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Socio-Cultural Factors Influencing the Perception and Management of Meningitis among Older Patients and Their Caregivers

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Abstract: Limited studies have investigated the socio-cultural factors influencing the management and control of Meningococcal Meningitis among older adults in Northern Nigeria. This study explored the lived experiences of older individuals with Meningococcal Meningitis and relationships with their caregivers in the Kaiama Local Government Area of Kwara State, Nigeria. Twenty (20) Meningococcal Meningitis patients aged 65+, their caregivers, and three (3) traditional healers were purposely selected for in-depth interviews. Results show that some older adults believed that their health conditions were caused by supernatural forces, thereby influencing the scope and type of care they receive. For such participants, traditional treatment options are fundamental for addressing the root causes of their ailment. Few participants mentioned that their health conditions were caused by excessive heat in their community and were more likely to consider biomedical treatments as the most effective for diagnosing, treating, and managing the ailment. Additionally, Meningococcal Meningitis might have caused physical, cognitive, and psychological frailties and impairments among the older patients, compelling family caregivers to support the older adult patients in their homes. We discuss the need for a policy that would benefit both those who care for older adults and the older adults themselves.

Keywords: Meningococcal Meningitis; older adults; patients; caregiving; qualitative research; socio-cultural factors

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1. Introduction

Meningococcal Meningitis is a highly contagious and life-threatening disease that affects the protective membranes covering the brain and spinal cord [1]. The high fatality rate of the disease coupled with its lifelong disability syndrome among survivors have combined to make the disease a major public health burden [2], especially in Sub-Sharan Africa (e.g., Nigeria) where a higher burden of the disease is evident [2,3].

According to the Nigerian Centre for Disease Control [4], Kwara State lies within the Nigerian Meningitis Belt (NMB). During the outbreak of meningitis epidemics, Kaiama local government area (LGA) in the Kwara North region carries the heaviest burden of all the affected areas of the state. Over 70% of all meningitis cases in Kwara state have consistently been recorded from the Kwara North region, accounting for the highest number of cases and deaths due to meningitis in Nigeria [4]. Specifically, during the 2017 epidemic (November 2016–May 2017), Kaiama LGA recorded 70 (57%) of the total number of cases and 31 (94%) of the total number of deaths in Kwara State [5]. The LGA had a Case-Fatality Ratio (CFR) of 44%, with one death out of every two known meningitis infections in the general population. These statistics contrast the statistics from the neighboring LGAs in the region, where only 2 (6%) deaths from known cases were recorded in two separate LGAs.

The consistency in high cases and deaths during epidemic and non-epidemic seasons suggest an urgent need to examine health outcomes due to meningitis infection among people living in Kaiama LGA. In 2018, despite not attaining an epidemic threshold, Kwara State recorded 23 cases and 2 deaths due to meningitis. However, 17 out of the 23 cases and the 2 deaths were recorded in Kaiama LGA. National and sub-national governments have made efforts to stem the higher incidence and increased mortality due to meningitis. For example, the Kwara state government prioritized vaccination programs across the state. A report from the fourth quarter of 2020 shows that the Kwara state government spent fifty-five million naira to procure about two hundred thousand doses of meningitis vaccines [6].

1.1. Perceptions of Meningitis in Nigeria

According to Williams and Jones [7], when cases present with symptoms such as convulsions, hallucinations, and/or loss of consciousness, for example, in patients with severe Cerebrospinal Meningitis (CSM), the illness is often interpreted as having a supernatural etiology. Such misunderstandings due to overlapping conceptions of folk illnesses and the interpretation of symptoms can become problematic. For example, supernatural perception of diseases drives the individual to seek traditional healers for diagnosis and treatment. A similar association is seen between symptoms of severe malaria and reports of spirit attacks [7]. Thus, clinical symptoms of diseases are not always recognized and associated with the disease. In cases where people know and understand the biomedical origin of a disease, it is still common for some to attribute the cause of the illness to supernatural forces—a common trend when there is ambiguity during diagnosis, complications during the illness progression, and relapses [8].

Another explanation for the supernatural perception of meningitis is witchcraft. Symptoms suggesting severe meningitis, such as headache, high fever, confusion, nausea, vomiting, photophobia, rash, neck stiffness, and lethargy, are often attributed to the affliction of supernatural entities or factors "outside the body," such as witches. Some believe that *Aje*, Ooso, alujannu, and other supernatural bodies possess the power to inflict disease on victims. Indigenes often believe that the *Aaje* and *Ooso* possess a quality that makes them addicted to spiritually consuming other human beings, 'sucking' their life force until the victims get very sick and die [9]. The symptoms people experience when attacked by a witch tend to include convulsion, seizure, and neck stiffness. To better illustrate the phenomenon of attributing ailment to witchcraft, O'Neil and colleagues [9] stated: "if you put the insect in a small container with a groundnut, it will suck away all the liquid contained in the seed. That is the same way that the witches operate" (p. 20). Thus, given the similarities between witchcraft attacks and symptoms of meningitis, some people believe that witchcraft causes the "*Yinrun yinrun*" sicknesses and commonly afflicts individuals through "foul wind" [9]. *Alujannu* or *Jinn* is also another community understanding of meningitis etiology. Unlike witchcraft, *Jinns* are non-human spirit creatures believed to inhabit the world alongside humans—a belief more common among Muslims. *Jinns* are said to be invisible to humans under 'normal' circumstances and do not harm, although some 'bad *Jinns*' can afflict human beings, causing aggressive behavior, 'madness' and mental illness, sickness, or death by 'attacking' a person through 'wind' or in 'unsafe' places in the bush [9].

Furthermore, *Jinns* are commonly believed to dwell in trees in the bush and attack specifically vulnerable people, for instance, pregnant women walking through their territory. A *Jinn* may attack anywhere, and no place is entirely safe, and most of the symptoms of these attacks, as described, match the clinical presentation of severe meningitis and other serious diseases such as malaria [9]. The severity of these symptoms is thus an indication of how much the *Jinn* has possessed the victim's body and the extent to which the traditional healer or marabout's treatment is driving the force of the *Jinn* out of the body.

Based on the spirituality and witchcraft explanations for meningitis, treatment depends on the patient's family traditions and common practices and often involves healers or

marabouts who are well-respected religious figures across African communities, especially in West Africa. Healers or *marabouts* specialize in Islamic and non-Islamic practices such as prayers, healing, clairvoyance, and other rituals around life and death—some of the people afflicted by ailment visit traditional healers for diagnosis and treatment. The traditional healer's diagnoses are often based on divine consultations or "black magic." Most healers believe that most sicknesses or misfortunes are due to spiritual blockages. If an individual is therefore showing severe symptoms, it is crucial to identify what exactly has caused the misfortune before the person can recover. In some cases, the person suffering from severe symptoms would likely not consult a biomedical health practitioner because they believe that supernatural forces are responsible for the sickness. Despite the well-documented beliefs in spirits and witchcraft, there is a lack of ethnographic and socio-behavioral research describing local beliefs of sickness caused by supernatural entities and their relation to CSM.

1.2. Current Study

The high sensitivity of meningitis to climate variations has made the disease one of the major public health concerns in the sub-Saharan Africa (SSA) countries, where consistent large epidemics have been recorded. Although climatological interpretations form the dominant explanations advanced for the recurring epidemic of meningitis in the region, previous studies have revealed that despite relatively good availability of diagnosis and treatments for the disease, some individuals still decide not to go for biomedical treatment but instead opt for the supernatural diagnosis and traditional treatments [7,8]. Research has been conducted to understand the importance of proper management of infectious diseases among vulnerable populations in developed countries [9], however there is a paucity of research on managing Meningitis in Nigeria—particularly in Northern Nigeria.

This study, therefore, focuses on the contending discourse between the climatological/biomedical understanding and treatments as well as on community understanding of the cause of meningitis and treatment itineraries of suspected meningitis cases. Understanding community members' perceptions of epidemics are critical for designing effective communication and mitigation strategies and coping and adaptation strategies. While there are many studies on climatic factors as the causes of the disease, few studies examined the socio-cultural understanding of the etiology of the disease [10–14]. This study aims to fill the existing knowledge gap by looking at climatic interpretations and community understanding of the cause of meningitis and treatment itineraries of suspected cases in the Kaiama Local Government Area of Kwara State. The study also looks at the availability of family caregivers providing support and cares for older adults who have been physically, cognitively, and psychologically frail due to the ailment.

1.3. Location of the Study

The study was conducted in Kaiama LGA of Kwara State, which occupies a land area of 3985.2 km^2. In 2020, the population of Kaiama LGA was estimated to be 222,007, with a growth rate of 3.4% [15]. The area is located between latitudes 9°451 N, 10°51 N and longitudes 4°31 E, 5°251 E [16]. From the north, Kaiama is bounded by Niger State; it is bounded to the east by Moro and to the southeast by Baruteen Local Government. There are two weather seasons in Kaiama, the rainy season and the dry season. The rainy seasons commence from May to October, while the dry season lasts from November to April. The mean minimum temperature is about 30 °C to 35 °C, and the mean annual rainfall ranges between 1100 mm and 1600 mm [16].

Kaiama is an ancient town in Kwara North district where *Bam-lam-gu* is spoken as the indigenous language. Other tribes such as Yoruba, Hausa, and Fulani dominate some parts of the local government. Agriculture is the major preoccupation of the indigenes. Crop production is dominant in people's agricultural engagements. Food crops such as groundnut, millet, maize, sorghum, beans, and other grains are usually produced in commercial quantities. In addition, some people are into fish and livestock farming while

others are employed with the local government civil service. The Local Government is reported to have copper, iron, feldspar, and lead deposits.

Kaiama Local Government is categorized as a rural area because it is characterized by relatively fewer populations and low population density. Furthermore, the scarcity of social amenities such as schools and hospitals has kept school enrolment and health statuses relatively low in Kaiama. There are two major hospitals in the area and other supporting primary healthcare centers, clinics, and maternity homes located in different parts of the Local Government. One of the hospitals (General Hospital Kaiama, Kaiama, Kwara State, Nigeria) is designated and used as the treatment center for meningitis cases in the Local Government.

Like most northern societies, Kaiama is a patriarchal society, and the men have a substantial stake in what happens in a family. Traditionally, families live together in extended family houses. Therefore, most houses host more than one household. However, the women take care of most domestic activities such as cooking, fetching water and firewood, and tending to the children and the sick. Socioeconomic activities have the cut across agriculture, trade, and commerce, and government authorities are equally employers of labor at local and state levels.

2. Methods

2.1. Research Design

The study utilized a qualitative research design to deeply understand the participants' meanings, interpretations, and narratives regarding meningitis. Additionally, qualitative design was employed to assess participants' perception and understanding of meningitis etiology and their possible influence on treatment-seeking behavior. One of the key characteristics of qualitative research is its recognition that a phenomenon under study can only be adequately understood if examined within its socio-cultural context [17]. Thus, we adopted a qualitative research design to understand how people understand the disease etiology and interpret symptoms within the socio-cultural context of the people affected by the disease.

2.2. Sampling Method

Due to the sensitive nature of the study, a multi-stage sampling technique and an informant-based survey were employed. A similar method was used in studying maternal mortality among rural women in southwest Nigeria [14]. Kaiama LGA was selected purposively out of the sixteen LGAs in Kwara State due to its high reported cases and deaths from meningitis. The first stage in the sampling procedure was the cluster of the wards into four districts based on geographic location. The four districts are Kaiama, Kaburu, Wajibe, Gwanagaji. In the second stage, each cluster was further stratified into political wards. In the third stage, there was a random selection of one ward each from the Kaburu and Wajibe clusters; and two wards each from Kaiama and Gwanagaji clusters. The number of wards randomly selected was proportional to the size of the clusters. A total of six wards were used for the study. In the fourth stage, purposive sampling was used to select older adult meningitis patients and their caregivers from their households. A total of 20 patients, their caregivers, and 3 religious/traditional leaders were purposively selected from the six wards to participate in the study.

2.3. Data Collection

In-depth interviews (IDI) were used for data collection. Forty-three (43) interviews were conducted with older patients, their caregivers, and traditional healers. Before data collection, the researchers visited the community to obtain informed consent from the participants and community leaders. The lead researcher used pre-designed interview guides during the interview with participants. The discussions bordered on their perceptions of the socio-cultural factors influencing the treatment and management of meningitis and adaption strategies. The interview questions in the guide include: "what do you think

causes meningitis?" "What are the symptoms of the disease?" "What do you know about modern treatment options for meningitis?" and "describe the traditional treatment methods and management practices?" Participants' responses were either hand-written by a research assistant or recorded with prior consent from the participants.

2.4. Data Analysis

The interview data were analyzed using a thematic framework. The main steps of thematic analyses are familiarizing and identifying thematic frames, indexing, charting, mapping, and interpreting the interview data. To familiarize themselves with the information gathered, the lead authors carefully listened to the audio tapes and read the transcripts and observational notes taken during the discussions. The technique guided the identification of the dominant themes that emerged from the interviews. Afterward, a priori themes were applied to sort out key quotes from the transcripts and determine the emerging themes aligned with the study's objectives. Subsequently, a coding frame was developed, and the coded data were mapped and interpreted. In doing this, particular attention was paid to the participants' context, comments, and words to enhance the data's internal consistency. Triangulation techniques in the form of interviewing medical personnel were used to reduce potential bias effects in the data.

2.5. Ethical Consideration

The Ethical Committee of the University of Ilorin approved the research. The consent of the community leaders, respondents, and all the necessary authorities was sought before the study commenced. The aim and purpose of the research were explained to the participants, and their voluntary participation was clearly explained to them, informing them also of their right to withdraw from the interview at any time. More so, the data collected were solely for educational use.

3. Results

The older patient participants were aged 65 years and above, with an average age of 72.4 (SD: 1.25). All the participants reported that they were married. Additionally, the descriptive analysis revealed that 47.4% of the participants had no education/Islamic education, 31.3% had primary education, 15.5% had secondary education, and 5.8% had tertiary education. While 89% of the participants indicated Islam as their religion, 11% indicated Christianity as their religion. Additionally, 45.3% of the participants had meningitis for at least six months, while 54.7% had meningitis for more than six months.

Further, ten (10) women and ten (10) men caregivers (daughters, sons, wives, spouses, ex-wives, and other family members) were included in this study to understand better what they think of their older family members suffering from the disease, and how their perceptions affect the kind of care they provide to the patients. The age group of caregivers ranged from 25 years to 49 years. The income levels ranged from 10,000 naira to 100,000 naira. However, a few participants had no stable source of income. Below, we present the result in themes.

3.1. Causes and Symptoms of Meningitis

Eight of the 20 older adults suffering from meningitis believe that there is a possibility that either natural or supernatural factors could have caused their conditions. Specifically, 7 of the older adults believe that their conditions were caused by *Jinn*, witchcraft, and other supernatural forces. Their perceptions of disease symptoms are shaped by their understanding or belief about the causes. Most participants expressed that the primary symptom of the disease is a stiff neck. One participant said, "I just observed that my neck was stiff, and it is getting stiffer daily. So, when my daughter took me to the hospital, I was diagnosed with meningitis ... Even though I did not believe this because before I started feeling stiff neck, someone struck me with a big stick in my dream. I have every reason to believe that it is a spiritual attack. However, doctors have a different opinion,

which I totally disagreed with" (Patient/72 years old/Female/Wajibe District). Another participant stated:

I felt a loss of appetite. I vomited intermittently. I also feel stiffness in my waist consistently coupled with rising body temperature. My children and many people thought all the symptoms resulted from old age. However, I felt I was cursed by a friend whom I suspected that she was envious of me because my children were more successful compared to her children. I saw her in my dreams many times. I think she is behind my ailment. When my children took me to the hospital, the doctors said I had meningitis. That was not true because I know the person that is behind this. I have been explaining to my children, but they refused to believe what I was saying. (Patient/70 years old/Male/Gwanagaji District)

Similarly, some participants noted that they experience body weakness, high body temperature, and an inability to drink and eat. A participant stated:

I experienced general body weakness and loss of appetite. I thought it was due to old age. Many of my contemporaries have passed away. I thought maybe my time was approaching until one of my son's friends, a medical doctor, examined me and suspected that it could be meningitis. So, they took me to the hospital, where it was confirmed. But I still believe it is old age because I know how I feel. (Patient/78 years old/Female/Kaburu District)

Their responses indicate that participants linked the disease to the activities of *Jinn* and witchcraft. Almost all the participants believe in their existence and the dangers they can pose to humans, perhaps, especially as mentioned in the Holy *Qur'an*. They stated they believe that some bad *Jinn* cause deadly diseases to people, such as Meningitis, among others and suggest that Jinn might have possessed those who are suffering from Meningitis. In addition to *Jinn*, witchcraft was mentioned by some of the participants. Participants believe that witchcrafts are human creatures that spiritually devour other humans. According to a participant, "they suck blood until the victim gets sick and eventually dies. They often attack their victims in their dreams." Another participant expressed that "while I believe that Meningitis may be naturally caused by too much heat due to high temperature in this area, witches may complicate the conditions especially if the victims offended them or someone reported the victim to them; they may finish the victim off by complicating the illness" (Caregiver/35 years old/Female/Kaiama Township). However, most of the participants said that they do not know how the witches operate because it is spiritual.

A few of the participants noted that the disease could be caused by too much heat, especially in tropical and overcrowded places. One participant stated, "I understand that too much is associated with high body temperature, and this could culminate into stiff neck" (Caregiver/41 years old/male/Kaburu District). Others believed their conditions were caused by the scorching sunlight in their community (Kaiama). The climatic condition of the study setting (Kaima) is tropical, with high temperatures, heavy rainfall, and intense sunlight. Additionally, the researchers observed that most houses in the study setting do not have good ventilation. There are many traditional houses and rooms with small windows, and the older adults were found living in the rooms. One participant noted that the sun in Kaiama is intense and there is always heat at night except during the harmattan period. According to her, "we have been used to intense heat here at night because of the sun during the day. As part of the coping strategy, we normally stay or even sleep outside sometimes when it is unbearable" (Caregiver/40 years old/Female/Wajibe District). During the data collection, the researchers observed that older adults and their caregivers primarily used firewood to cook. The use of firewood and the associated air pollution—risk factors for meningitis—may have contributed to the hot condition expressed by the participants in the study.

3.2. Traditional Treatment and Management Methods of Meningitis

Most of the old adults suffering from meningitis, their caregivers, and traditional healers/religious leaders believe that biomedical treatments are most effective in diagnosing, treating, and managing the ailment. However, we found that the perception of the causes

of the disease determines the preferred treatment options. For instance, those who believed that supernatural forces caused their ailments preferred traditional and Islamic treatment methods. While most participants understood that Western treatment and management are effective and quick, they still believed that the spiritual aspects should be recognized in treatment options.

A participant stated:

Western practitioners only diagnose the peripheral causes and treat the symptoms; traditional healers (mostly herbalists) treat the root cause of the disease. (Caregiver/50/Male/Kaiama Township).

The participants' assertions were equally evident among the traditional healers interviewed for the study. The healers reported that, depending on the disease stage or the patients' conditions, they use herbs to cure Meningitis in some of their patients. Another healing technique the healers reported using is libation, whereby they may instruct some patients to offer a libation to appease the spirits. Participants who believed that Meningitis is the work of *Jinn* stated that the only treatment option is to drive the force of the *Jinn* out of the patient's body and not through medical treatments. One Islamic scholar, who is also a healer, explains, "If the disease is caused by the *Jinn, Ruqyah* will be performed on the patients. Some verses of the Holy Qur'an would be recited to drive the force of *Jinn* out of the body of the patients. This will be followed by other Islamic treatments". While commenting on how the disease can be diagnosed, he stressed that "if the case of Meningitis is brought to me, I would recite some verses in the Holy Qur'an and do some other prayers. After these prayers, the disease's cause(s) and remedies would be revealed to me through dreams". (Healer/48/Male/Gwanagaji District).

Some of the participants and their caregivers disagreed on treatment methods. Some caregivers believe the disease should not be handled or treated by traditional healers or Islamic scholars. They believe that the best treatment option for the disease is biomedical, and western medical practitioners should be allowed to treat and manage the conditions. According to a caregiver, "medical treatment is the best because they diagnose, manage the disease, and prescribe drugs to address the symptoms". Another caregiver noted:

I took my old mum to the hospital because I know that is the best way she can get treated for the disease, and it is working. She is getting better ... It is only doctors who can diagnose what we cannot see. While I understand that there are evil-doers and *Jinns*, I still prefer medical treatments to traditional treatment approaches. (Caregiver/38 years old/Male/Kaiama Township)

3.3. Family Caregivers for Older Patients Suffering from Meningitis

The importance of caregivers for older adults suffering from Meningitis and other diseases cannot be overemphasized. Most of the older adults in this study reported that Meningitis deteriorated their health and caused significant physical changes such as heart problems, partial paralysis, hearing and visual impairments, and cognitive and mental functioning. For example, a 78-year-old participant (patient) stated that "the disease has interfered with his social and personal activities. I cannot do many things again. I have been rendered useless by this disease and increased my level of dependency. I cannot do anything if I do not see people around me". Similarly, another participant expressed:

I cannot see clearly after I suffered from the disease. My hearing is not functioning as it used to ... I feel that something has gone wrong with my health. I cannot see and hear clearly ... As you see me, I am struggling a lot, and my children are not available to help. Although this is the time I need them most, I understand that they have to work too. (Patient/71 years old/Male/Wajibe District).

Noting the impact of meningitis on cognitive health and function, a participant stated: "my doctor confirmed to me that it affects my brain functioning. I overheard the doctor telling my oldest son that they need to be patient with me because my brain is malfunctioning due to the disease" (Patient/70/Male/Kaiama Township). Based on their interactions with some healthcare providers, the patients surmised that the disease could cause psy-

chological fragility. Some of the older adults reported phobia, a sense of insecurity, social isolation, and feeling of difference, and some were engaging in risky behavior. A participant said, "I think I am experiencing mental fatigue because what I could do in the past with ease, I cannot do them anymore . . . I do not know anything. I do not know what is happening around me . . . Everything is blank" (Patient/71 years old/Female/Gwanagaji). Considering the above consequences of the disease and the economic situation of older patients, family members, especially adult children, are expected to care for their sick older parents.

While most of the older adults interviewed mentioned that their older children periodically check on them, a few reported that they are enjoying full-time care and support from their adult children. One adult child commented that he is not opportune to provide necessary care to his sick mother because he works far away from home. He narrated:

My siblings are there despite not having much time because they are still in school. I am here in Lagos working. If I do not work, how will I pay the hospital bill? I must confess that I am not happy leaving my mum in such conditions, but what can I do? We need money too to take care of her. (Caregiver/ 30 years old/Male/Gwanagaji District)

Additional participants expressed the desire to care for their sick older parents. However, this desire is conflicted with the reality that they must work to be able to afford the required medications and other basic needs for their sick parent. One caregiver noted, "I would love to give my mother back what she gave me when I was young. Taking care of older adults is a way of expressing or showing appreciation and gratitude for what they did for us when we were young. I wanted to care for my ailing father but could not do this because of my job commitment. He has been down with Meningitis for some weeks now". This work-related concern was reiterated by some of the older adults regarding their daughters, who were culturally expected to care for their older parents over their sons. One of them stated, "my only daughter used to take care of me when I was sick, but now she is working with Guaranty Trust Bank. She no longer has time to take care of me anymore. She only comes when she closes and during the weekends." Some of the daughters in the study pointed out that marriage and its accompanying responsibilities adversely affect the care they can give to their sick older parents. For instance, a female caregiver stated:

I was supposed to have married a man from my hometown. If I had done that, I would have been able to take care of my sick mum. I married a man from Lokoja. Currently, I live in Lokoja, and my sick mum is in Kaiama. It is not easy to be going there to take care of her. I am only sending money to her. (Caregiver/32/Female/Lokoja).

It could be gleaned from the above that adult male children appear to be in a better position to provide adequate care for their ailing older parents, contrary to the popular trend where adult female children are considered as ultimate caregivers for ailing older parents. While adult female children might have married and busy with their marital and domestic responsibilities, adult male children may have more time than adult female children to provide adequate care for their ailing older parents. For instance, a male caregiver expressed that:

I take the responsibility of caring for our mother because all my female siblings are not around; they are in their various matrimonial homes outside our town. Since I am around and have my own house, I bring my mummy here, giving her every care she needs (Caregiver/ 45 years old/Male/Gwanagaji District).

Another participant noted:

It is not the responsibility of adult female children alone. It should be shared. She is my mother; I owe her that responsibility. I do not even allow my wife to do it for me. I take charge of every care she needs. I hope she will get back to her feet soon . . . I do not want to force my female siblings because they are also working. I do not want anything to affect their jobs" (Caregiver/71 years old/Male/Wajibe District).

These narratives suggest that adult male children take charge of their older parents' care, especially during their ailing periods. Additionally, despite the reality of not dwelling in the same home with their sick parents, most of the caregivers condemned the institution-

alization of older adults. They envisage that "institutionalization would further compound their [sick parents] health problems. Family is the best home where they can see their loved one . . . However, there would be a significant problem if family members are not available to provide care and love to them" (Caregiver/34/male/Kaburu District). Most of the participants stated that there should be support services to bolster family caregiving. These supportive services could include counseling services, meal programs, and others.

Another finding that illuminated caregivers' experiences is the psychological stress that most participants noted in their responses. Some of the caregivers mentioned psychological factors such as isolation from friends, frustration from care experience, and fear of economic instability. One participant stated:

I abandoned my job and personal life to give my sick mother everything she needed because of her sickness. However, I must tell you, living with her has been an enormous challenge for me. It appears that she is not appreciating the fact that I am giving her the necessary care she needs. I am not complaining because she is my mother. I understand that old age sometimes makes some older adults behave like a baby. I am trying to cope with her behaviors and actions toward me. (Caregiver/30/male/Kaiama Township)

4. Discussion

The current study examined factors influencing the understanding of Meningitis and care for older adults with Meningitis. The results show that some older adults suffering from Meningitis believe that supernatural forces caused their health problem. Spirits and witches were the most identified supernatural causes for Meningitis among the participants. This finding supports earlier studies [7,8,10] showing that people in hinterlands of sub-Saharan Africa are most likely to attribute supernatural causes to their ailments and misfortune. Despite some of the older adults suffering from Meningitis, their caregivers and traditional healers/religious leaders believing that biomedical treatments are most effective for diagnosing, treating, and managing Meningitis, they reported preference for traditional treatment options and consider it fundamental for addressing the root causes of the disease. Traditional healers and spiritual leaders in this study stated some of the traditional methods for addressing the root causes of the disease that they utilize for their patients.

The analysis revealed that some adult male children are responsible for caring for their ailing older parents, contrary to the existing knowledge or trend where adult female children appeared to have shouldered the responsibilities of caring for their sick and older parents. As shown in the results section, a male caregiver said, "I take the responsibility of taking care of our mother because all my female siblings are not around; they are in their various matrimonial homes outside our town. Since I am around and I have my own house, I bring my mummy here, and I'm giving her every care she needs" This finding suggests that some men are breaking caregiving stereotypes as they provide adequate care for their sick older mothers [18–21]. Additionally, the increasing proportion of women in the workforce has reduced the number of female caregivers for sick older adults. Traditionally, gender role expectations are on women to provide care. However, due to current economic situations and increased poverty rates among families with children, women are no longer housewives but workers [22].

The study also found that some participants felt happier to have given back what their parents once gave them when they were young. They viewed taking care of them as a sign of appreciation and gratitude for everything they had done in the past [21,23]. As shown in the results section, one caregiver noted, "I would love to give my mother back what she gave me when I was young. Taking care of older adults is a way of expressing or showing appreciation and gratitude for what they had done when they were young. I wanted to care for my ailing father but could not do this because of my job commitment. He has been down with Meningitis for some weeks now". They noted that their sick older parents' cares for them were an investment in the future. They deserve the returns on their investments in their old age [24]. While the caregivers are sometimes provoked or burdened by the

attitudes and behaviors of the sick older adults, the caregivers always find means of coping with them. Some even stressed that they try to make meaning out of such experiences because they understand their difficult situations and sufferings [25,26].

We observed demographic shifts and a reduction in the number of family caregivers willing to care for their sick older parents. This could have been caused by increased mobility as many caregivers have left homes searching for greener pastures. The analysis also revealed that despite caregiving's economic and social burden, the institutionalization of sick older adults is socially undesirable for families. As revealed in this study, this necessitated the need for family caregivers to care for and support older adult patients in their homes. Our finding supports prior research showing that sick older adults are more likely to prefer their families to geriatric homes [24,27]. We found a general belief that home care is the best way to provide care for older adults. This keeps them closer to their family and their loved ones. Most caregivers feel that caregiving is a filial expectation, and it is rewarding to care for and support older parents or family members suffering from ailments. However, family caregivers may experience some stressful situations. The caregivers may become isolated and frustrated or face abuse from sick older adults. These are likely to be frequent when the health conditions of sick older adults are deteriorating.

Surprisingly, we found that few the participants attributed their sickness to climate factors. The participants mentioned that their Meningitis can be attributed to excessive heat due to the weather conditions in their community. This is a crucial observation given the recent public health focus on the impact of climate change on health outcomes. Generally, there are few studies on the climate change-meningitis nexus. Even these studies were based on models predicting meningitis and marking and mapping risk areas [11,28] or systematic reviews of previous studies [29,30]. Some studies focused on why causes of the extension of the meningitis belt [11,30]. Other studies have examined the seasonality of the disease [31,32]. There is a paucity of research in Kwara State to comprehend the nature of the climate change-meningitis nexus from the perspective of community members through a perceptual study. Understanding community members' perceptions of epidemics are critical for designing effective communication and mitigation strategies and coping and adaptation strategies [33–35].

Our study is not without limitations. We experienced difficulties in locating some caregivers and working with their schedules. We made a series of contacts over several weeks to get those caregivers recruited for this study. However, we were able to recruit adequate caregivers and meet the point of saturation. Additionally, some ailing older people could not coherently respond to questions. We took time getting the necessary information from them and relied on their accompanying caregivers for clarification.

5. Conclusions

The study examined socio-cultural factors that impact the perception and management of Meningitis among older adults in Kwara State, Nigeria—an area with high incidence and mortality due to Meningitis. The findings revealed that the supernatural explanation for the illness is most common, often promoting the use of alternative methods for diagnosing and treating Meningitis. Additionally, Meningitis causes physical, cognitive, and psychological frailties and impairments among older patients, necessitating the need for family caregivers to care for and support the older adult patients in their homes. While most caregivers felt that it is rewarding and expected to care for and support the older parents or family members suffering from ailments, they stated that they could not do this because of their jobs and distance from their older adults. Providing caregiving services to sick older adults may be challenging, especially for older adults experiencing physical, cognitive, and psychological frailties and for their caregivers who must balance the duty to care for their parents with the necessity to work and provide for themselves and the older adults.

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References

1. Codjoe, S.N.; Nabie, V.A. Climate change and cerebrospinal meningitis in the Ghanaian meningitis belt. *Int. J. Environ. Res. Public Health* **2014**, *11*, 6923–6939. [CrossRef] [PubMed]
2. García-Pando, C.P.; Thomson, M.C.; Stanton, M.C.; Diggle, P.J.; Hopson, T.; Pandya, R.; Miller, R.L.; Hugonnet, S. Meningitis and climate: From science to practice. *Earth Perspect.* **2014**, *1*, 14. [CrossRef]
3. Nigeria Centre for Disease Control. Meningitis. In *NCDC Connect Centre.*; 2016. Available online: www.ncdc.gov.ng/diseases/factsheet/29 (accessed on 6 August 2022).
4. Nigeria Centre for Disease Control (NCDC). *Preparedness and Response to Cerebrospinal Meningitis Outbreaks: A Guide for Health Workers and Authorities in Nigeria*; Federal Ministry of Health: Abuja, Nigeria, 2017.
5. Kwara State Ministry of Health. *Records of 2017 Meningitis Outbreak in Kwara State*; Kwara State Ministry of Health: Ilorin, Nigeria, 2017.
6. Kwara State Ministry of Finance and Planning. *Fourth Quarter 2020 Budget Implementation Report*; Kwara State Ministry of Finance and Planning: Ilorin, Nigeria, 2017.
7. Williams, H.A.; Jones, C.O. A critical review of behavioral issues related to malaria control in sub-Saharan Africa: What contributions have social scientists made? *Soc. Sci. Med.* **2004**, *59*, 501–523. [CrossRef] [PubMed]
8. Hausmann Muela, S.; Muela Ribera, J.; Toomer, E.; Peeters Grietens, K. The PASS-model: A model for guiding health-seeking behavior and access to care research. *Malar. Rep.* **2012**, *2*, 10–4081. [CrossRef]
9. di Fazio, N.; Caporale, M.; Fazio, V.; Delogu, G.; Frati, P. Italian law no. 1/2021 on the subject of vaccination against COVID-19 in people with mental disabilities within the nursing homes. *Clin Ter.* **2021**, *172*, 414–419. [CrossRef]
10. O'Neill, S.; Gryseels, C.; Dierickx, S.; Mwesigwa, J.; Okebe, J.; d'Alessandro, U.; Grietens, K.P. Foul wind, spirits and witchcraft: Illness conceptions and health-seeking behaviour for malaria in the Gambia. *Malar. J.* **2015**, *14*, 167. [CrossRef]
11. Abdulsalaam, A. *Climate Influences on Infectious Diseases in Nigeria, West Africa*; University of Birmingham: Birmingham, UK, 2014.
12. Ogbo, A.; Lauretta, N.E.; Ukpere, W. Risk management and challenges of climate change in Nigeria. *Hum. Ecol.* **2013**, *41*, 221–235. [CrossRef]
13. Farauta, B.K.; Egbule, C.L.; Idrisa, Y.L.; Agu, V.C. *Climate Change and Adaptation Measures in Northern Nigeria: Empirical Situation and Policy Implications*; African Technology Policy Studies Network: Nairobi, Kenya, 2011.
14. Onu, F. *Mitigation and Adaptation Strategies to the Effects of Climate Change on the Environment and Agriculture in Nigeria*; Research Gate: Berlin, Germany, 2015.
15. National Bureau of Statistics (NBS). *Projected Population of Kwara State*; NBS: Ilorin, Nigeria, 2019.
16. Akande, T.M.; Monehin, J.O. Investigation of an Epidemic of Meningitis in Baruten Local Government Area of Kwara State, Nigeria. *African J. Clin. Exp. Microbiol.* **2014**, *5*, 247–251. [CrossRef]
17. Hughes, C. *Qualitative and Quantitative Approaches to Social Research*; University of Warwick: Coventry, UK, 2016.
18. Azuh, D.E.; Azuh, A.E.; Iweala, E.J.; Adeloye, D.; Akanbi, M.; Mordi, R.C. Factors influencing maternal mortality among rural communities in southwestern Nigeria. *Int. J. Womens Health* **2017**, *9*, 179. [CrossRef]
19. Baker, K.L.; Robertson, N.; Connelly, D. Men caring for wives or partners with dementia: Masculinity, strain and gain. *Aging Ment. Health* **2010**, *14*, 319–327. [CrossRef]
20. Almeida, L.; Azevedo, R.C.D.S.; Reiners, A.A.O.; Sudré, M.R.S. Care performed by family caregivers to dependent elderly, at home, within the context of the family health strategy. *Texto E Contexto Enferm.* **2012**, *21*, 543–548. [CrossRef]
21. Couto, A.M.D.; Caldas, C.P.; Castro, E.A.B.D. Family caregiver of older adults and Cultural Care in Nursing care. *Rev. Bras* **2018**, *71*, 959–966. [CrossRef] [PubMed]
22. Gutierrez, D.M.D.; Sousa, G.S.D.; Figueiredo, A.E.B.; Ribeiro, M.D.N.D.S.; Diniz, C.X.; Nobre, G.A.S.S. Subjective life experiences of family caregivers of dependent older adults. *Ciênc. Saúde Coletiva* **2021**, *26*, 47–56. [CrossRef] [PubMed]
23. Moreno-Cámara, S.; Palomino-Moral, P.Á.; Moral-Fernández, L.; Frias-Osuna, A.; del-Pino-Casado, R. Problems in the process of adapting to change among the family caregivers of elderly people with dementia. *Gac. Sanit.* **2016**, *30*, 201–207. [CrossRef]

24. Greenwood, N.; Smith, R. Motivations for being informal carers of people living with dementia: A systematic review of qualitative literature. *BMC Geriatr.* **2019**, *19*, 169. [CrossRef]
25. Araújo, M.G.D.O.; Dutra, M.O.M.; Freitas, C.C.S.L.; Guedes, T.G.; Souza, F.S.D.; Baptista, R.S. Caring for the carer: Quality of life and burden of female caregivers. *Rev. Bras* **2019**, *72*, 728–736. [CrossRef]
26. Givens, J.L.; Mezzacappa, C.; Heeren, T.; Yaffe, K.; Fredman, L. Depressive symptoms among dementia caregivers: Role of mediating factors. *Am. J. Geriatr. Psychiatry* **2014**, *22*, 481–488. [CrossRef]
27. Nwakasi, C.; De Medeiros, K.; Kafayat, M. Poverty, Domestic Violence or Both: A Case Study of Younger and Older Female Nigerian Dementia Caregivers. *Comp. Sociol.* **2021**, *20*, 615–632. [CrossRef]
28. Broutin, H.; Philippon, S.; Constantin de Magny, G.; Courel, M.F.; Sultan, B.; Guégan, J.F. Comparative study of meningitis dynamics across nine African countries: A global perspective. *Int. J. Health Geogr.* **2007**, *6*, 29. [CrossRef]
29. Obiakor, M.O. Weather variables and climatic influence on the epidemiology of cerebrospinal or Meningococcal Meningitis. *Asian J. Med. Pharm. Res.* **2011**, *3*, 1–10.
30. Savory, E.C.; Cuevas, L.E.; Yassin, M.A.; Hart, C.A.; Molesworth, A.M.; Thomson, M.C. Evaluation of the meningitis epidemics risk model in Africa. *Epidemiol. Infect.* **2006**, *134*, 1047–1051. [CrossRef] [PubMed]
31. de Chabalier, F.; Djingarey, M.H.; Hassane, A.; Chippaux, J.P. Meningitis seasonal pattern in Africa and detection of epidemics: A retrospective study in Niger, 1990–1998. Trans. R. Soc. *Trop. Med. Hyg.* **2000**, *94*, 664–668. [CrossRef] [PubMed]
32. Greenwood, B.M.; Bradley, A.K.; Wall, R.A. Meningococcal disease and season in sub-Saharan Africa. *Lancet* **1984**, *323*, 1339–1342. [CrossRef]
33. Heitz, C.; Spaeter, S.; Auzet, A.V.; Glatron, S. Local stakeholders' perception of muddy flood risk and implications for management approaches: A case study in Alsace (France). *Land Use Policy* **2009**, *26*, 443–451. [CrossRef]
34. Ho, M.C.; Shaw, D.; Lin, S.; Chiu, Y.C. How do disaster characteristics influence risk perception? *Risk Anal.* **2008**, *28*, 635–643. [CrossRef]
35. Hunter, L.M.; Strife, S.; Twine, W. Environmental perceptions of rural South African residents: The complex nature of environmental concern. *Soc. Nat. Resour.* **2010**, *23*, 525–541. [CrossRef]