



Knowledge, Practices and Attitude of Residents towards Buruli Ulcer in Jasikan Municipality: An Ethnographic Study

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Abstract

Background: Buruli ulcer is one of the neglected tropical diseases in the world. The mode of transmission and the identification of source reservoirs of the causative organism of the disease are still largely unknown. Buruli ulcer often starts with a pre-ulcerative nodule, a plaque or oedema, which breaks down to form characteristic ulcers with undermined edges. The first probable case of Buruli ulcer in Ghana was reported in the Greater Accra Region in 1971.

Purpose: This study explored the knowledge, practices and attitudes of residents towards Buruli ulcer in Jasikan Municipality.

Method: The study employed an ethnographic approach. Data were collected from 20 study participants using an in-depth interview guide. The data were presented using thematic analysis. Ethical approval was obtained from the Research Ethics Committee (UHAS-REC: UHAS-REC A.11 [103] 2I-22).

Results: The knowledge of respondents on Buruli ulcer was moderate. The study found that respondents sought treatment for Buruli ulcer in health facilities, prayer camps, herbalist homes, and practised self-medication. The study

found that residents did not want to be seen with persons living with Buruli ulcer and the practice in terms of cleanliness of the wound was found to be low.

Conclusions: Respondents had varied social constructions for Buruli ulcer and employed several methods to clean and dress the wound. The study recommended more health education by health workers to improve residents' knowledge and practices on Buruli ulcer in the study setting.

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Introduction

Buruli ulcer is probably the third most common mycobacterial infection in the world today. Clinically, the disease starts with a papule, nodule, plaque, or oedematous lesion that eventually progresses to extensive skin ulceration (Vandelannoote et al., 2019). Remarkably, given the extent of tissue loss, the lesion is usually painless or only mildly painful. The disease's epidemiology is characterised by its patchy focal distribution within countries where it is endemic (Garchitorena et al., 2018). Persons living or working close to slow-flowing or stagnant water bodies who fail to wear protective clothing, or living around low-lying marshes, wetlands, riverine areas and those who do not take appropriate care of skin wounds are at risk of being infected by *M. ulcerans* (Simpson et al., 2018).

Buruli ulcer has a significant, cumulative impact on the socio-economic health of afflicted populations, imposing a catastrophic social and economic cost on affected individuals, households, and communities. The WHO recommends an eight-week course of antibiotics based on rifampicin, as well as adjuvant debridement and skin grafting if necessary (WHO, 2022). There is a need to identify residents' knowledge and practices employed among the population at the study setting to identify an appropriate health intervention strategy to be employed.

Materials and Methods

Study setting

The study was conducted in the Jasikan Municipality. The Jasikan Municipality is one of the municipalities in the Oti Region of Ghana. The majority of the population live in rural areas, constituting about 72.4%. There are health centres in the Municipality providing healthcare to the people around their catchment areas and beyond. The health centres are

geographically located to provide easy access to health services for the people. The terrain in the Municipality is generally undulating. The low-lying areas, some of which are swampy, average 456.4 meters above sea level, and are used for rice cultivation. The Jasikan Municipality was chosen for the study because of the rising cases of Buruli ulcer among the population. Available data confirmed that, as of 2018, 56 suspected cases of Buruli ulcer were reported in the Jasikan Municipality. In 2019, 2020 and 2021, 1, 21 and 24 cases of Buruli ulcer were recorded respectively (DHIMS 2, 2021).

Research approach

This study primarily used the ethnographic approach. The study employed this approach because ethnography considers the cultural orientation of people's way of life within their natural community. The researchers lived among the community members with the view to understanding the culture and opinions they shared about Buruli ulcer. The study considered this approach very relevant to the study of Buruli ulcer because it enabled the researchers to gather the relevant data from residents about Buruli ulcer.

Sampling method

The study employed a purposive sampling method in the form of maximum variation to sample the respondents for the study. This sampling technique was chosen to gather data from both residents with the disease (Buruli ulcer) and those without the disease. This provided the opportunity to collect diverse views from residents in terms of their knowledge, attitude, and practices in relation to Buruli ulcer.

Study participants and sample size

The study participants were residents living in the Jasikan Municipality at the time of the study. The study included residents of Jasikan Municipality who had stayed at least one year before the study and were confirmed cases of Buruli ulcer patients in the Jasikan Municipality. The study excluded residents with wounds who were seriously ill and required medical care. In terms of the sample size, twenty study participants were sampled.

In-depth interview guide

The study employed the use of an in-depth interview (IDI) guide to collect data from the respondents. The interview was held in a quiet place to avoid unnecessary disruption that could affect the quality of the data. The use of the IDI guide provided the opportunity for the study to collect detailed data from respondents.

Data collection

The Medical Director of the Jasikan Health Directorate was informed of the data collection. The data collection was supported by the Surveillance Officers at the Municipality. Data collection was done within a one-month period. Data collection began after the purpose of the study had been explained to participants. Participants consented to participate in

the study. The interviews lasted for about 30 minutes for each participant in the study setting. The interviews were conducted in a private place where participants were made comfortable enough to express themselves without any hindrance. Interviews were mainly conducted in English and the local languages that were preferred by participants. These enabled the study participants to express themselves very well without any hindrance in terms of their expression and practices on Buruli ulcer.

Rigor

The study used confirmability, credibility, transferability, and reflexivity to explain how the methodological rigour was achieved in the study. In terms of achieving confirmability, the study ensured that the interpretations of the data did not influence the researchers' own prejudices, knowledge, and past experiences with regards to Buruli ulcer. The researchers carried out the study in an orderly manner, keeping field notes to describe events and processes pertaining to data collection. To ensure the credibility of the study, the period stated for the data collection, which was thirty minutes, enabled the team to gather the relevant data from the respondents. The issue of transferability was handled explicitly. For instance, the study setting is known in Ghana as a Municipality in the Oti region. The procedure for gathering the data was also well described to enable any other person who wants to carry out the work to employ similar methods for the study.

To address the issue of reflexivity, the researchers approached this issue very carefully by examining their own conceptual understanding of the topic through a clear lens, allowing study participants to explicitly and implicitly express their opinions on the subject matter freely. The values and preconceptions of the researchers did not influence the decision of the data collection process and, by extension, all the phases of the study.

Ethical considerations

Written approval for the study was obtained from the University of Health and Allied Sciences (UHAS) Research Ethics Committee (REC) (UHAS-REC: UHAS-REC A.11 [103] 2I-22) before the commencement of the study. Written informed consent was also obtained from parents/guardians, and assent was obtained from the children. Permission was sought from the Jasikan Municipality Health Directorate. The participants' information sheet explained the purpose, benefits, and data collection procedures, as well as possible risks, to the participants. Names and identifying information were all anonymised. Participation in the study was voluntary.

Data analysis

The data were analysed using thematic analysis. Field notes and data were transcribed into a Microsoft Office Word document, and themes were developed for thematic analysis. Each transcript was checked for accuracy against the data. The researchers read the transcripts several times to reach an overall understanding. Data were presented in a narrative form that described the various responses established in the coded thematic analyses. The coded responses were checked by experts to ensure that the recorded data matched the transcribed data.

Results

Table 1 shows the demographic characteristics of the participants. The study sample comprised 20 participants, the majority of whom were females.

Table 1. Demographic data of respondents		
Age (years)	Case (n=10)	Control (n=10)
Less than 20	1	3
21-40	7	5
41-60	6	4
61-80	6	8
Sex		
Male	6	7
Female	14	13
Occupational status		
Petty trading	4	5
Farming	6	5
Salaried worker	3	4
Unemployed	7	6
Marital status		
Single	2	2
Married	12	14
Separated	6	4
Educational status		
No education	2	3
Primary	14	13
SHS	2	3
Tertiary	2	1

Five themes and sub-themes emerged from the data, as shown in Table 2.

Table 2. Themes from the cases responses

Main themes	Sub themes
Knowledge of Buruli ulcer	
Understanding of Buruli ulcer	Wound caused by the environment
	A wound that takes long time to heal
	Wound that starts small and becomes big
Signs and symptoms of Buruli ulcer	Wound that is not going
Natural wound	Wound that just come on its own
Painful wound	Wound that is painful and not healing
Wound cause by evil spirits	The wound is caused by evil spirits
Unknown cause	The cause of Buruli ulcer is not known
Attitude of people towards Buruli ulcer	
Less attention to wound due to cost	Managing the wound is too costly
No concern until it is serious	There is no seriousness of the disease until it becomes serious
Transportation cost is high	Going to health centre to dress the wound is too costly and expensive
Less socialization	Less participation in social activities
Practices of people on Buruli ulcer	
Managing Buruli ulcer	Use local herbs to manage the disease
	I go to health centre to dress the wound
Use counter medicine	Use counter medicines to manage the wound
Purchase of dressing materials	Dressing materials are purchased for use
Visitation of prayer camps	Visits prayer camps for healing
Herbal medicine	Use herbal medicine to treat the wound
Visit hospital	Visit the hospital for wound dressing

Table 3 presents the themes that emerged from the responses of the controls.

Table 3. Themes from the controls' responses

Main themes	Sub themes
Knowledge of Buruli ulcer	
Understanding of Buruli ulcer	Wound that is painful
	I have no idea about Buruli ulcer
Attitude of people towards Buruli ulcer	
Uncomfortable with the disease	Feel uncomfortable with the disease
Less favourable	I do not attend health centre regularly
	No concern until it is serious
	Managing the wound is too costly
Practices of people on Buruli ulcer	
Managing Buruli ulcer	Herbal medicines are good for the disease
	Encourage people to go to hospital
Move to prayer camps	Attend prayers camps for healing of the wound
Clinics for wound dressing	Some of the patients visit the clinic for wound dressing
Covering the wound	Always make sure the wound is covered
Application of herbal medicine	Cases applied herbal medicine on the wound

Theme 1: Knowledge of residents on Buruli ulcer

The study examined the knowledge of residents, comprising Buruli ulcer patients and participants without the disease. Based on the responses, various sub-themes emerged from the participants' responses and are presented below.

Participants' understanding of Buruli ulcer

The study participants were asked to explain their understanding of Buruli ulcer. Based on the responses, study participants provided various explanations for the disease. Excerpts are illustrated below.

- *Buruli ulcer is when a person has a wound that is caused by the environment the person is exposed to here in Jasikan Municipality...* **Buruli ulcer patient (P: 1)**

In this explanation by the study participant, the Buruli ulcer patient is attributing the cause of Buruli ulcer to the environment in the study area. The participant's explanation could be linked to the environmental pathogen hypothesised to be the causative organism for the disease.

Another participant explained what Buruli ulcer is as follows:

- *Buruli ulcer is when a person has a wound and the wound takes a long time to heal in this place..* **Buruli ulcer patient (P: 2)**

The explanation of the disease attributed to the wound could be linked to the nature of how the patient had the wound for a long time and was hoping the wound would heal within the shortest possible time.

Another study participant explained the meaning of Buruli ulcer as follows:

- *Buruli ulcer has no known cause in the human body...* **Buruli ulcer patient (P: 1)**

This participant is judging the disease based on the lack of information about the causative organism over the past years.

Similarly, another study participant explained what Buruli ulcer is in these words:

- *Buruli ulcer is a disease that starts with a small sore and becomes very big in the person.* **Buruli ulcer patient(P: 4)**

The explanation of the participant is attributed to the nature of people having different understandings of the disease in the study community.

Another study participant explained Buruli ulcer as:

- *Buruli ulcer is a disease caused by evil spirits... these evil spirits could be in the environment or outside the environment due to the nature of the person affected by the disease...* **Buruli ulcer patient (P: 5)**

Based on the findings, the participant's understanding of the disease is based on the belief in spirits believed to inflict pain on people in the study setting.

Similarly, another study participant indicated that:

- *Buruli ulcer is when a wound appears in the person and those wounds are very painful..* **Resident without Buruli ulcer (P: 2)**

This participant was one of those who might have gotten the feeling of Buruli ulcer pain from their relatives with the condition.

Another study participant remarked as:

- *To me, I do not have any knowledge on that [Buruli ulcer] disease and hence there is no proper knowledge of me about the condition...* **Resident without Buruli ulcer (P: 2)**

This participant appeared to have no knowledge of the disease and could have probably attributed the disease to evil spirits.

Participant's knowledge of signs and symptoms of Buruli ulcer

The study participants were asked to indicate their knowledge level on the signs and symptoms of Buruli ulcer in the study setting. The findings are illustrated below.

- *One thing I know about the sign and symptom of Buruli ulcer is that, the wound is painful and does not heal for a long time in the person. So those of us [Buruli ulcer patients] with the disease often experience the pain in the night...*

Buruli ulcer patient (P: 5)

The participant's identification of the sign and symptom of Buruli ulcer was linked to the pain they experienced in the night due to the condition.

Another study participant identified the signs and symptoms as:

- *A wound that would just appear in the person on its own without any cause..* **Buruli ulcer patient (P: 5)**

Based on the explanation, study participants identified the sign and symptom of Buruli ulcer linked to the mysterious wound in the body that has no cause.

Theme 2: Attitude of residents towards Buruli ulcer

The attitude of residents towards Buruli ulcer was examined. Various responses were identified and presented. The attitudes of the study participants were presented in two folds. These included the favourable and unfavourable attitudes of the participants towards the disease.

Favourable attitude of respondents towards the disease

Participants expressed a few favourable attitudes towards the disease in these manners.

Seek support in health centre for Buruli ulcer

- *The dressing of the wound is done at the health centre...* **Buruli ulcer patient (P: 1)**

The study participants were able to identify the need for them to go to the hospital for wound dressing. This implied that the participant had a favourable attitude towards the disease.

Another study participant expressed their attitude towards the disease in this manner:

Manage the condition at home

- *I usually take care of myself with the disease... It is not a good look for some people..* **Buruli ulcer patient (P: 5)**

This participant probably reverted to the use of local medicines to manage the condition at home.

Unfavourable attitude towards the disease

The unfavourable attitudes of the study participants towards the disease are expressed below:

Fewer visitations to healthcare facilities to seek medical attention

- *Sometimes they do not visit the healthcare for checking because the wound does not want to heal in the patients.*

Resident without the Buruli ulcer (P: 5)

The findings from the study suggest how study participants treated and showed their attitude towards the disease in the study setting. Therefore, cases were perhaps left to manage the disease themselves at home.

Patients are uncomfortable with the disease

- *Sometimes, I feel uncomfortable with people who have the Buruli ulcer... so I do not show so much care in the person infected...* **Resident without the Buruli ulcer (P: 1)**

The findings suggest that residents in the study setting had a less favourable attitude towards the disease and tended to abandon their relatives with the disease.

No concern is given to the disease until it is serious

- *I have been to health centres when the condition was serious..* **Buruli ulcer patient (P: 1)**

The persons living with the Buruli ulcer showed more concern about the disease when the condition was serious among them at the time of the study.

Less attention to wound due to cost of buying dressing materials

- *Managing the wound is too costly among the cases at the study setting..* **Buruli ulcer patient (P: 1)**

Because the cases were managing the conditions at the study setting, there was less attention to the condition because it was costly to do so. They had to purchase dressing materials for their wound dressings by themselves.

Transportation cost is high to health centre

- *Going to the health centre to dress the wound is too costly and expensive..* **Buruli ulcer patient (P: 1)**

Persons living with the disease explained that sometimes, it was very difficult to manage the condition because the cost of going to the health centre for dressing was too high, and this affected their attitude towards the disease.

Less socialisation with people in the study setting

- *There is less participation in social activities due to the nature of the disease in me..* **Buruli ulcer patient (P: 1)**

The study participants revealed that there was less participation in social activities due to the nature of the disease. The

affected individuals were socially tied down and did not want to be exposed to people due to the stigma associated with the disease.

Theme 3: Practices of residents on Buruli ulcer

The practices of residents regarding Buruli ulcer were examined among the study participants in the study setting. Various responses emerged from the data and are illustrated below.

Managing Buruli ulcer with local herbs

- *I have been using local herbs to manage the disease for some time now... because the hospital medicine is not healing the wound fast...* **Buruli ulcer patient (P: 1)**

This finding from the study provides the argument that residents use local herbs for the treatment of the disease.

Another study participant remarked as follows:

- *Here in this place, when we see a person with the disease, their family members encourage them to seek health by going to the hospital...* **Participant without Buruli ulcer (P: 2)**

The findings provide the opportunity for other members in the family to assist in taking care of Buruli ulcer patients. In the study setting, people with the disease try to seek support from other family members in terms of reaching the hospital or traditional homes or Pastor's place for care services at the time of the study.

Use of over-the-counter medicine to treat Buruli ulcer

- *I sometimes use over-the-counter medicines to manage the wound because if the medicine that is given to me is finished and I cannot go to the hospital, I will use the medicine that I bought to manage the disease...* **Buruli ulcer patient (P: 1)**

The findings indicate that there was usage of over-the-counter medicine in the treatment of Buruli ulcer among residents in the study setting at the time of the study.

Purchase of dressing materials for the wound

- *I have been using dressing materials that I purchased for use in the health centre..* **Buruli ulcer patient (P: 1)**

This means that in the study setting, persons living with Buruli ulcer had to purchase the dressing materials to be used for the wound dressing when they visited the health centres or hospital for care.

Visitation of prayer camps for prayers and healing

- *I visit prayer camps for prayers to enable me to get the opportunity to be healed.* **Buruli ulcer patient (P: 1)**

In the study setting, persons living with the disease visited prayer camps to ensure that their conditions were improved through divine interventions.

Another participant expressed this as:

- *Buruli ulcer patients do move to attend prayer camps for healing of the wound by Pastors who prophesise that these types of wounds are spiritual and hence need to be healed by divine intervention...* **Participant without Buruli ulcer (P: 3)**

There is a belief that the disease could be cured by religious leaders since most people do not want to place all their hopes in the healthcare medicines provided to them. In the study setting, people were seen at the prayer camps because that place provided them the opportunity to be able to pray and ask for God's mercies and healing powers.

Visit hospital for healthcare

- *I visit the hospital for wound dressing always when I have transportation cost and the dressing materials are available...* **Buruli ulcer patient (P: 3)**

The Buruli ulcer patients visited the hospital to seek healthcare when there was the need at the study setting.

Another participant remarked as;

- *Some of the Buruli ulcer patients visit the clinic for wound dressing once the wound appears in them and have hope that, the wound would heal...* **Buruli ulcer patient (P: 3)**

The finding suggests the practice of Buruli ulcer cases going to the hospital to ensure that their condition is better and hence listen to the advice of healthcare professionals who were experts in treating similar cases in the study setting. But the cost of transportation coupled with the belief that, the disease could be treated at the prayer camps affected the nature and pattern of Buruli ulcer cases attending the hospital regularly.

Use herbal medicine for managing Buruli ulcer

- *The use of herbal medicine to treat the wound is common in this Municipality. The practice is common among the cases [Buruli ulcer cases] who have seen that, the hospital medicines that are given to them do not provide immediate relief and healing...* **Buruli ulcer patient (P: 4)**

The belief in the use of herbal medicine often compels people to use it to treat conditions even after they attend healthcare facilities with the same condition.

Another study participant remarked as;

- *The [Buruli ulcer cases] apply the herbal medicines because they believe that these medicines are good for the disease...* **Participant without the Buruli ulcer (P: 2)**

The residents indicated that they used herbal medicine to treat the disease because the herbal medicine was seen and thought to be good among the Buruli ulcer patients.

Covering the wound in the person

- *Most of the Buruli ulcer patients cover their wounds well and I think this is okay with them to heal faster...* **Participant without Buruli ulcer (P: 4)**

The need for patients to keep their wounds clean and neat to facilitate healing was observed by the study participants at the study setting. This implied that, patients were covering the wounds to ensure that they are well and able to heal faster at the study setting.

Discussion

The study examines the knowledge, attitudes, and practices of residents towards Buruli ulcer among residents at the study setting at the time of the study. These respondents were both Buruli ulcer cases and those who were not cases. The study found that those who were cases had more knowledge on the disease compared to those who were not infected with the disease. The residents had various social constructions in terms of how the disease was manifesting in human bodies. The study found that the majority of the respondents indicated the disease was caused by evil spirits. This finding from the study is similar to that of Owusu–Sekyere et al. (2012) who also found that in most communities affected by Buruli ulcer in Ghana, witchcraft can be used to inflict others with Buruli ulcer. Similar beliefs have been reported by Adobea and Adamba (2012) that people thought Buruli ulcer is caused by their own adversaries, including witches, as well as Stienstra et al. (2002) study that reported witchcraft as a major cause of the disease perceived by study participants.

In Ghana, sociocultural beliefs and practices strongly influence the health-seeking behaviours of people affected by Buruli ulcer. The results showed that respondents had visited spiritual centres for God's protection. This finding from the study agrees with Adamba and Owusu's (2011) study where similar results were found. The similarity in terms of the results is the role of culture in seeking health care among Ghanaians. The role that cultural factors play in the etiology, explanation, prognosis, and treatment-seeking behaviour cannot be underscored, because the study provides in-depth information on the burden of the disease, the local understanding of the causes of the disease, and therefore its management.

The study also examines the attitude of residents towards the disease. Based on the findings, the study recorded both positive and negative attitudes among residents at the study setting. The study examines the practices of residents on the disease at the time of the study. Various practices were recorded at the time of the study. Various ways were employed by residents to manage the disease, especially among those who were infected. Wound management was one of the practices employed.

Based on the findings, delayed treatment and insufficient wound assessment might contribute to the colonisation and may prolong wound healing. The attitude of patients to Buruli ulcer may also lead to secondary microbial infections on the lesions. Most patients reported very late for treatment. Some even worsened the lesion using non-aseptic herbal medications, which are an additional source of secondary microbial infections.

Attending a hospital is associated with illnesses that are perceived to be caused by natural factors, while illnesses that are perceived to have been induced by sorcery need to be addressed by a traditional healer to counteract the sorcery. The implication of this is that people would delay treatment for the disease in biomedical health facilities by resorting to self and traditional options of treatment. This presents a serious public health concern because when Buruli ulcer advances to a category three stage, it eventually leads to chronic sores and serious deformities leading to disabilities. At category three stages, treatment becomes very costly, thereby putting a heavy financial burden on families, health facilities, and the nation as a whole.

Strengths and limitations

The study used a qualitative approach to conduct the research. This provided the opportunity to explore the knowledge, attitudes, and practices of residents towards Buruli ulcer in the study setting. The use of a qualitative approach could help in the possible generation of hypotheses for a more quantitative study with a large number of study participants in the study setting. The findings would serve as baseline data in the study setting. The study could not establish any association with any variables and fell short of any statistical inferences of the study findings.

Conclusion

The attribution of the disease to witchcraft and enemies, and not knowing the signs, symptoms, and risk factors may affect early detection and treatment as most of them would not report early at a healthcare facility which may worsen their condition. The findings would provide relevant information that would inform public health education in the Jasikan Municipality. Public health workers in the municipality could use the findings to provide health education to residents in the affected communities in the area and those not recording Buruli ulcer diseases to raise awareness about Buruli ulcer.

Abbreviations

GHS: Ghana Health Service

Statements and Declarations

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Authors' contributions

- Atubiga Alobit Baba conceptualised the research protocol, participated in the design of the research protocols, analysis of data, and drafting of the manuscript.
- Dr. Michael Adjabeng participated in drafting the manuscript, provided direction, supervised, and reviewed the manuscript.
- Prof. John Owusu Gyapong read and approved the final manuscript.

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Availability of data

The dataset is available upon reasonable request from the corresponding author.

Competing interests

The authors declare no conflict of interest.

Consent for publication

Not applicable.

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