

Perceptions on preeclampsia and eclampsia among older women in rural southwestern Uganda

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Research

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Abstract

Background

Eclampsia is among the leading causes of maternal mortality. It is a serious hypertensive (HT) complication of pregnancy and increases the risk of cardiovascular disease (CVD) in later life. Pregnancy-related HT complications predispose to chronic hypertension and premature heart attacks. A significant proportion of women with preeclampsia/eclampsia does not reach the formal healthcare system or arrive too late because of certain African cultural beliefs about the condition. The older senior women in the community play a significant role in decision making regarding where mothers should maternal health care. Therefore, the purpose of this study was to explore the perceptions of older women regarding the manifestation of, risk factors and possible causes of preeclampsia/eclampsia.

Methods

We conducted a qualitative study in a rural area in southwestern Uganda. The key informants were older women including community elders, village health team members and traditional birth attendants who were believed to hold local knowledge and influence on birth and delivery. We purposively selected key informants (KI) and data were collected till we reached saturation point. We analyzed data using a combined inductive and deductive approach to identify themes. Analysis was completed using N-Vivo version 12.

Results

We interviewed 20 key informants. Four themes emerged namely: traditional local naming, causes and risk factors, remedies, and effects of preeclampsia/eclampsia. There was no identifiable local name from the interviews. Women carried several myths regarding the cause and these included little blood, witchcraft, stress from marital tension and ghost attacks. The remedies identified included herbal treatment, prayers and corrective nutrition. Women were generally aware of the outcomes of eclampsia.

Conclusion

Eclampsia is associated with significant myths and misconceptions in this rural community. We recommend interventions to increase awareness and dispel the myths and misconceptions regarding eclampsia in the community.

Introduction

Cardiovascular disease (CVD) is a leading cause of death and in sub Saharan Africa; women are more likely to die of heart disease compared to the men. [1, 2] Overall, incidence of heart disease and other non-

communicable diseases is on the rise in resource limited settings. [3] Prior history of pre-eclampsia or eclampsia increases cardiovascular risk later in life. [4, 5] Substantial epidemiological data reveal that pregnancy-related hypertensive complications are associated with a predisposition to chronic hypertension, premature heart attacks, strokes, and renal complications [6]. Women diagnosed with hypertensive complications during pregnancy have a two-fold increased risk of future ischemic heart disease and stroke [6–8].

Preeclampsia and eclampsia are among the top three causes of maternal mortality worldwide and the incidence remains high in resource limited settings, although it has reduced in resource rich countries. [9] In sub-Saharan Africa, about one third of the mothers with eclampsia will experience a still birth and eclampsia is responsible for almost 20% of maternal mortality and disability. [10] A recent study in south western Uganda showed that most of the maternal deaths were related to late referrals. [11] Rural women often experience delays to make a decision to seek care, delay to reach place of care and delay in receiving appropriate and adequate care. [12] A critical challenge for referral may involve the community perceptions regarding decisions to adhere to referrals to deliver at higher level health facilities.

Studies conducted in Asia and West Africa suggest there is a variety of community perceptions that may be barriers for women with pre-eclampsia to seek care and eventually deliver at a health facility.[13–15] The clinical presentation of preeclampsia and eclampsia may not be well understood by some of the communities, and is often confused with other conditions and some communities believe local home remedies may cure them. [13] Some communities associate preeclampsia/eclampsia with witchcraft. [16] These alternative explanations may lead to late care seeking for mothers with pre-eclampsia and this is often further compounded by weaknesses in the existing health system that prevail in low resource settings. [17]

Older women in the communities and families play a significant role and decision on where mothers will deliver. [18, 19] The perceptions they carry about certain health conditions may influence pregnant women's decision to seek care or deliver in health facilities. [20] There is limited data on studies to explore the perceptions of pre-eclampsia/eclampsia in resource limited settings with poor access to health care. Therefore, the purpose of this study was to explore the perceptions of older community women regarding preeclampsia/eclampsia in rural Uganda. We hypothesize that these perceptions may be driven by cultural beliefs, myths and misconceptions which may contribute to staying away or delaying in seeking care by women with pre-eclampsia in rural south Western Uganda.

Methods

Study design and setting

We conducted a qualitative study in Kabuyanda subcounty, in Isingiro district of southwestern Uganda, a rural remote location. The terrain in this district is very hilly, making transportation very challenging. The sub-county is served by two health center II (parish level health facilities), namely Rwakakwenda and Rwamwijuka. The two health facilities do not offer antenatal care services. Most women in this sub-

county are referred to Kabuyanda HC IV (county level health facility) which is relatively far away, approximately 30minute to 1 hour journey on a motorcycle taxi. Kabuyanda HC IV refers cases they are not able to handle to Mbarara Regional Referral Hospital, a journey that takes well over 1 hour. By the time women from this community arrive at the biggest regional referral Hospital for basic and comprehensive emergency services, they are often very ill with complications.

According to Uganda's health care delivery system, a HC II does not provide ANC and birthing services. Pregnant women in this locality may be at a relatively higher risk of developing undiagnosed pre-eclampsia due to difficulty in accessing antenatal blood pressure check-ups. This study area was chosen because Mbarara Regional referral hospital receives a significant proportion of mothers from this region, often referred very late with eclampsia.

Study population and sampling

The key informants were older women aged 45 years or above were documented. These were chosen because they are believed to be the custodians of traditional beliefs and practices that may affect health seeking behavior. They consisted of traditional birth attendants (TBAs), village health team (VHT) members and older women of higher parity; outside reproductive age. Traditional birth attendants are usually older women who have learned to deliver babies, usually from an older woman and run maternity service for the community from their homes. Some of them have received some formal training through workshops on how to perform safe deliveries and referrals. Village health team consists of lay persons usually 3 or 4 per village, nominated in each village and tasked with overseeing and mobilizing for health related activities in the village. The study was conducted in the 5 parishes of the sub-county and for each parish, we selected 4 key informant interviews. Data were collected till saturation point was reached.

Data collection tools

We designed an interview guide to collect data. The interview guide had sections on demographic characteristics of the participants. Questions were designed based on the literature reviewed and included open – ended questions. We described preeclampsia and eclampsia as they present in pregnancy and asked participants to mention the local name for disease, what they thought was the cause and risk factors and how the condition should be managed. We used open ended questions to obtain this information and also what the participants thought were the short term and long term effects of eclampsia on pregnant women.

We recruited three experienced research assistants (RAs) and trained them to administer the interview guide. One of the co-authors (HN) worked with the RAs during the training and conducted role plays with the tools to ensure there was clear understanding of the questions. The research assistants were exposed to the study tools to get acquainted with them in the two-day training. We conducted pilot interviews with 4 older women in a contiguous parish, not the study parish, to test the tool in a similar setting to ensure the questions were valid. We made a few adjustments following the pilot.

Data collection and analysis

Data were collected over a 2-week period in April 2018. The RAs collected data with the supervision of one of the co-authors (HN). We obtained an introductory letter from the Assistant District Health Officer and presented this to the parish mobilisers as our port of community entry. These mobilizers assisted in identification of the eligible participants and the RAs approached them for their participation. The interviews were conducted in the local language, *Runyankore*, and in private rooms at the parish headquarters. Data collection was stopped when the point of saturation was reached. Interviews lasted between 30-45 minutes and were audio recorded. At the end of each day, two co-authors (HN and GR) listened to the audios. The RAs transcribed the audio material after a day's work. .

The transcripts were translated into English by a native *Runyankore* speaker. Two co-authors (HN and FM) are fluent in the local language and listened to all the audios to ensure they corresponded with the transcriptions. The corresponding author read and re-read the transcripts to ensure they were complete. We used a combined inductive and deductive thematic approach to the data analysis. We reviewed existing studies to inform the potential emerging themes but also kept the analysis open to allow new themes driven by the data to emerge. Data were coded by two team separately (HN and GR, FM and FB) and the teams reviewed the emerging themes to reconcile any differences. We used NVIVO software version 12 to analyze the data.

Ethical considerations

We obtained ethical approval from the Mbarara University of Science and Technology Research Ethics Committee and the final approval was issued by the Uganda National Council for Science and Technology. Administrative clearance was granted by the Isingiro Assistant District Health Officer (ADHO) who gave us introductory letters to the local authorities permitting data collection in the villages of the county. We explained the details of the study procedures to the participants, and once they agreed to participate, we obtained written informed consent. The data were anonymous and were accessible to only the study team.

Results

We enrolled 20 participants and reached data saturation. Majority were aged between 45 and 49 years, were married, belonged to the Kiga tribe and the details of the socio-demographic characteristics are shown in Table 1 below. Most of the women were either members of the village health team or traditional birth attendants. Sixty percent of them did not have a formal education.

Table 1: Demographic characteristics for participants n=20 older women in Kabuyanda, Isingiro district, western Uganda

Variable	n (%)
Age	
65 and over	2 (10)
60-64	4 (20)
55-59	4 (20)
50-54	3 (15)
45-49	7 (35)
Marital status	
Married	18 (90)
Widow	2 (10)
Tribe	
Mukiga	19 (95)
Nyankore	1 (5)
Parity	
0-5	9 (45)
6-10	9 (45)
11-15	2 (10)
Education level	
None	12 (60)
Lower primary	6 (30)
Lower secondary	2 (10)
Occupation	
Traditional Birth Attendant	8 (40)
Village Health Team	9(45)
Peasant farmer	2 (10)
Chairperson for women committee	1 (5)

Emerging themes

Four themes emerged from our analysis namely; local name, causes and risk factors, remedies, and effects of preeclampsia/eclampsia and these are presented in Table 2 below. The theme local name emerged from the subthemes of no identifiable local name and a couple of other conditions namely meningitis and epilepsy which were mistakenly confused for pre-eclampsia. Causes and risk factors emerged from multiple pregnancy, 'little' blood, witchcraft, stress from marital tension, ghost attack, drinking alcohol, having a big baby, poor feeding and a disease of the well-to-do cited as potential causes. The remedies emerged from the consistent mention of herbal treatment, prayers and counseling, corrective nutrition, appeasing the dead, 'good treatment' by spouse and seek medical help as potential solutions cited by the majority. The effects emerged from the mention of premature delivery, caesarian section delivery and death as potential consequences.

Table 2: Emerging themes on perceptions of pre-eclampsia among older women in Isingiro, south-western Uganda

Themes	Sub-themes
Local name	No local name <i>Obuzimba bw'enda y'abarongo</i> <i>Omuraramo, ensimbo, amakiro</i>
Causes and risk factors	'Little' blood Poor feeding or food insecurity Drinking alcohol Stress: Marital tension and poverty Witchcraft Big baby A disease of the well-to-do Multiple pregnancy High blood pressure
Remedies	Herbal treatment Prayers and Counseling Corrective nutrition Appease the dead "Good treatment" by spouse Seek medical help at the hospital
Effects	Premature delivery Still birth Caesarian section delivery Death

Local name

No local name

The *Baganda* tribe in central Uganda and *Banyakitara* tribes in southwestern Uganda call pre-eclampsia '*amakilo* and *amakiro*' respectively but none of these KIs we interviewed seemed to know this name.

'I am really not sure of the name for a disease that presents that way; besides I have never had those symptoms in combination but I see women with twin pregnancies having swollen feet' 47 year VHT Member , mother of 4.

Obuzimba bw'enda y'abarongo

Instead, some KI seemed to have coined other names such as "*Obuzimba bwe'enda y'abarongo*" translated as 'swelling of the body due to twin pregnancy". The KIs seemed to suggest that the body swelling in preeclampsia was due to weight gain that happens when a woman is carrying a twin pregnancy.

"You can tell that a woman has multiple pregnancies if you see her body swollen up. But usually in the morning, the swelling has reduced but because the babies she is carrying are heavy, then her body swells up again, the swelling is there all the time but more pronounced during the day when it is difficult for her legs to carry her pregnancy and do chores as well.

So I think this disease that presents this way together with body swelling is Obuzimba bw'enda y'abarongo MS010, 73-year old widow , mother of 7.

Ensimbo

Ensimbo, translated as 'epilepsy' was confused with pre-eclampsia by some of the women. Participants said that fits/convulsions in pregnancy are due to epilepsy especially if it has been pre-existing before the woman got pregnant.

'Fitting in pregnancy is caused by [ensimbo]. It's a bad omen to suffer from epilepsy. When someone is convulsing because of epilepsy, we run away from them because should they pass flatus when you are near them, you catch it too. It's terrible, you don't want your relative to have epilepsy of all diseases.' N.F 008, 48 year old, mother of 6, Peasant

Omuraramo

'Omuraramo, translated as 'meningitis' was considered to be equivalent to the symptoms of pre-eclampsia by some women in the KI. The fits/convulsions that manifest in eclampsia were perceived as meningitis by the participants.

'When I was growing up there was an outbreak of omuraramo and sometimes patients would fit. It was a killer disease and they would remove fluid from their back. Your patient would never make it after this extraction of fluid from the back. I think a pregnant woman fitting has caught omuraramo [meningitis] and is destined to die with her pregnancy'. MS010, 73-year old, TBA widow, mother of 7

Causes and risk factors

Participants thought that the convulsions that occur in this disease can be caused by *omuraramo* or *ensimbo* literally meaning meningitis and epilepsy respectively in the local Runyakitara dialect as already indicated under the names the locals have identified for the condition.

'Those symptoms could be caused by omuraramo [meningitis] and ensimbo [epilepsy] but now you see the confusion is that even men can have it and can fit.' 44 year old TBA , mother of 3.

Little blood

The respondents associated the oedema or body swelling seen in preeclampsia and eclampsia patients with having anemia or 'little blood' in the pregnant woman's body as they mentioned. Respondents mentioned that a poor diet dominated by *matooke* [steamed bananas] and no beans or greens or even millet porridge was blamed for the 'little blood' in women.

'When you eat poorly, especially when you can't find foods that give blood, then your whole body will swell.' KR-004,57years TBA, mother of 5.

Poor feeding/food insecurity

Respondents mentioned that poor feeding resulting from a pregnant woman not being able to find foods rich in nutrients such as iron, not having enough to eat in general due to lack of money to buy the necessary food stuffs was seen as a cause of having 'little blood' in the body and body swelling in pregnant women.

'I think the person is weak in this case and does not have enough blood because of poor feeding, you know village life where people don't have money to buy foods rich in iron like the health worker tells us of meat and fish, so this may be the cause for the swelling in pregnant women, then the stress will bring about headache. As you know, our poor way of living in the village may have brought about this,' KR 001,45 year old VHT member, mother of 6.

This was echoed by other participants who thought not taking the right foods is solely responsible for body swellings in pregnant women.

'I thought the pregnancy was big and also the woman was not having a balanced diet. At times the pregnancy restricts one and they have no appetite. A woman may end up eating matooke with no salt, they don't want beans or other times they depend on only drinking water. Such a person may lack blood and end up getting swollen.' 56 year old, mother of 5; women's leader

'The challenge is that some pregnant women are not feeding well or have other diseases that are left untreated and can swell up or even fit and so they will blame pregnancy when it isn't the case' MS 005 45 year old VHT , mother of 4.

Ghost attack

There was a common belief in spirits and ghosts. Some respondents thought the fits were linked to a ghost attack from recent demise of a close relative especially if the pregnant woman was not at peace or was loved too much by the deceased.

'Some relatives don't die completely. If at the time of demise you had a misunderstanding or they loved you too much and are not resting in peace, they may strangle you so that you die too.' MS010, 73-year old widow, mother of 7.

Alcohol intake

Most participants thought that pregnant women who drink locally brewed beer can have swollen bodies.

'Yes, there are some but they also don't behave in a normal way. At times when they get pregnant they will work very hard to earn money only to spend it on alcohol. I am always telling them to change their ways. One cannot spend the whole day working and later buy zebra [an alcoholic drink, therefore they will not eat good food say beans and greens to get more strength. Alcohol makes them swell up when they are pregnant. There is a particular woman I usually tell that she will be embarrassed when she goes to hospital for checkup and the doctors find alcohol contents in her body. She works hard every day for the money and after getting it, she drinks alcohol, she doesn't eat well and in the end her body swells up.' MS 003, 79-year elderly woman, mother of 7.

Stress from marital tension

Some participants thought that having abusive spouses can be very stressful giving one a headache especially when one is pregnancy. Some women are in polygamous relationships and they thought that all of this, coupled with poverty where they are unable to have enough iron rich food, nagging from co-wives can raise one's blood pressure.

'For us we always think that she has a lot of thoughts like when the woman is unstable at home, like the man doesn't bring for her home necessities and when she encounters such problems , they can cause a headache and pressure [high blood pressure].' N.F 008, 48 year old , mother of 6, Peasant

"Sometimes you have constant stress from friends and your husband, especially polygamous marriages; your blood pressure is bound to rise giving you a headache." N.F 008, 48 year old , mother of 6, Peasant

Witchcraft

Several respondents believe the illness may be a result of witchcraft especially from persons that do not wish the pregnant woman well.

"Not everyone is happy for you when you get pregnant, for some reason, someone can bewitch you and you fit, a co-wife for example could wish you dead. When you are pregnant, she is already imagining that your child will compete for property with her children" 45 year old VHT, mother of 5.

A disease of the well-to-do

Although this was not commonly mentioned, some participants thought that body swelling during pregnancy was a result of good feeding. They thought this was especially common for those who have the money to buy the food they crave.

'Some fat women whose husbands feed them well are the ones I have seen get convulsions in this village each time they are pregnant.' KR 019.

Multiple Pregnancies

Multiple pregnancies are associated with a certain level of prestige but seemed to be associated with complications such as body swelling and anemia.

'They are not many though I usually see some women with swollen hands, face and legs and I always think it is because one is expecting twins and at times we joke about it.' KR 001, 45 year old VHT member, mother of 6.

Big baby

Respondents believed that body swelling was predictive of the size of the baby the mother was carrying, and some respondents seemed to suggest that the more the swelling, the bigger the baby would be.

"Yes, I have seen them and they can get swollen even if they feed on a balanced diet. There is a medical person in town who used to eat well but had those symptoms of headache, unclear vision and legs would usually swell. I think when the child becomes very fat while still in the abdomen then the legs get swollen" 45 year old mother of 3 and VHT coordinator

'We say that a woman swelling during pregnancy means that she has a big baby who is demanding a lot of blood hence the swelling.' 56 year old, women's leader and mother of 5

High blood pressure

Majority of the respondents seemed to correctly relate having high blood pressure with symptoms of pre-eclampsia and eclampsia as evidence in the narratives from a VHT member in the community.

'The signs that she has, the woman who has [high blood] pressure, she has severe headache, she tells you that the heart pumps a lot like it is about to fly out of the chest, and those are the only ones.'

'It is a woman with high blood pressure that presents that way. I don't do much with such a woman, I just give her a referral letter to hospital immediately. There is nothing more I can do really because am not empowered to help her.' N.F 009 45 year, VHT coordinator, mother of 4

Remedies

Participants had different views on how a client with preeclampsia /eclampsia should be managed. The recommendations ranged from herbal medical treatment to referral to the formal health care facilities

Herbal treatment

Some of the participant said that when getting medical treatment from the hospital is difficult, they resort to some herbal concoctions. The respondents believed that these had the ability to raise their body blood levels and therefore the swelling would reduce.

'The woman goes to a health facility and gets some tablets but these may not be very helpful most of the time. At times they go to Kabuyanda [county level] health center and are not helped so they are advised to seek further medical treatment in a hospital. But they do not go because they have no money. So they resort to using herbs. ...they can use a red herbal concoction that increases their blood levels' KR 001, a 45 year old VHT member, Para 6+2.

Appeasing the dead

Some respondents thought convulsions in a pregnant woman are linked to a ghost attack from recent loss of a close relative. They mentioned that the traditional healer would appease the dead by performing certain rituals.

'The services of a traditional healer should be sought to appease the dead. I don't know what the traditional healer does but I know that he should be performing some rituals to appease the dead' MS010, 73-year old widow, retired TBA, mother of 7

Prayers and counseling

Some respondents believed in spiritual healing as a remedy for eclampsia. Although this was not common, the few respondents that suggested so were very passionate about the potential effectiveness of the remedy.

'For me I pray for them and counsel them.' MS 003, 79-year elderly woman, mother of 7.

'Seeing a counselor can help her to be peaceful since they have troubles. She can join a prayer group and pray for peace in her home to save her the stresses of daily life.' MS011 , 60 year old farmer, mother of 7.

Corrective nutrition

Respondents alluded to a balanced diet for the participants as being essential, although their understanding of a balanced diet meant eating beans, green vegetables, sweet potatoes, and millet porridge to correct the anaemia. They believe that this type of diet will correct the dizziness and body swelling and prevent the convulsions.

'At times the pregnancy is very demanding on the woman to carry but also lack of enough blood. When they are swollen up, they are encouraged to feed well so that they can get enough blood like feeding on liver can bring back the blood and the body swelling will slowly go away. They say they get swollen and when they visit the hospital they are advised on how to feed. Enough blood prevents them from fitting as well.' N.F 008 VHT, mother of 6.

'Good treatment' by spouse

Some respondents believed that symptoms related to eclampsia were because the woman was being mistreated by her husband. They believed that if the husband treated her better

and took good care of her, these symptoms would resolve or would not appear in the first place.

'Loving each other and when a woman feels any pain the husband hurries to attend to her, helps a lot. Also a husband who treats his wife well saves her stress that can cause her [high blood] pressure.' VHT member, 65 years old

Seek medical help

Although some respondents were proponents of local herbal remedies, some strongly discouraged and recommended visit to the health facility.

'Long time ago herbs used to help in every illness of our forefathers but nowadays they tell you they take but the herbs are of no help. So they are better off going to hospital for treatment because herbs of these days no longer help.' MS 005 45 year old VHT, mother of 4.

'You advise her to always eat and drink eat fruits and [dodo] to raise blood levels .it helps one's vision to be stable and more so tell them to go to hospital for more advice.' MS010, 73-year old widow, retired TBA, mother of 7

Effects of preeclampsia and eclampsia

Stillbirth

Participants were aware of the potential consequences of the symptoms of eclampsia. They mentioned that the condition could lead to death of the baby in utero or even the mother. These potential adverse outcomes were mentioned by the majority of respondents.

'The person may die if not referred to hospital. If the woman does not die, her baby will die in the womb. How can the baby survive with a mother that has no blood?' N.F 009 45 year , VHT coordinator, mother of 4.

Premature birth

Most of the participants linked the signs and symptoms of preeclampsia to little blood that causes body swelling .They said that such women can have premature deliveries.

'Maybe the baby can become very weak or some women get swollen legs, little blood and this can sometimes lead to premature births. That is how we see them.' MS 011, 60-year old farmer, mother of 7

Caesarian Section delivery

Participants thought that a woman with symptoms of preeclampsia/eclampsia becomes very weak and may get difficult deliveries. They mentioned that such women are likely to be surgically operated to remove the baby.

'No, it's not that they get all that well, they remain weak and at the time of giving birth they may still be weak, they may fail to push the baby and are delivered by caesarian section.' KR 001, 45 year old VHT member, mother of 6.

'Such women remain weak, may fail to push the baby at birth and the health workers have a fear that these women can collapse and therefore they decide to operate them.' N.F 008 Peasant, mother of 6

Death

Participants acknowledged that preeclampsia/eclampsia is a serious illness and life threatening. They agreed that if not attended to, the disease had some grave consequences including the potential to cause death.

'I think such a person should get help from a health facility but because we are in village at times when a woman is in such a condition and you tell her to go to hospital, their husbands, don't mind so they don't care, in such a situation, the woman remains in that poor state of health and at times she dies.' KR 004 , 57 year old TBA, Mother of 7.

Discussion

Our data from rural southwestern Uganda shows that the older women of influence we engaged in the interviews hold significant myths and misconceptions about eclampsia. Although, a distinct local name did not emerge, respondents related the condition to other medical conditions namely epilepsy and meningitis due to a shared symptom of convulsions. The women described various factors that they believe may be causes and remedies for the condition, most of which had no direct relation with eclampsia. However, majority of the women understood that the condition was related to blood pressure and was also potentially fatal.

We were surprised that a clear local name for eclampsia did not emerge. The descriptions women gave were made in reference to other diseases namely, meningitis and epilepsy. Anecdotal evidence from midwives practicing in central and other places in southwestern Uganda associate eclampsia to pregnant woman who have had an extra marital affair. In these places, eclampsia is referred to as '*amakilo*' and '*amakiro*' in central and southwestern Uganda respectively. However, data from a study in rural Nigeria. [14] and Pakistan [21] support our finding that a local name may not necessarily exist. In the Nigerian study done among the *Yoruba* tribe, respondents described the condition as the epilepsy of pregnancy, similar to what participants in our study did.

Our data show that when women were asked about causes and risk factors for eclampsia, they revealed a high level of misconception regarding the condition. The women suggested several potential causes for eclampsia and these included anemia or having little blood, carrying a very big baby, poor feeding, witchcraft and even marital stress. It is clear the misconceptions are common face in sub Saharan Africa.

In a qualitative study in Nigeria [14], women also suggested that marital conflict, abusive husbands and strained relationships were responsible for eclampsia.

In a similar study in Mozambique designed to examine community knowledge about preeclampsia, women also believed that it is caused by stress, worry and mistreatment from in-laws. [16] In this Mozambican study, extreme suggestions such as snakes living inside the woman's body were fronted as possible explanations. Witchcraft was mentioned as a possible cause in our study and the Mozambican one. Despite these prevailing misconceptions, some respondents correctly associated eclampsia with high blood pressure.

There were several misconceptions regarding the remedies for preeclampsia. The one most participants easily turned to was herbal remedies. Herbal remedies are common throughout sub Saharan Africa as a first mode of treatment. The concern is these remedies provide false hope and may cause delay in seeking treatment. One study in Nigeria [22] found that use of herbs was associated with severe eclampsia and preeclampsia. Women also suggested prayer a potential remedy. While there are strong religious beliefs in sub Saharan Africa, these may contribute to the delay in seeking care or the first delay. [23, 24]

Most of the respondents were aware of the dangers of eclampsia and expressed fear for maternal deaths as the ultimate consequence of eclampsia. This awareness of the dangers of eclampsia provides a window of opportunity for interventions to target even the wider challenge of the misconceptions. The health belief model has been used to tackle misconceptions and poor health care seeking behaviors in Nigeria. [25] The perceived susceptibility to still birth and death among mothers with eclampsia as reported by these older influential women in our study provide a valid basis for interventions. Community health workers provide a potential first line of intervention as they have been shown to have sufficient knowledge and ability to identify women with preeclampsia and administer initial treatment. [26-28] Interventions will also need to focus on demystifying the prevalent myths and promote a more scientific understanding of the condition and eventually this knowledge could serve as cues for action.

Our study has important strengths. Although several studies have been conducted on this subject, our study focuses on the older senior women who play a significant role in the health care seeking behavior of pregnant women. Second, our study is community based in a rural population. The data collected provides a strong grip for interventions to improve outcomes of mothers with eclampsia. These respondents are the custodians of local knowledge and the power to influence belief and practice of younger women and eventually their health seeking behavior. Third, our study reveals some unique myths and misconceptions that should be explored in other communities as well. There are some limitations to our study. This was a qualitative study among only 20 participants, and therefore the findings may not be generalizable to other populations such as women in urban areas.

In conclusion, our study in rural southwestern Uganda has shown that there is no identifiable local name for preeclampsia. There is a plethora of myths surrounds the possible causes and risk factors and some of these myths may negatively influence health care seeking behavior. Women were generally aware of

the potential danger of preeclampsia. There is a great necessity to create campaigns to raise knowledge and dispel the myths surrounding preeclampsia.

List Of Abbreviations

ADHO	Assistant District Health Officer
ANC	Antenatal Clinic/care
HC	Health Centre
MRRH	Mbarara Regional Referral Hospital
MURTI	Mbarara University Research Training Initiative
REC	Research Ethics Committee
TBA	Traditional Birth Attendant
UNCST	Uganda National Council for Science and Technology
VHT	Village Health Team

Declarations

Ethical approval and consent to participate

The study was approved by the Mbarara University of Science and Technology Research Ethics Committee (REC) and the Uganda National Council for Science and Technology (UNCST).

Consent to publish: Not applicable

Availability of data and materials: These are available from corresponding author upon reasonable request and with approval from the Research Ethics committee.

Competing interests

The authors declare that they have no competing interests.

Author contributions

HN, GR and FB conceived and designed the study. HN supervised the data collection. HN, GR and FM participated in data collection. All authors participated in reading the transcripts and data analysis and verification. HN made the first draft of the manuscript. All authors read, revised and approved the final version of the manuscript.

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