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Community beliefs and practices about diabetes and their implications for the prevention and management of diabetes in Southeast Ghana

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Abstract

Background Diabetes is a major public health issue, and over half a billion people are estimated to be living with diabetes, with 6.7 million deaths reported in 2021. The global diabetes burden has been recognised and included in the United Nations Sustainable Development Goals to achieve a zero increase in diabetes cases and reduce one-third of premature diabetes deaths by 2030. However, local beliefs about the causes of diabetes have affected its prevention and management. This study examined community beliefs and practices about diabetes and how they affect the prevention and management of diabetes in the community.

Methods This study was carried out in the Ho Municipality of the Volta Region of Ghana. We conducted 33 in-depth interviews with 18 patients with diabetes, 5 carers (caretakers of patients with diabetes), 3 traditional healers, 2 religious leaders, 3 community elders, and 2 assembly members who were purposefully selected from urban and rural areas across the municipality. The interviews were recorded digitally and transcribed verbatim. Thematic analysis was applied to analyse the data using QRS NVivo 20.

Results Diabetes was described locally as *sukli dɔ* (sugar disease), which affects humans. Diabetes is believed to be caused by spiritual forces (juju, bewitchment, and punishment from gods) and physical factors (unhealthy diet, physical inactivity, eating fruits and vegetables sprayed with pesticides and insecticides, sugary and starchy foods, smoking, and abuse of alcohol). In terms of the management of diabetes, participants said traditional remedies are performed for spiritual interpretation, deliverance, fortification, and cleansing before biomedical and physical remedies are sought. Diabetes was likened to HIV/AIDS, and the sufferers were described as bringing the condition upon themselves as a result of their bad deeds. They were stigmatised, coupled with delays at the hospital, and poverty has also affected the prevention and management of diabetes.

Conclusion The local belief that diabetes is caused by spiritual forces, likened to HIV/AIDS, delays at hospitals, and poverty, has affected the prevention and management of diabetes. Incorporating local beliefs and practices into the intervention design using culturally sensitive health education programmes and improving social determinants of health may help improve the prevention and management of diabetes in communities.

Keywords Diabetes, Prevention, Management, Community beliefs, Ghana

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Introduction

Diabetes mellitus, often referred to as diabetes, is the fastest-growing chronic disease globally in the 21st century, causing disability and premature death among people within the most economic and productive age group [1]. Diabetes has reached pandemic levels, with a prevalence rate of 10.5%, and has accounted for 6.7 million deaths globally and 416,000 deaths in Africa in 2021 [1, 2]. Most people with diabetes (432.7 million) live in lower- and middle-income countries, where people develop diabetes earlier, have high morbidities, and unfortunately die sooner than their counterparts in developed nations [2]. Diabetes cases have increased globally from 151 million in 2000 to 537 million in 2021 among adults aged 20–79 years [2].

Approximately 24 million people live with diabetes in Africa [2]. Ghana is one of the countries in Africa with a high prevalence rate of diabetes, and approximately 329,200 Ghanaians were diagnosed with diabetes in 2021. An increase of 17% from the 2019 figure of 281,100 [2]. Currently, approximately 4 million Ghanaians are estimated to be living with diabetes [3, 4]. The prevalence of diabetes ranged from 3.9% in 2002 to 13.9% in 2017, with increasing cases with age and higher in metropolises. However, a systematic review in 2019 reported a 6.5% prevalence rate of diabetes among Ghanaian adults [5]. The prevalence rate may not be alarming, as many people with diabetes are undiagnosed in the general population. It is the leading cause of medical emergency admissions, morbidity, and premature death in Ghana [6]. For example, hospital admissions increased from 2.36 per 1000 admissions in 1983 to 14.94 per 1000 admissions in 2014, representing a 633% rise over the period, and the mortality rate also increased from 7.6 per 1000 deaths in 1983 to 30 per 1000 deaths in 2012 [7]. The increase in diabetes cases in Ghana has been driven primarily by physical factors (physical inactivity, unhealthy diet, harmful use of alcohol, and smoking) [8]. To reduce the diabetes burden, Sustainable Development Goals 3 target 3.4 has set a global agenda to halt new diabetes cases and reduce premature diabetes-related deaths by one third by 2030. Several primary prevention randomised controlled trials over the last two decades unequivocally demonstrated that lifestyle modification and the administration of some pharmacological agents could help prevent and manage diabetes in many ethnic groups [2, 9–11].

The Ministry of Health, Ghana, in partnership with Novo Nordisk Pharma and with support from the WHO, has supported 38 hospitals and communities to reach children and adults with holistic diabetes care [12]. However, diabetes cases continue to increase in the Volta region. Although there are regional variations in the prevalence of diabetes in Ghana, the Volta Region is one of the regions with a high prevalence rate of 7.0% [3, 12]. Diabetes accounts for morbidity and premature death in the region. For instance, the region recorded 31,804 cases between 2018 and 2020. In the same years, 64 direct diabetes deaths were reported in the region [3]. Diabetes has also caused a financial and social burden on patients and their families [13]. However, financial barriers to managing diabetes have been reduced with the implementation of the National Health Insurance Scheme Act 852 to ensure that patients with diabetes have access to free, primary-quality healthcare [12]. Therefore, it was expected that the community and patients with diabetes would take advantage of free healthcare to have a health check-up periodically to prevent and manage diabetes [14, 15]. However, reports from the healthcare providers at the Ho Municipal and Ho Teaching Hospitals have shown that patients with diabetes in the community do not visit the health facilities for healthcare, and those who eventually do so do so late. These delays in seeking healthcare for diabetes were associated with local beliefs about diabetes, community practices, and health-seeking behaviour [16, 17]. Local beliefs about the causes of diabetes have implications for health service utilisation [8]. Many people, including Ghanaians, have been reported to have a holistic concept of health and diseases that entails the spiritual aspect of disease causation and that has affected the management of diabetes [8, 18]. This local concept of illness beliefs and health-seeking behaviour remains unexplored, although it is crucial to achieving the global agenda to halt new diabetes cases by 2030 and manage existing cases with available technologies [19]. This study aimed to explore the community understanding of diabetes and its implications for the prevention and management of diabetes in south-eastern Ghana.

Methods

Study area and design

This study was conducted in the Ho municipality, which is located in the middle belt of the Volta region in the south-eastern part of Ghana. The municipality was selected for this study due to the increasing cases of diabetes in the area. For instance, approximately 30% of diabetes cases in the region are found in the Ho municipality [3]. The economic activities of the people in the area include farming, stone quarrying, trading, and the hospitality industry. Additionally, there is cross-border business activity between the region and the Republic of Togo, probably because of the free seaport in Lomé, and the people of Togo also access health care in the region whenever the need arises. The study was an exploratory and qualitative using in-depth interviews. Persons who were residents of the municipality were included in the study because the study sought to examine local beliefs

about diabetes, and persons who have not lived in the community might not understand community beliefs and practices about diabetes. Although 40 people were approached to participate in the study, seven declined. In all, 33 people participated in the study after informed consent was signed. The study area was divided into rural and urban areas based on the Ghana Statistical Service classification in the 2021 Population and Housing Census, and participants were purposefully recruited from both areas for in-depth interviews (IDIs).

Data collection tool, procedure, and period

A semi structured interview guide was used to conduct in-depth interviews (IDIs). The interview guide was designed in English and translated into Ewe (the dominant local language in the study area) by language experts using a back-to-back strategy where a language expert proficient in English and Ewe languages first translated the interview guide from English to Ewe. Another language expert also retranslated the guide from the Ewe language back into the English language, and the two versions were compared. Where there were divergent views, the two language experts discussed this with a third language expert as a mediator. This was done as a quality control measure to ensure uniformity in the data collection tool. The IDI guide covered areas such as knowledge about the causes of diabetes, signs and symptoms, beliefs about diabetes, health-seeking behaviour, prevention and management, and challenges with prevention and management of diabetes.

Two research assistants (male and female nurses) who were postgraduates in Ho, were currently not working, and had no prior relationships with the participants were recruited by the corresponding author through word-of-mouth referral and trained to collect data for this study. The research assistants had prior training in qualitative research data collection at the master's study programme, and they were also trained on how to create rapport with the interviewee and ask probing and prompt questions to collect data for this study. The female interviewer was assigned to interview female respondents, and the male interviewer interviewed male respondents to ensure that the effects of gender, class, and race in the research process were minimised [20]. Interviews were digitally recorded and conducted in the homes of the participants on the agreed date and time after the recruitment of patients and carers from the diabetes clinics and members of the community. The interviews were conducted in English and Ewe, depending on the language the respondents preferred. After each interview session, member checking was performed, where the recordings were replayed for the participant to listen to, make corrections, or further clarify points they deemed necessary [21]. In the course of interviewing, saturation was reached when no new information emerged from the interviews after 14 patients and 12 community members were interviewed. The study was conducted from April 4 to September 30, 2022.

Data analysis

The digitally recorded interviews were transcribed verbatim and transferred into a text document for analysis (by SKA). These notes and transcriptions were anonymized, and no identifying information was included. The data were analysed simultaneously (by SKA) after a few interviews were conducted and continued alongside data collection using the thematic data analysis process [22, 23]. The transcripts were entered into QSR NVivo version 20.0 for analysis. A codebook was developed for the main themes and subthemes. Some of the predetermined items in the codebook included local beliefs about the causes of diabetes, signs and symptoms, health-seeking behaviour, prevention, and management processes. The emerging items of social support and challenges were added to the predetermined items. The reading of all transcripts within QSR NVivo version 20.0 was performed, and relevant portions of statements made by respondents were coded into existing codes (by SKA). Based on the codebook, the researchers verified independently coded texts from the transcriptions. Thematic analysis [24] was performed, and the predetermined, emerging themes and subthemes were discussed, supported by respondents' quotes. To ensure the credibility, transferability, dependability, and confirmability of the study, the COREQ (Consolidated Criteria for Reporting Qualitative Studies) checklist [25] was used in the data collection and analysis.

Results

The ages of both male and female participants ranged from 30 to 80. The highest educational attainment of participants was tertiary education in both rural and urban areas. The participants aligned with three main types of religion in Ghana: Christianity, Islam, and traditional African religion; however, the majority of the participants were Christians. Many of the participants were widows, as indicated in Table 1.

Local beliefs about the causes of diabetes

Locally, diabetes was believed to be caused by both spiritual forces and physical factors, as presented in Table 2. The belief that diabetes could be caused by juju (an object that has been deliberately infused with magical powers or the magical power itself) and witchcraft (malevolent action caused by "witches"—people possessing mystical powers used to harmful ends) emerged strongly in

Table 1 Background information on the participants in the in- depth interview (IDI)

Social-demographic characteristics	Rural		Urban		Total	
Gender	N	%	N	%	N	%
Male	8	47	9	53	17	51.5
Female	8	50	8	50	16	48.5
Age (years)						
≤ 40 years	3	50	3	50	6	18.2
41–50	4	57	3	43	7	21.2
51–60	4	50	4	50	8	24.2
≥ 61 years	6	50	6	50	12	36.4
Educational level						
No formal education	4	50	4	50	8	24.2
Primary	5	50	5	50	10	30.3
Secondary	4	44	5	56	9	27.3
Tertiary	3	50	3	50	6	18.2
Religion						
Christians	9	53	8	47	17	51.5
Islam	3	75	1	25	4	12.1
African Traditional Religion	6	50	6	50	12	36.4
Marital status						
Married	6	50	6	50	12	36.4
Widow	7	53	6	47	13	13.4
Divorced	2	50	2	50	4	12.1
Never married	2	50	2	50	4	12.1

most of the IDIs. There was a popular view held that juju, witchcraft, and punishment from gods were the local causes of diabetes. As a result, people diagnosed with diabetes believed that they had offended someone or been envied and bewitched. The respondents indicated that they saw the biomedical diagnosis of diabetes as a secondary and spiritual manifestation in the physical realm. The views of some participants are shared below:

> *I got diabetes because people were jealous of me because my children are doing well and taking good care of me, and they bewitch me with diabetes, but I have faith in Jesus Christ (59-year-old female patient, rural).*
> *Yes … just last weekend, my friend who died because of diabetes was buried in the Wadze community, and we were of the view that he was spiritually attacked with diabetes because he was wealthy and people envied him a lot (58-year-old male patient, urban).*
> *Diabetes is spiritual; if it is not witchcraft, why would you have a small sore on your leg that fails to heal and continues to enlarge until your leg is cut off or you die. It is the work of witches (60-year-old male community member, rural).*

In the case of physical causes, the respondents reported that eating too many sugary and starchy foods (fufu, akple, and banku) late in the night may lead to diabetes. They indicated that this caused a large amount of sugar to accumulate in the blood and therefore led to the development of diabetes. The views of some community members are illustrated as follows:

> *When you eat a lot of sugary foods that the body is not able to use, you get diabetes. My mother died of diabetes because she liked eating sugary food a lot (52-year-old assemblywoman, rural).*
> *I have learned that diabetes is not a "spiritual sickness," as many have thought. It is a disease that affects us because we eat starchy foods. I had been eating a lot of starchy foods late at night in those days because I was a community development officer in Akatsi District, so by the time I returned from the villages, it would be late, but I had to eat before I went to bed (68-year-old male patient, urban).*

The abuse of alcoholic and non-alcoholic beverages was also reported as a cause of diabetes. The local view was that an individual who offended their neighbour or was doing well and successful in life could be juju or bewitched as a result of jealousy to abuse alcohol.

Table 2 Perceptions of causes, presentation, prevention and management of diabetes

Condition	Local name (Ewe)	Causes	Signs/symptoms	Prevention	Management	Health seeking behaviour	challenges
Diabetes	*Sukli dɔ/aduɖɔvivi dɔ*	Spiritual, Bewitchment, juju, Alcohol abuse, Pesticides, insecticides, Sugary & starchy foods	Frequent urination, excessive thirst, sudden weight loss, constant hunger, blurred vision, lack of energy	Avoid offending people, avoid alcohol abuse, reduce sugary and starchy foods, regular physical activity, check-ups	Spiritual, Herbal and orthodox medication, balanced diet, monitoring blood glucose, physical activity	Spiritualist traditional medicines prayer camp, Delay in seeking biomedical care,	Tired of taking medicines, lack of fund, delay at hospital, poverty, attitude of healthcare providers, delay of NHIS to reimburse health facilities, healthcare cost

This juju or bewitchment directed at those doing well or offenders leads to drunkenness, which could cause diabetes. These are some of the views shared by the respondents:

My friend who died recently from diabetes was a good farmer, and many people envied him in the community; suddenly, he started drinking alcohol, and this alcohol inflicted on him diabetes (47-year-old carer, rural).
You see, there is one man in that house because of his excessive intake of alcohol; he has developed diabetes now. He is always drinking alcohol, while he is a successful man (61 years old, community elder, urban).

Additionally, a respondent narrated that eating fresh fruits and vegetables sprayed with pesticides and insecticides was the cause of diabetes in the community. The view of an 80-year-old male patient is illustrated as follows:

Fresh fruits and vegetables such as mangoes, watermelon, okra, tomatoes and garden eggs that are sprayed with pesticides and insecticides and that we eat give us diabetes (80-year-old patient, urban).

The participants also indicated sudden weight loss and fatigue where they shed weight and looked like HIV/AIDS patients, resulting in rejection, stigmatisation, and social burden. As a result, they tend to hide from the public. The views of the respondents were shared as follows:

Three of my family members from my mother's side, including my mother, had diabetes, and all of them lost weight and became lean like HIV/AIDS patients and died (47-year-old male carer, urban).

Local beliefs about the signs and symptoms of diabetes

Frequent urination, bedwetting, and excessive thirst were the main signs and symptoms of diabetes that participants frequently mentioned. The respondents said they had to wake up to empty their bladders, sometimes more than seven times before daybreak. They described this constant urination as unusual. Additionally, excessive thirst at night could result in dehydration and death. Participants shared their local understanding of the nature of diabetes-related urination and excessive thirst as follows:

Yes, I urinate a lot, and whenever we are in a gathering, I have to go out frequently to urinate, and sometimes if I don't hurry up, I end up urinating in my clothes, which is embarrassing and worries me a lot. Sometimes I don't attend family or community gatherings (67-year-old male patient, urban).
I'm always thirsty, even in the middle of the night. I had to get up and drink water, and when I drink, I urinate (80-year old male patient, urban).

Another key sign of diabetes is constant hunger, fatigue, and weight loss. The participants narrated that they were constantly hungry because anything they ate liquefied and came out as urine. The respondents reported that this often resulted in dizziness and sometimes collapse. They also indicated sudden weight loss and fatigue where they shed weight and looked like HIV/AIDS patients, resulting in rejection, stigmatisation, and social burden. As a result, they tend to hide from the public. The views of the respondents were shared as follows:

I feel hungry constantly and eat frequently. Sometimes I eat approximately 6 p.m., but by 9 p.m. I have to eat again or else I wouldn't be able to sleep (51-year-old female patient, rural).
I started shedding weight considerably. I used to have a lot of fat, but I started growing lean. I became weak and tired and couldn't do anything for myself because I had no energy left in me (68-year-old female patient, urban).
Three of my family members from my mother's side, including my mother, had diabetes, and all of them lost weight and became lean like HIV/AIDS patients and died (47-year-old male carer, urban).

Another important symptom of diabetes mentioned by the participant was blurred vision, sugary urine, ants gathering around urine, and sexual weakness. Respondents reported that they could hardly see, that sometimes their eyes became reddish and were constantly tearing, and that they had to depend on others. Respondents also used the sugary taste of their urine or the sight of ants around the urine as indicators of diabetes. They also narrated that they become sexually weak when they have diabetes. The following are the views of the respondents:

I have also developed visual problems because of diabetes. I was supposed to have surgery, but I couldn't have it because of my diabetes. I can't see well, and tears are flowing every day (78-year-old male patient, rural).
I realised that ants were always gathering around the place I urinated, and I told my friend, and she said it was a sign of diabetes, and it was true when I got tested (51-year-old female patient, rural).
I was always thirsty, and I told my friend, and he asked me to taste my urine, and when it is sugary,

then I should know that I have diabetes, and when I tasted it, it was sweet like sugar (80-year-old male patient, urban).
The penis is not erecting rightly, and I find it difficult to satisfy a lady. After the death of my wife, a lady stayed with me for 1 year, and she left because I could not satisfy her sexually (67-year-old patient, urban).

The respondents also mentioned that signs and symptoms in the early stages of diabetes were not very specific and were often confused with other common local conditions, such as headache, fever, and malaria. The following quotes support these assertions:

One night, I was feeling pain all over my body. I couldn't sleep. I was sent to the Tanyigbe clinic and later transferred to Ho Teaching Hospital, and I was told I went into a coma, but when I came back to life, that was when I was told I had diabetes (59-year-old female patient, rural).

Prevention and management of diabetes

The popular belief was that spiritual remedies were more effective in the prevention and management of diabetes. Patients indicated that they sought spiritual interpretation, deliverance, fortification, and cleansing before biomedical and physical remedies could be effective. As a result, the respondents reported that they patronised traditional healers or prayer camps to protect themselves from getting diabetes and to manage the condition. The views of some participants are as follows:

I went to a traditional healer to see what exactly the problem is so that I could seek healing for myself (40-year-old male patient, urban).
I was advised by my uncle to go and see one herbalist to prepare diabetes medicine for me, which I took before I went to the hospital in order to prevent those spirits from causing the diabetes (48-year-old patient, rural).

The participants also narrated that diabetes could be prevented and managed without complications when they stopped abusing alcohol, reduced their intake of sugary foods, and ate an early dinner to aid adequate digestion before bedtime. The views of the participants are shared as follows:

Intake of alcoholic and non-alcoholic beverages has to stop if we want to prevent and manage diabetes because drinking alcohol is common here and we all know it is the cause (43-year-old male caregiver, urban).

From what they said, it looks like everything related to eating habits. We eat early before going to bed, so I don't eat at night. I don't take cassava and corn dough, but I eat akple (a staple maize meal) and a lot of fruits and vegetables instead of consuming sugary foods (60-year-old female patient, rural).

Furthermore, the participants also mentioned in most of the IDIs that regular exercise, such as running, jogging, and brisk walking for at least 30 min to an hour for a minimum of three times a week, was key. The following quotes support these assertions:

This time I exercise a lot; I walk a lot. As for my car, I park it at the office, and I walk from that place to this place to take my drugs. In the evening after supper, I walk for some time together with my wife, and that's what keeps me going (58-year-old male patient, rural).
I exercise, which helps me a lot. However, one morning, I went jogging, and I was nearly knocked down by a car. Since then, I have stopped going out for jogging. However, whenever I'm about to bathe, I do some press-ups and jump around the house (68-year-old male patient, rural).

The participants also narrated how education could help create awareness about diabetes. The respondents mentioned that with education and knowledge sharing about diabetes, people would change their lifestyles, which could lead to the prevention of diabetes. The views expressed by respondents are as follows:

Education is important, especially among youth. Organise forums in the hospital; make your desk available for people to come; tell the public that diabetes is on the rise and let them understand the causes, signs and symptoms, prevention, and management strategies (58-year-old male patients, rural).
Education should be intensified, especially in our villages. Let them understand that whenever you experience frequent urination, you need to go straight to the hospital (68-year-old male community member, rural).

Most of the respondents mentioned that diabetes is not curable. They narrated that diabetes is a lifelong disease that can only be managed using pharmacological agents, diet, and exercise. The views expressed by respondents are as follows:

Diabetes is not fine because there is no cure for it. I had travelled to Qatar… I was thinking over there that I would get a cure, but there is no cure (42-year-old male patient, rural).

It is not curable; it can only be managed. We should be mindful of what we eat. I take medications consistently and eat a lot of vegetables. I recommend that everybody develop the habit of eating fruits and exercising regularly (48-year-old female patients, urban).

In using pharmacological agents to manage the condition, many of the respondents reported using insulin and oral medications, or both, to manage their condition. Respondents mentioned some medications they use to control diabetes. The following quotes illustrate this point:

The Dr prescribed glimepiride for me, and he asked me if I had money to buy it, and I said no, so he changed it for me and gave me metformin. I'm taking metformin alone (50-year-old female patient, rural).
From the beginning, I was taking metformin, insulin, glipizide, and glimepiride, but the Dr recently removed insulin and glipizide from it, so I'm now taking metformin and glimepiride (67-year-old male patient, urban).

Health seeking behaviour of patients with diabetes

The participants indicated that they delayed seeking biomedical health care due to stigmatisation because diabetes was likened to HIV/AIDS. They were described as bringing the condition upon themselves as a result of their bad deeds. The patients also indicated that to be able to attract a life partner, they concealed their conditions, which led to delays in seeking biomedical care. Others delayed seeking orthodox healthcare because they believed that diabetes was a spiritual illness and reported visiting herbalists, prayer camps, and spiritualists for healing. The following views were shared:

People even regard diabetes as HIV/AIDS, and therefore diabetics hide to avoid stigmatisation. The people say diabetes is for the elderly … and when young people get diabetes, they think they have HIV (43-year-old female caregiver, urban).
Superstitious beliefs are a major factor. People turn to spiritualists or priests for prayers to find solutions to their problems. This is why most people wait until their condition gets worse before they rush to the hospital (33-year-old male healthcare provider, rural).
There was a woman who died recently from diabetes. She told me that the sickness is a spiritual attack and she needs to consult a spiritualist for healing, and she went to see one traditionalist, even when I told her to go to the hospital for medication (44-year-old assemblyman, rural).
Nobody would want to be your partner if they knew that you had diabetes because they knew you could satisfy them sexually, so people concealed their diabetes condition (42-year-old patient, rural).

Challenges for the prevention and management of diabetes

We also explored the challenges community members and patients face in the prevention and management of diabetes. Poverty, healthcare costs, the failure of the NHIS to reimburse health facilities on time, delays at hospitals, and the attitudes of health care workers were the factors affecting diabetes prevention and management. The respondents also reported that dieticians advised them on the foods to eat to prevent and manage diabetes, but due to poverty, most of them could not afford such foods. The following quotes illustrate what they expressed:

I was told to eat a balanced diet and more fruits and vegetables, but I don't have money and I can't afford it (58-year-old female patient, urban).
Yes, many people will go to the hospital if treatment is completely free. In fact, when treatment was free, we were all going to the hospital, and we hail it (67-year-old male patient, urban).
When NHIS came, we stopped paying, but now they are taking money from us because the NHIS is not working well. I remember paying GH¢50 for medication. Right now I don't have the money. The GH¢3.00 they normally charge for checking sugar level, and additional charge of GH¢1.00 if your sugar is high for injection should be scrapped, is very difficult to get GH¢3.00 sometimes as a pensioner (68-year-old male patient, urban).
When you go to the hospital early in the morning too, some people will use the 'backdoor' with the help of the nurses and jump the queue; you would have to waste time at the hospital (61-year-old female community member, urban).
The pharmacists will not tell you how to take the drugs …they assumed that you know. They will not tell you which drug is for diabetes and which one is for hypertension (78-year-old male patient, rural).

Other challenges included regular medications and a change in lifestyle. The respondents reported that taking medications in the morning and evening, especially insulin injections, was tiring. They also indicated that changing lifestyles was undoubtedly difficult. The following quotes illustrate what they expressed:

See let me be honest with you, I don't take the medications in the evenings. I'm tired of taking medicines morning and evening (58-year-old male patient, rural).

It is not easy to take medicine for life. I don't take the medications all the time. I only take the insulin when I'm going to eat banku or fufu (67-year-old male patient, urban).

I can't travel because of my insulin medication; especially if the place I'm going does not have a fridge to preserve it (48-year-old female patient, urban).

Discussion

The study revealed that local beliefs about diabetes, health seeking behaviour, poverty, and long waiting times at hospitals have affected the prevention and management of diabetes. The local belief that diabetes is caused by juju and witchcraft has affected the prevention and management of diabetes. This finding is similar to earlier findings, where respondents believed that diabetes was caused by supernatural forces [8, 26]. Outside Ghana, our finding is consistent with findings in Cameroon [27], Kenya [28], Nigeria [29], Uganda [30] Sudan [31], and India [32], where patients with diabetes believe that the illness was inflicted on them through spiritual means such as juju and witchcraft. However, some Muslims in Sudan see diabetes as a sign of God's love to test their faith and for rewards in the afterlife [31]. This might be due to earlier studies that reported that many people, including Ghanaians, have a holistic concept of health and diseases that entails the spiritual aspect of disease causation and that has influenced people to associate diabetes with spiritual causes. Additionally, inadequate public health education on the part of health officials and the belief systems of the people might have made them associate diabetes with spirituality, which may have affected the prevention and management of diabetes. Given that diabetes is perceived to have spiritual etiological causes, health is often sought from spiritual sources such as Pentecostal healing, spiritualists, traditional medical practitioners, and self-medication, as orthodox health facilities are deemed ineffective in dealing with diabetes. This might be due to poor knowledge of the causes of diabetes in the study area, probably due to a low level of education on diabetes. This finding supports previous findings [8, 28, 29, 33, 34] that influenced the kind of traditional healer to visit or the course of treatment to follow for healing. Furthermore, traditional medicine is rooted in the culture of the people and is believed to be more potent than orthodox medicines in the management of diabetes, as reported in previous studies [27, 28, 32, 35]. This could seriously affect diabetes prevention and management, as people are not aware of the causes and are not in a position to take measures to prevent and manage complications. This implies that healthcare professionals develop tailored messages on the causes and prevention of diabetes in the study area.

The results also showed that diabetes is caused by behavioural factors such as eating too much sugar, starchy foods, and alcohol. The possible explanation is that diabetes is believed to be caused by excess sugar in the blood, which is why it is called sukli dɔ (sugar disease) in the community, and that consuming sugary and starchy foods and alcohol, which are full of sugar, might result in diabetes. This finding is in tandem with a previous study in Ghana [8]. Outside Ghana, this finding is consistent with findings in Kenya, where they refer to diabetes as *sukari*, the word for sugar in Swahili [28]. Similarly, studies in Uganda [30], Cameroon [27], Sudan [31], Senegal [36], Ethiopia [37], South Africa [38] and India [39] associated diabetes with dietary misbehaviour, sugar, and abuse of alcohol. The study also found that the consumption of fruits and vegetables sprayed with pesticides and insecticides is a cause of diabetes. The possible explanation is that these pesticides and insecticides might cause destruction of the b-cell responsible for producing insulin in the pancreas. This finding is consistent with previous findings elsewhere [28, 40–42]. This might account for the increasing cases of diabetes in the study area, as many farmers use these agrochemicals on their farms without knowing their public health implications for consumers, as well as their consumption of sugar, and this could stiffen the efforts of the health authorities in controlling diabetes. Therefore, there is a need for agricultural extension officers to educate farmers on the best application of agrochemicals, and the use of organic manure would help address this challenge.

Our findings also showed that health-seeking behaviour affected the prevention and management of diabetes in this study. Participants do not visit the hospital for healthcare with diabetes illnesses because they believe that diabetes is caused by spiritual means and therefore seek healthcare from traditional and spiritual healers, thereby relegating biomedical health care to the background since it is often deemed ineffective for managing diabetes. However, these spiritualists and traditional healers might not have the expertise to manage diabetes. This might be attributed to the belief that diabetes is the physical manifestation of the spiritual, as previous studies have reported. This finding is consistent with findings in sub-Saharan Africa, where illness is given spiritual interpretation, and therefore, people seek healing from the spiritual realm before seeking further management from biomedical facilities [18, 29, 31]. This implies that diabetes cases would be reported late to health facilities

with complications, and there is little that can be done to save lives. There is a need to intensify public education in communities on the causes, signs, and symptoms of diabetes, as well as the prevention and management of diabetes and the importance of early detection to avoid or delay complications.

Additionally, this study found that diabetes is likened to HIV/AIDS infection. This is because both diabetes and HIV/AIDS are incurable, and sufferers of both diseases lose excessive weight [43]. This association of diabetes with HIV/AIDS has led to stigmatisation, preventing patients living with diabetes from seeking healthcare from biomedical health facilities, which adversely affects the prevention and management of diabetes in the community. The findings of this study indicate that the knowledge of patients, carers, and the elders of the community about diabetes is poor, leading to misconceptions about diabetes. This finding raises doubts about the effectiveness of the current strategies used to provide health education in the community. This finding is in consonance with studies in sub-Saharan Africa [27, 30]. Adopting new strategies by healthcare professions to drive home health promotion messages on diabetes and avoid likening diabetes to HIV/AIDS will help reduce stigmatisation.

This study has shown that the long waiting times at hospitals as a result of inadequate human resources and poverty have affected the prevention and management of diabetes. This finding is consistent with findings in South Africa, where diabetes patients had to wait for long hours, sometimes from 7 a.m. to noon, to meet the physician [39] and had to pay for management services out of pocket. This increases the cost of care, making it difficult for poor patients to access diabetes care at the hospital [32, 36–39]. This implies that people would not seek healthcare for diabetes from hospitals, and this could affect early detection and management, leading to poor quality of life as spiritual and traditional healers currently do not have what it takes to diagnose diabetes. There is a need to train more healthcare providers and equip diabetes clinics with the tools they need to prevent delays at hospitals.

Strengths and weaknesses

Although this study provides useful insights into how local beliefs and practices about diabetes affect prevention and management and could derail efforts towards achieving the global agenda to halt diabetes in Ghana, it is important to note a few limitations. The authors used independent language experts to perform the translations from the local language into English, and although these translations were verified, it is possible that some of the original words could have lost their meaning through the translation process. Second, the findings of this study cannot be generalised since it was conducted in one of the 18 districts in the region, and the participants were predominantly one ethnic group (Ewes). However, using the maximum variation purposeful sampling technique to select the participants from urban and rural areas strengthens the study's findings while increasing the credibility, transferability, dependability, confirmability, and trustworthiness of the evidence from the study [25]. The use of the qualitative approach also made it possible to collect in-depth information on local beliefs about the causes of diabetes in the community.

Conclusion

Diabetes is believed to be caused by supernatural forces and behavioural factors that affect diabetes prevention and management, leading to an increase in cases among people in their productive age group. This has far-reaching public health implications for the current strategy to prevent and manage diabetes, as those spiritual outlets currently do not have the capacity to prevent and manage diabetes in the area. Developing culturally sensitive health education strategies that consider local beliefs about diabetes would help increase knowledge levels and improve the prevention and management of diabetes.

Abbreviations

CHPS	Community-based Health Planning and Services
GHS	Ghana Health Service
IDF	International Diabetes Federation
IDIs	In-depth Interviews
WHO	World Health Organisation

Supplementary Information

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Supplementary Material 1.

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Authors' contributions

Stanley Kofi Alor designed the study, collected and analyzed the data, and prepared the draft manuscript. Philip Baba Adongo, Franklin N. Glozah, and Irene Akwo Kretchy provided scientific advice on the study design and data analysis as my supervisors in a Ph.D. program in Public Health in which this manuscript was developed. All authors read and approved the final manuscript.

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Data availability

Data are not available out of respect for participants. The majority of the anonymized data have been included in this manuscript. Providing individual transcripts will breach the confidentiality and anonymity requirements during ethical approval. As a result, we do not have permission from the participants to share the raw data. All interested persons who may want further clarity can contact the corresponding author via this email address: *skalor@st.ug.edu.gh*.

Declarations

Ethics approval and consent to participate

The study was approved by the Ghana Health Service Ethics Review Committee (GHS-ERC: 003/03/22). The participants gave informed consent, and their information was anonymized and used in this study. All methods were performed in accordance with relevant guidelines and regulations approved by the GHS-ERC committee. Two independent experts first translated data from Ewe into English. The translations were then compared for consistency. The translators discussed any inconsistencies with a third person serving as a mediator. An independent reviewer again reviewed all transcripts. The recorded voices were listened to by the independent reviewer to compare them with the transcriptions.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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References

1. Sun H, Saeedi P, Karuranga S, Pinkepank M, Ogurtsova K, Duncan BB, Stein C, Basit A, Chan JC, Mbanya JC. IDF Diabetes Atlas: Global, regional and country-level diabetes prevalence estimates for 2021 and projections for 2045. Diabetes Res Clin Pract. 2022;183:109119.
2. IDF Diabetes Atlas. 10th ed. 2021. https://www.diabetesatlas.org.
3. GHS. District Health Information Management System 2: Ghana Health Service. https://ghs.gov.gh/gwer/v6w2-report.php.
4. Osei-Yeboah J, Owiredu W, Norgbe GK, Lokpo SY, Allotey EA, Doe EA, Attah FA. Quality of life of people living with type 2 diabetes in Ho, Ghana: a cross-sectional study. Am J Biomed Sci. 2016;8:4.
5. Asamoah-Boaheng M, Sarfo-Kantanka O, Tuffour AB, Eghan B, Mbanya JC. Prevalence and risk factors for diabetes mellitus among adults in Ghana: a systematic review and meta-analysis. Int Health. 2019;11(2):83–92.
6. MOH. National policy for non-communicable diseases. Ministry Of Health Ghana; 2022. https://www.moh.gov.gh/.../Ghana-NCD-Policy-2022.
7. Sarfo-Kantanka O, Sarfo FS, Oparebea Ansah E, Eghan B, Ayisi-Boateng NK, Acheamfour-Akowuah E. Secular trends in admissions and mortality rates from diabetes mellitus in the central belt of Ghana: a 31-year review. PLoS ONE. 2016;11(11): e0165905.
8. Amponsah MK. Local perceptions and management of diabetes and hypertension in Shai-Osudoku District of Ghana (Doctoral dissertation, University Of Ghana). 2017. https://ugspace.ug.edu.gh.
9. IDF. International diabetes federation atlas- 9th edition_2019. 2019. https://www.diabetesatlas.org.
10. Saeedi P, Petersohn I, Salpea P, Malanda B, Karuranga S, Unwin N, Colagiuri S, Guariguata L, Motala AA, Ogurtsova K, et al. Global and regional diabetes prevalence estimates for 2019 and projections for 2030 and 2045: results from the international diabetes federation diabetes atlas, 9(th) edition. Diabetes Res Clin Pract. 2019;157:107843.
11. IDF. IDF Africa members. 2020.
12. GHS. Ghana health service; annual report. 2016.
13. Al Hayek AA, Robert AA, Al Saeed A, Alzaid AA, Al Sabaan F. Factors associated with health-related quality of life among Saudi patients with type 2 diabetes mellitus: a cross-sectional survey. Diabetes Metab J. 2014;38(3):220–9.
14. Esmailnasab N, Hassanzadeh J, Rezaeian S, Barkhordari M. Use of health care services and associated factors among women. Iran J Public Health. 2014;43(1):70.
15. Rezaei S, Hajizadeh M, Kazemi A, Khosravipour M, Khosravi F, Rezaeian S. Determinants of health-related quality of life in Iranian adults: evidence from a cross-sectional study. Epidemiol Health Affairs. 2017;39:e2017038.
16. Kleinman A, Eisenberg L, Good B. Culture, illness, and care: clinical lessons from anthropologic and cross-cultural research. Ann Intern Med. 1978;88(2):251–8.
17. Tabong PT, Akweongo P, Adongo PB, Shiri R. Community beliefs about tuberculosis in Ghana: implications for the end tuberculosis global agenda. Cogent Med. 2021;8(1):1870069.
18. Ahulu CS. Cultural epidemiology in EMIC perspective with Malaria. 2005.
19. WHO. Global report on diabetes- Geneva 27, Switzerland 2016.
20. Naples NA. Feminism and method: Ethnography, discourse analysis, and activist research. Routledge; 2013. taylorfrancis.com.
21. Birt L, Scott S, Cavers D, Campbell C, Walter F. Member checking: a tool to enhance trustworthiness or merely a nod to validation? Qual Health Res. 2016;26(13):1802–11.
22. Clarke V, Braun V. Thematic analysis J Positive Psychol. 2017;12(3):297–8.
23. Clarke V, Braun V, Hayfield N. Thematic analysis. Qualitative Psychology: Practical Guide Res Methods. 2015;222(2015):248.
24. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3(2):77–101.
25. Lincoln YS, Guba EG. But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. New Dir Program Eval. 1985;30:73–84.
26. Aikins Ad G. Healer shopping in Africa: new evidence from rural-urban qualitative study of Ghanaian diabetes experiences. BMJ. 2005;331(7519):737.
27. Awah PK, Unwin N, Phillimore P. Cure or control: complying with biomedical regime of diabetes in Cameroon. BMC Health Serv Res. 2008;8(1):1–11.
28. Abdulrehman MS, Woith W, Jenkins S, Kossman S, Hunter GL. Exploring cultural influences of self-management of diabetes in coastal Kenya: an ethnography. Glob Qual Nurs Res. 2016;3:2333393616641825.
29. Chinenye O. Socio-cultural aspects of diabetes mellitus in Nigeria. J Soc Health Diabetes Care. 2013;1(01):015–21.
30. Hjelm K, Nambozi G. Beliefs about health and illness: a comparison between Ugandan men and women living with diabetes mellitus. Int Nurs Rev. 2008;55(4):434–41.
31. Ahmed. Cultural aspects of diabetes mellitus in Sudan. Practical Diabetes Int. 2003;20(6):226–9.
32. Mendenhall E, Shivashankar R, Tandon N, Ali MK, Narayan KV, Prabhakaran D. Stress and diabetes in socioeconomic context: a qualitative study of urban indians. Social Sci Med. 2012;75(12):2522–9.
33. Adhikari D, Rijal DP. Factors affecting health seeking behavior of senior citizens of Dharan. J Nobel Med Coll. 2014;3(1):50–7.
34. Aikins. Reframing applied disease stigma research: a multilevel analysis of diabetes stigma in Ghana. J Community Appl Social Psychol. 2006;16(6):426–41.
35. Dièye AM, Sarr A, Diop SN, Ndiaye M, Sy GY, Diarra M, Rajraji/Gaffary I, Ndiaye/Sy A, Faye B. Medicinal plants and the treatment of diabetes in Senegal: survey with patients. Fundament Clin Pharmacol. 2008;22(2):211–6.
36. BeLue R, Diaw M, Ndao F, Okoror T, Degboe A, Abiero B. A cultural lens to understanding daily experiences with type 2 diabetes self-management among clinic patients in M'bour, Senegal. Int Q Community Health Educ. 2013;33(4):329–47.
37. Tewahido D, Berhane Y. Self-care practices among diabetes patients in Addis Ababa: a qualitative study. PLoS ONE. 2017;12(1): e0169062.
38. O'Brien C, Van Rooyen D, Ricks E. Self-management experiences of persons living with diabetes mellitus type 2. Afr J Nurs Midwifery. 2015;17(2):103–17.
39. Mendenhall E, Norris SA. Diabetes care among urban women in Soweto, South Africa: a qualitative study. BMC Public Health. 2015;15(1):1–7.
40. Lee DH, Lee IK, Song K, Steffes M, Toscano W, Baker BA, Jacobs DR Jr. A strong dose-response relation between serum concentrations of persistent organic pollutants and diabetes: results from the National Health and Examination Survey 1999–2002. Diabetes Care. 2006;29(7):1638–44.
41. Montgomery M, Kamel F, Saldana T, Alavanja M, Sandler D. Incident Diabetes and pesticide exposure among licensed pesticide applicators: Agricultural Health Study, 1993–2003. Am J Epidemiol. 2008;167(10):1235–46.

42. Lee D-H, Steffes MW, Sjödin A, Jones RS, Needham LL, Jacobs DR Jr. Low dose organochlorine pesticides and polychlorinated biphenyls predict obesity, dyslipidemia, and insulin resistance among people free of diabetes. PLoS ONE. 2011;6(1): e15977.
43. Van Crevel R, Van De Vijver S, Moore DA. The global diabetes epidemic: what does it mean for infectious diseases in tropical countries? Lancet Diabetes Endocrinol. 2017;5(6):457–68.

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