymous identifiers. After completion of the interviews, participating THs were not approached for a follow-up interview, nor for additions, comments or corrections of the transcripts as this would have logistically been too challenging.

## Data analysis

Demographic variables were analysed using IBM SPSS Statistics version 28. Transcriptions of the interviews, which were written using Microsoft Word 2021

(Microsoft Corp., Redmond, WA, USA), were assessed, after which a list of codes was assembled in Microsoft Excel 2021 (Microsoft Corp.). Codes from all transcriptions were subsequently collated and thematically analysed during four cycles by two researchers (JMT and IAV), after which themes were extrapolated, reviewed and refined [23]. While writing the report, attention was paid to the 'COnsolidated criteria for REporting Qualitative research' (COREQ), see Table S2 [24].

## RESULTS

A total of 16 THs were approached with an interview request, of which 15 agreed to participate. One TH refused participation due to concerns regarding the dissemination of confidential information. The participants were either known to a member of the study team (8/15), recruited randomly by visitation of a village (6/15) or were involved in prior research (1/15). Interviews lasted on average 39 (SD 8.7) min. Most interviews were conducted at the practising workplace of the TH (12/15), at a community building (2/15) or in a healthcare facility (1/15). Themes derived from the interviews are presented in the sections below.

### Traditional healers

Of the 15 interviewed THs, 11 were male and four were female with a median age of 48 (range, 22–90) years. The THs were almost exclusively herbalists, of whom over half also exercised spiritual healing. One identified as a homoeopathist and reported using herbal preparations, and one practised solely by providing non-herbal nutritional supplementation. The THs had a median experience of 22 (range, 2–65) years. A complete overview of demographic variables is provided in Table 1.

All healers were familiar with the term scabies (in Twi *nkoronsankoronsa* or *dwiibaadwiibaa*) and all but two previously treated patients with scabies. Five THs reported a personal history of scabies, all occurring during childhood.

Knowledge of treatment practices was acquired from familial predecessors (fathers, grandfathers, aunt or husband), by divine inspiration, or by self-education. One TH had followed tertiary education on the subject of homoeopathy.

This is a work from our family. My father was a traditional healer and I have learnt it from my father.—TH06, male

It is self-taught. I had it through ghost intervention. Besides that, there was also this fetish priest who taught me a little bit about herbs.—TH15, male

**TABLE 1** Demographic characteristics of THs.

Characteristic	<i>n</i>
Practising location	
Asante Akim North	12
Asante Akim Central	3
Gender	
Male	11
Female	4
Median (IQR) years of age	48 (40–57)
TH category	
Herbalist	4
Herbalist-spiritualist	9
Herbalist-homoeopathist	1
Nutritionist	1
Level of education	
No formal education	5
Primary education	1
Secondary education	7
Tertiary education	2
Religion	
Traditional African	6
Christian	7
Muslim	2
Median (IQR) years of practice	22 (18–32)
Median (IQR) distance to closest hospital (kilometres)	5 (3–8)
Other occupations	
Farmer	7
Tailor	1
Security officer	1

Abbreviations: IQR, interquartile range; TH, traditional healer.

## Perception of scabies causation and transmission

THs claimed that scabies is caused by (micro)organisms (insects, tadpoles or bacteria), contaminated water, poor hygiene or by spiritual factors. Scabies as a spiritual disease was said to be forced upon oneself by being disobedient, but could also be inflicted on an adversary by way of a curse (Figures 1 and 2). Curses could be purchased as a service from healers and enchanted on somebody else. These were said to be transmissible via blood and could therefore also affect offspring.

I know that it is caused by an organism but I do not know the specific organism. Sometimes it also has a link with unhygienic water.—TH15, male

The unhygienic water is some water that people use to bathe, they get themselves very itchy and then they develop the disease.—TH11, male

They [patients] may have offended somebody and the person felt so much offended that he consulted

an oracle and bought such a disease for them, or he enchanted some curses on the person.—TH07, female

The curse will come to you in the form of the skin rash. If you are not careful and you give birth, one of your descendants will also get this skin rash and it becomes a disease in the family.—TH06, male

Direct or indirect person-to-person spread was possible according to the majority of participants (13/15). The most frequently mentioned risk factors for transmission were direct body contact with an infected person, sharing sponges and textiles (towels, clothing, and bedsheets), overcrowding (transportation, prisons, schools, and refugee camps) and lack of personal and household hygiene. The dry season and high temperatures were mentioned as contributing environmental risk factors.

Risk factors include sharing a bed and close contact with patients as well and contact with sweat of infected patients.—TH03, female

No matter what you do, once there is an infected source and you use the sponge or the towel you will definitely get it.—TH12, male

All transportation in Ghana is overloaded, people are squeezing in such a way that if somebody has a problem, it will infect the others.—TH08, male

The vast majority acknowledged the possibility of reinfection with scabies. The chances of getting a reinfection would be reduced if one got the right treatment, correctly followed the treatment instructions, or had strong blood.

When they get treatment and they come, the disease doesn't come again. Once it is treated, it is treated forever.—TH11, male

## Diagnosis of scabies

THs have an important societal role in communities and are therefore well known by community members. Word-of-mouth advertisement within communities was the main reason patients attended THs. 'A divine calling in your dream' was also quoted as a possibility.

There was great heterogeneity in the number of treated scabies cases per TH. One had never seen a case of scabies, and seven reported infrequent consultations ranging from once every 2 months to only two per year. Frequent scabies consultations, defined as cases on a weekly basis, were reported by seven THs.



FIGURE 1 Traditional Ghanaian shrines, utilised for spiritual consultations.



FIGURE 2 Workspace of a Ghanaian traditional healer.

I do not see them often, maybe from six months to a year then one person comes around.—TH01, male

In a week I can see about six to ten scabies cases here.—TH02, male

The diagnosis of scabies was made by history taking and clinical examination. The THs unanimously regarded skin rashes and pruritus as the main symptoms of scabies. The rashes were described as being scaly that could ultimately develop into blisters. The rashes were localised to the extremities, genitals or beneath the breasts, but could also be generalised over the trunk and rest of the body. Bathing and sweating were said to aggravate the pruritus. Some patients were also said to suffer from burning sensations and pain.

When patients come to me they complain of severe itching, and then after itching they also see rashes around their bodies.—TH05, male

In some people, particularly males, around their genitals it is very itchy. Even though it is itchy, once you are scratching then you are smiling. It is very nice when you are scratching [laughs].—TH09, male

Some of them complain of severe itching of the rash. Others even also have some discharge coming out of the rash. Apart from the itching, some also have a burning sensation.—TH14, female

One-third of THs consulted deities and spirits to guide them in their diagnosis (Figure 2). A distinction was made

between two types of scabies: ‘natural’ scabies and ‘spiritual’ scabies. Spiritual scabies was said to be more severe, requiring divine consultation.

[The gods] say: this is scabies and this is another different type of skin condition. So usually, my recognition is by consulting the gods.—TH07, female

Actually, the spiritual one takes a longer time before it disappears.—TH12, male

THs also treated other skin conditions, including ringworm, eczema, boils, shingles, swellings and fungal skin infections. Two used the same therapy for different disorders, but the majority had different recipes for every single disease.

### Scabies management

Even though most participants were convinced of their own abilities to manage the disease, a couple were self-conscious about their limited knowledge. Two THs preferably sent patients to the local hospital immediately for diagnosis and treatment, but would afterwards provide supplementary therapies.

Sometimes when a patient comes and I am not so familiar with what I am seeing, I ask the person to go to the hospital and get a definite diagnosis. If they [...] wish to come back to me, they come. [...] They have very good results from their remedies in the hospital and they do not come back again.—TH04, male

The THs used various methods of treatment administration. Topical application of creams and lotions was the most popular route, but concoctions to drink, vapour to inhale, soup to bathe in and injection of treatment were also reported. When deemed necessary, spiritual rituals were performed.

I have two types: one that they take orally and one that they use to smear or apply on their body.—TH05, male

I do not only give the applications on the skin, I also give purgatives and I also give drugs that will cleanse and detoxify your system.—TH02, male

I cut the root into pieces, some of them I boil it and let them cover themselves with cloth, so they inhale the vapour that comes out.—TH06, male

If it is spiritual, you have to perform all the necessary rituals and spiritual aspects for it and

everything will disappear once and for all.—TH11, male

The treatment of the THs mainly consisted of herbs acquired from tree roots, barks (Figure 3), seeds and leaves, as well as climbing plants. These herbs were commonly mixed with shea butter or lotions (Figure 4). Most THs were not willing to disclose which particular plants and trees they used, as they were afraid that their secret remedies would be shared with others. Non-herbal active ingredients in some preparations were reported to be sulphur, graphite and psorinum (an alcoholic extract of scabies slough and pus cells).

No, that has to be confidential. It is a secret remedy that I do not want to share.—TH01, male

Some are herbs like leaves, barks of trees and some are a form of roots. There are some plants that are creepy.—TH04, male

Advice on the prevention of scabies was provided by all but one TH. The importance of personal hygiene and the need to seek treatment were often highlighted. Direct skin contact with an infected person should be avoided, as should indirect contact through sponges, towels, clothes and bed-sheets. Textiles should be washed properly in hot, clean water with soap. The same advice was also given to household members of patients, indirectly through the patient or by the TH contacting the household him-/herself. The majority of THs were convinced that scabies could be prevented (13/15).

So I advise people to take good care of themselves. And the same advice is also applicable to household members, so that they eat very well and take good care of themselves and their



FIGURE 3 Tree barks as an ingredient for concoctions.



**FIGURE 4** Herbal cream containing shea butter and tree bark for the treatment of scabies (a) and a self-made mortar used to grind herbs (b).

personal hygiene so they do not get infected.—  
TH09, male

You boil your water and put your clothes inside,  
you wash them with soap. If there is any bacte-  
ria or some of that, it will die.—TH08, male

A trend towards a holistic approach was noted. Treatment to clear the body of toxins and adequate nutritional support were offered by multiple THs. Some believed that scabies was a systemic disease within the bloodstream and therefore offered not only topical but also systemic treatments.

I just tell them to be mindful of their skin. And  
the diet also very seriously, eat a nutritious  
diet.—TH01, male

Up-front payment in the form of money for the purpose of gathering the right herbs was required by five interviewees. Compensation after successful treatment was most often in the form of money, but goods, animals and labour were also accepted forms of payment. Fixed prices were uncommon and most let the patients themselves decide how they wanted to reimburse the TH.

I do not specifically charge. What I do is ask  
patients to give me some money to go to the  
forest and bring the herbs. [...] At the end of  
the day, when you are fully healed, then you  
come and say thank you. [...] Anything that  
you have, both cash or anything kind is  
accepted.—TH05, male

So it is not about me telling that I need money  
or goods or labour. If you are happy with the  
service, then you just bring something to thank  
me.—TH04, male

Follow-up appointments were offered to patients, or patients could return to the TH on their own initiative. Successful treatment was determined by absence of rash and pruritus, or in spiritual cases, when the deities regarded the patient healed.

### Personal and community consequences

Most THs were of the opinion that patients with scabies could work and attend school, albeit with reduced productivity and comfort.

The person can do his normal work, but he will  
not have 100% peace. Why? Because of the  
scratching. Because instead of concentrating  
what you are doing you can spend one or two  
minutes just to scratch.—TH10, male

Some people living on the farm even use  
machetes to scratch because of the discomfort  
on the skin. They see blood coming out of their  
skin.—TH01, male

Physical consequences reported were chronic skin damage, secondary infections including blood infections, weakness, fatigue, weight loss and eventually death. Not receiving treatment was also associated with ongoing transmission and prolonged outbreaks.

You may see scabies as small, but once it progresses it may give you other forms of superimposed infections, [...] like blood infections and you may die.—TH04, male

The consequences if a patient never gets treatment is that the whole skin is going to be damaged. They get bad skin and the sad issue about it is that he is going to infect so many people in the community.—TH03, female

Having scabies is associated with a stigma. Social isolation and harassment were reported by half the THs. Harassment commonly occurred in the form of being laughed and looked at. Despite this, a proportion of people also seem to sympathise with the patients, knowing that anyone can suffer from the infestation at some point.

Once you start scratching yourself all your colleagues will be laughing at you.—TH09, male

Even when she has it she might be too shy to go maybe to the facility for treatment because how can a beautiful lady have scabies? People have it and they hide it because of the stigma associated.—TH14, female

Scabies outbreaks were not a commonality in the study area. Only one TH was aware of an outbreak 20 years prior. Two other THs were unsure whether they had witnessed an outbreak but did report incidents of sudden high scabies prevalence.

### Alternative health-seeking behaviour

Delayed presentation to the TH after the first appearance of symptoms was a common trend. The earliest reported presentation was after 1 week, but most patients were said to present after months, with some even after 2 years. This was associated with worsening of the skin condition and complications.

Some of them also have taken even a year and months, because they have gone to several places and they have not had a remedy and then finally they come to me.—TH04, male

Most THs reported that patients did not come directly to them after the appearance of symptoms. Self-medication after buying creams or oral therapies from street vendors, herbal shops and pharmacies was a commonly reported phenomenon.

Most of them come here after taking a lot of oral treatments. Most of them buy it from the pharmacy or the drug store.—TH14, female

Creams that they buy from town and creams that they buy from other herbal shops before they come to me.—TH02, male

It was additionally reported that most patients visited the hospital prior to visiting a TH, but that hospital treatments were not resolving the problems in a perceived timely manner. Patients would turn to herbal medicine due to unsatisfactory results. Patients were said to receive injections, creams and oral medications at the hospital.

He has been struggling with this a long time, with different types of hospitals without any solution.—TH12, male

When they come back to me after the hospital because they have gone to the hospital and received [...] creams, injections and lotions, but it did not work for them, then they come to me for traditional medicine.—TH07, female

### Collaboration

The THs were not convinced of their colleagues' abilities to treat scabies. They mainly argued that everyone has their own specialty, that some lack spiritual power, and that allopathic medicine was required. Collaboration between THs was an uncommon practice. Secrecy and differences in (spiritual) views were reasons to refuse collaboration.

The work is full of business, so sometimes it is difficult to communicate with your colleague traditional herbalist. Because, if you say you [...] don't have it, your colleague will take advantage and then even discourage people from coming to you.—TH06, male

I don't see a reason why I should link up with traditional healers in this area. I trust what I have and maybe they also trust what they have.—TH15, male

Collaboration with local hospitals was reported by some, but appeared to be unidirectional being only in the form of referral. Indications for referral included difficulties in diagnosing and managing severe scabies cases. Referral to a pharmacy was also reported.

You should just go to hospital for help and after you can take herbal medicine in addition.—TH08, male

It is not all of us traditional healers that can treat scabies. It depends, some have the remedies, some do not.—TH03, female



If a person comes and he has a very severe scabies, we will have to refer the person to the hospital.—  
TH13, female

The majority of THs were open to bidirectional collaboration but felt limited by a lack of mutual appreciation and respect. Only two THs were opposed to the idea of collaboration with allopathic healthcare institutions.

My doors are open and I am looking forward to the day that the hospital management will refer a case to me. And then, when I also see a case which I think is above me, I can just let the person advise him to go to the hospital. So this is exactly what I am expecting.—  
TH10, male

But the mutual understanding should be there, the word is 'respect', because sometimes they also look down on the work we are doing.—  
TH06, male

At the end of the day we are all looking for the welfare of patients.—TH15, male

## DISCUSSION

We explored THs' perceptions on scabies causation and management in two districts in central Ghana. Through interviews, this study shed light on THs' knowledge, beliefs and practices related to scabies, highlighting their important societal role and unique perspectives.

From the conducted interviews it appeared that THs are regularly exposed to patients with scabies, and this supports the messages received from health authorities that these areas are endemic. Overall, THs were found to possess relevant knowledge on the clinical picture of scabies and its mode of transmission. Two THs were aware of the diagnosis of scabies but had not treated scabies before. They were nevertheless included as their ideas will impact how they manage future patients. A dichotomous classification of scabies into 'natural' (i.e., related to an infection) and 'spiritual' (i.e., related to a curse) variants was a recurring theme, in line with previous findings from interviews with THs in West Africa [17, 25, 26]. The treatment provided by THs consisted of divination rituals and herbal preparations, which were most often administered topically on the rashes. Lack of a universal treatment approach towards scabies was highlighted by the wide variety of treatment practices recorded, with every TH having a unique combination of ingredients and mode(s) of administration. One of the active ingredients mentioned by two THs was sulphur, which has a long history in treating skin disorders worldwide [27]. Interestingly, sulphur is also used in allopathic care, though a meta-analysis showed that other treatment regimens including topical permethrin and oral ivermectin are more

effective in treating scabies [28]. Most THs did put emphasis on adjunctive care measures (e.g., washing bed sheets and hygiene) in the management of scabies. THs should be provided with education on the role of such measures in scabies management as these could further improve outcomes.

Even though THs seemed to have a broad knowledge on the signs and symptoms of scabies, they did not mention a mite or a parasite as the causative organism. Furthermore, even though all THs claimed to be able to differentiate between scabies and other skin diseases based on clinical signs and symptoms, one-third still sent patients to the hospital to get a definite diagnosis. THs enjoy an uncontested respected status within their communities. A previous study has shown the societal importance of THs, with 70%–90% of community members in Ghana utilising it [29]. Furthermore, the cumulative quantity of patients that can be treated by THs far exceeds the capacity of allopathic healthcare in rural areas, with THs offering service to a number of patients thought to be 20 times less than the average number under the care of a single allopathic physician [30]. Relative accessibility and affordability, as well as social, religious and cultural factors seem to play important roles in health-seeking behaviour of patients [31–33].

Delayed health-seeking behaviour, an important factor in the ongoing transmission of scabies, was identified by most THs as adverse behaviour in the management of the disease. THs were well aware of the physical consequences of delayed presentation and also acknowledged the risk of further transmission. Reasons for delayed presentation to a TH were underestimation of disease severity, previous attempts of self-medication and the general challenging accessibility of care in rural Ghana. From an allopathic standpoint, the pursuit of traditional healing by patients has been reported as a reason for delayed presentation [7]. THs stated the contrary, blaming allopathic healthcare providers for the delay in presentation to their practice. Scepticism between the two entities regarding each other's ability to treat scabies was highlighted by THs reporting that the treatment of allopathic healthcare providers was often ineffective, as shown by the vast number of patients who used traditional healing as auxiliary care.

The acquisition of knowledge on scabies treatment was primarily through a familial predecessor, often extending over many generations. Being passed on from generation to generation, traditional recipes were unanimously regarded as confidential and the majority of THs were not willing to share the specifics of their treatment. This confidentiality limits opportunities to research the pharmacological properties of the remedies and can form a barrier to the collaboration between THs and allopathic healthcare providers [34].

Currently, collaboration between THs and allopathic healthcare in the study region is limited. Even though the majority of THs claimed that they collaborated with hospitals, this appeared to be unidirectional in the form of referral to hospitals only. Our results show that THs are generally open to collaboration with allopathic healthcare providers to treat scabies.

Collaborative efforts are widely considered as vital improvements to healthcare, especially in resource-poor settings [35]. Previous research demonstrated that collaboration between THs and allopathic healthcare providers in the management of psychosis is worthwhile [36]. In that randomised controlled trial, innocuous and possibly helpful traditional practices were respected by the allopathic healthcare providers, but THs were offered training to limit harmful practices and improve disease understanding. THs in the intervention-arm were offered clinical allopathic help if deemed necessary and received weekly supervision. The COSIMPO trial showed that collaborative efforts may lead to a decrease in harmful practices by the THs, including shackling, scarification, administration of untested concoctions and other potential human rights violations. Collaboration also benefited the allopathic healthcare providers as they were more open-minded and respectful with regard to traditional practices, concepts like holism and the potential benefit of their treatments. Further research about the decision making in seeking help for scabies and/or its consequences is needed to facilitate collaboration between allopathic providers and THs.

Introduction of herbal medicine into hospitals in Ghana has been piloted with mixed results [37–39]. A lack of governmental support and logistical challenges have been identified as barriers to successful collaboration. However, a qualitative analysis [37] reported great potential for the integration of herbal medicine into the allopathic healthcare system, offering opportunities for research into herbal medicine and the chance to develop mutual understanding and respect.

As reported in other studies, mistrust between allopathic healthcare workers and THs was identified as one of the major barriers [40, 41]. Our results similarly showed that there appears to be a hierarchical imbalance between the two entities, making the THs feel less valued and respected, resulting in distrust and potentially complicating collaboration. Achieving bidirectional trust is one of the major challenges but as shown by the COSIMPO trial, not impossible. Acknowledging and accepting the societal importance of THs is an important step towards collaboration. Effective collaboration on a large scale may not be easy due to lack of transparency, distrust, administrative procedures and limited resources. Our results show that THs highly appreciate allopathic hospitals sending patients back to them for additional herbal and spiritual treatment.

As mentioned by multiple THs, the common goal of both allopathic healthcare providers and THs is patient well-being, which forms a solid foundation for mutual collaboration. Collaboration has the potential to make affordable primary care more accessible and safer by providing training to THs to limit harmful treatment methods, opening up connections between allopathic healthcare providers and THs. Allopathic healthcare providers should be open to the expertise of THs in the subjects of holism and rehabilitation, and use their influence to increase community participation in health programmes, complementing the allopathic

healthcare system. Furthermore, collaboration will provide a line of communication, which could contribute to monitoring scabies prevalence in rural areas more closely. THs should be encouraged to keep a log of their cases and summon help from allopathic providers once they discover local outbreaks of scabies. We regard THs as important community members in NTD control roadmaps, but currently their significant reach and societal role appear to be underestimated [42, 43]. Future research should focus on the feasibility of a collaborative programme, with consideration being paid to barriers that could have a negative impact on a fruitful collaboration.

## Strengths and limitations

Our methodology provided a unique insight into the perceptions of THs. The group of participants was heterogeneous with regard to gender, age, religion, practising methods and experience, contributing to a wide variety in responses. Two-thirds of all interviews were held at the homes of THs or community buildings. Reluctancy to answer was only noted in one interview.

Fourteen of the 15 interviews were conducted in the local language which may have introduced bias during the translation process. Furthermore, we cannot exclude compromise of the interview quality by interpreter bias and by the fact that the local language is rarely used as a written language. It is unknown to which extent interviews were influenced by having only male interviewers participating in the study. Loss of non-verbal communication cues is inherent to the transcription process, which may have limited contextual information. Our findings are specific to THs in central Ghana and may thus not be generalisable to other regions.

## CONCLUSION

We found that THs often treat patients with scabies, using primarily herbal products and spiritual rituals. Even though THs were not able to mention the causative organism or exact mechanism of transmission, their general ideas regarding transmission matched those of allopathic healthcare providers. Further, their experience and conclusions with regard to the phenotypical presentation of the disease, its causes and its course of progression may provide a sound basis for further training and education. THs were generally open to collaboration with allopathic healthcare providers, but lack of transparency and mistrust form barriers to collaboration. THs could contribute to broadening the primary healthcare network, increasing the accessibility, availability and safety of care to individuals affected with scabies in rural Ghana.

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## CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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