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Qualitative assessment of knowledge, determinants and the consequences of obstetric fistula among patients and caregivers in a tertiary hospital in North Central Nigeria

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Abstract

Introduction: Obstetric fistula is an entirely preventable condition that can be caused by obstructed labour, caesarean section, advanced cervical cancer, and uterine rupture. It is commonly found among poor and illiterate rural women. This study assessed the knowledge of obstetric fistula among patients and relatives, the determinants of maternal healthcare utilization and the health, psychological and economic consequences of obstetric fistula.
Methods: This qualitative study was conducted in the Fistula Centre of Bingham University Teaching Hospital, Jos, Plateau State. This study utilized Focus Group Discussions among 40 patients and relatives of obstetric fistula patients.
Results: Causes of obstetric fistula as stated by most respondents include prolonged labour, home deliveries, caesarean section, delay in seeking care, early parity, and high parity. Relatives stated that prevention of obstetric fistula can be achieved by creation of referral services to bigger hospitals in complicated deliveries, health education/empowerment of the girl child, encouragement of spouses and family members to give support for ANC and delivery services. A fifth of respondents do not utilize maternal health services due to lack of transportation, and all respondent needed to inform their spouse before seeking maternal care. Patients suffered significant health, psychosocial and economic sequalae like isolation and rejection, shame, depression, divorce, low income, and other morbidities.
Conclusion: Perceived possible causes of obstetric fistula were prolonged labour, home deliveries, caesarean section, delay in seeking care, early parity and high parity. Patients had Significant health, psychosocial and economic sequalae like isolation and rejection, shame, depression, divorce, low income and other morbidities are possible consequences of the condition.

Keywords: Obstetric fistula, knowledge, determinants, consequences, maternal health, utilization.

Introduction

Historically, the first acknowledgments of obstetric fistula date back to various Egyptian documents known as the papyri [1]. These documents, including rare medical engravings, were found at the entrance of a tomb located in the necropolis of Saqquarah, Egypt. The tomb belonged to an unknown physician who lived during the 6th dynasty. The translation of this document became legible with the invention of the Rosetta stone in 1799.[1] Interestingly, vesicovaginal fistula was found in the mummy of Queen Henhenit, the wife of 11th dynasty Pharaoh Mentuhotep II, who reigned about 2050 BC. Obstetric fistula was also described in ancient Hindu writings on medicine. In modern medicine, James Marion Sims, in 1852 in Alabama, developed a surgical procedure for fistula and it remains virtually the same today. Sims worked at the New York Women's Hospital, currently the site of the Waldorf Astoria Hotel in New York City. Sims then dedicated the next 4 years to developing surgical solutions to this condition. Using slave women as his

subjects, he was able to successfully repair a vesicovaginal fistula (VVF) in 1849 [1,2].

Obstetric fistula has been an age long challenge of maternal health in developing countries. [3] It seems to affect a certain sociodemographic group, typically common among poor, illiterate rural women within reproductive age group.[4] Other common factors contributing to development of the disease include illiteracy, poverty, ignorance, restriction of women's movement, non-permission from husband, and transportation [4-6].

Obstetric fistula is both physically and socially disabling to women. [5] [7] [8]. It presents huge consequences to families and communities and women face many challenges when they develop the disease. The condition is entirely preventable and mainly caused obstructed labour. Other common causes include caesarean section, advanced cervical cancer, uterine rupture, and gishiri cut.[4]. In the developing world, obstetric fistula is almost always the result of obstructed labour. During prolonged obstructed labour the soft tissues of the pelvis are compressed between the descending baby's head and the mother's pelvic bone. [10,11,17] Lack of blood flow to these tissues leads to necrosis and eventually a hole forming between the mother's vagina and bladder (vesicovaginal), vagina and rectum (rectovaginal), or both. This leaves the affected woman with urinary or faecal incontinence, or both.[7,8,12]. Such fistulas can be due to cephalopelvic disproportion, whereby the baby's head presents with diameters whose dimensions are larger than the proportions of the pelvic canal through which it passes. This abnormality is associated with delays in seeking or receiving appropriate emergency obstetric care.[5,8,13].

Early intervention to relieve obstructed labour will restore perfusion to these tissues and, in most cases, will prevent fistula. The results of fistula are devastating. In nearly every case the baby is stillborn. Women and girls with fistula are unable to stay dry. [14]. They smell of urine or faeces and are shunned by the community and, at times, even by their own husbands and families. They remain hidden, shamed, and forgotten[15-17]. They face enormous health, psychological, economic and social consequences. [16-17].

Obstetric fistula has been eradicated in nearly all industrialised countries due to marked improvements in obstetric care.[18-190]. But, in the developing world this disease continues to cause untold suffering and pain in millions of women of reproductive age. Studies have shown that its very existence is the result of gross societal and institutional neglect of women. This is by any standard, an issue of rights and equity.[15,20].

The World Health Organization estimates that between 50 000 to 100 000 women world- wide develop obstetric fistula each year.[3,21,22]. Other studies indicate that the number of women affected is alarmingly high—in some countries up to 350 per 100000 livebirths, with a backlog of unrepaired cases nearing 1 million in northern Nigeria alone.[3,15,23]. Incidence and prevalence estimates of this disease are generally based on self-reporting, personal communication with surgeons, studies by advocacy groups and reviews of hospital services in which the relevant denominators are unknown or unreported. [22,24,25]. The annual obstetric fistula incidence of about 2.11 per 1000 births.[4]

There is also a lack of accurate information on the magnitude of the problem. Lack of accurate data is caused by neglect of the issue, and practical difficulties important for prevention. [11,26]. Policymakers in the area of safe motherhood often underestimate the toll of fistula—both the numbers of cases and the depth of suffering it causes, and education might enable them to have a larger role in prevention.

Women who survive the ordeal of obstructed labour only to develop an obstetric fistula are often doomed to a life of utter misery. The woman with an obstetric vesicovaginal or rectovaginal fistula usually becomes an outcast. Unclean, soiled, stinking, continually wet, and stigmatized by communities that do not understand that fistulas are the result of faulty obstetrical mechanics and not immoral personal behaviour. Usually, afflicted women are usually divorced by their husbands and often are cast out by their families, relegated to precarious lives on the margins of society.[27,28].

This study was done to contribute to literature and fill the knowledge gap in having the views of patients on causes of obstetric fistula, its prevention, and the consequences the have faced. It is important to hear from those affected as they tell their own stories and experiences.

This study utilized Focus Group Discussions among patients to assess the knowledge of obstetric fistula among patients and relatives, knowledge of causes of Obstetric fistula, prevention of Obstetric fistula, and determinants of maternal healthcare utilization and the health, psychological and economic consequences of obstetric fistula.

Methods

This qualitative study was conducted in the Fistula Centre of Bingham University Teaching Hospital, in Jos North local Government of Plateau State. The Fistula Centre was founded in 1983 by Steven Arrow Smith [24], an American Urologist. It is a 20-bed capacity Centre with 5 administrative offices, 2 Clinic offices, VVF theatre (equipped with 2 operating tables and 1 anaesthetic machine), rehabilitation centre, 90 bed hostel accommodation and a kitchen facility. The hostel accommodates those awaiting repairs or those who have had surgeries done and have been discharged from the ward; it also houses care givers

of the patients. Patients stay for an average of 8-20 days in the ward receiving treatment. After being discharged, the patients have an option of dwelling in the VVF hostel or going home. The bed occupancy in the hostel ranges from 30-90 varying with different time of the year. Patients that stay in the hostel are cared for by their relatives. The Centre receives patients from every part of Nigeria, it conducts about 450 fistula surgeries in a year and conducted 450 and 445 Fistula surgeries were conducted in 2017 and 2018 respectively. The Fistula Centre also offers physiotherapy, psychological counselling, health and nutrition classes, a post-surgery skill acquisition program, extensive community outreach and patient screening/identification. Currently, The Fistula Centre has 3 fistula Surgeons, 6 Nurses, 3 Nursing aids and 3 Attendants. It runs a weekly out-patient clinic on Tuesdays for new clients and another clinic on Fridays to review patients on the ward. Surgeries are done twice in a week (Thursdays and Fridays). The Centre is managed by a Project Director who is a Fistula Surgeon.

This study used four focus group discussions (FGD) that involved all the 40 fistula patients and their relatives. Each focus group discussion consisted of 10 participants per session five (5) obstetric fistula patients and five (5) relatives) in four (4) sessions. All the participants gave informed consent to be part of the study.

The researcher facilitated the discussion using the FGD guide while two trained research assistants took notes and recorded the responses using a tape recorder. The FGD participants were recruited by purposive selection and the sessions were held in a quiet environment to ensure privacy. Participation was voluntary and the sessions were conducted in Pidgin English. This was to get a better understanding of their condition and experiences. The sitting arrangement in each session was such that there was easy eye contact and hearing between the researcher who was the principal facilitator and the participants. The participants were encouraged to talk freely and spontaneously, and each session lasted for 30-40 minutes as allowed by the participants. Within 24 hours after each session, the recordings were carefully translated and transcribed. The content of the sessions was analysed using thematic analyses to identify recurrent themes. Systematic reading, coding, and re-categorisation of the transcripts of focus group discussion sessions were carried out. Relevant quotes from sessions were presented in line with themes identified and analysed in keeping with the specific objective of the study.

The possibility of recall bias is a limitation to this study. Also, communication with respondents may pose a little challenge because of language barrier which was mitigated by the presence of an interpreter.

Results

Knowledge of fistula among patients and relatives

Most of the respondents were open and willing to express themselves at all stages of the discussion. They listed prolonged labour, home deliveries, caesarean section, delay in seeking care, early parity, high parity and death of foetus in utero as possible causes of Obstetric fistula. Majorityof the patients (60%) attributed the cause of their fistula to prolonged labour while 70% of their relatives stated it was due to prolonged labour. One of the patients said,

> *"…I laboured for one week and I was not taken to the hospital. Finally, they took me and I was placed on a drip and I delivered a lifeless baby; thereafter I started leaking urine… I was thinking it will stop, but it continued… "* ***A 19-year-old Patient***

A relative stated that,

> *" …. we stayed for long and hoped that my sister will deliver, the baby was not coming again. It will come down and stop. Later we have to rush to the hospital after 3 days…I was thinking my sister will die. But we thank God..."* ***A 25-year-old relative of patient.***

Home deliveries: About 10% of patients and 10% of relatives thought the disease occurred due to home deliveries. They believed if they had come to the hospital for the delivery, the situation would not occur. As one patient said,

> *"…I was told that I could deliver by my-self and so I laboured for long, I was pushing and pushing. They said, it is good to deliver in my house. I lost the baby and now I'm leaking urine".…* **A 27-year-old Patient with OF**

Caesarean section: Twenty percent (20%) of the relatives attributed it to iatrogenic cause. They believed that the Caesarean surgery caused the obstetric fistula. While 10% of the patients also thought it was due to caesarean section. One of the relatives said

> *"…some doctors do not know how to do a caesarean section that is why my sister developed this leaking of urine…it was not there before".* ***...A 32-year-old relative***

A patient said,

> *" …After the operation to bring my baby, I stated seeing urine. I believe the doctor burst something in my stomach. Maybe he cannot do the operation well, or he made a mistake."* ***… A 30-year-old Patient with OF***

Delay in seeking care: Most of the relatives (70%), thought that Obstetric fistula occurred due to delay

in seeking medical care. A relative asserted that,

"…We should have rushed immediately, my sisters Oga (husband) did not come on time. We were waiting for him. I told him we should go, he said we must wait… now see this big problem now…we want to get better and go home…"

Early Marriage: Ten percent (10 %) of relatives and 105 of patients thought it was due to early marriage. A relative said that,

"…*My sister is not supposed to marry now. She is too young. She was rushed into marriage. Her body is not matured enough to handle pregnancy. I told them, they would not listen to me… "* … **A 35 year old relative**

High parity: Ten percent (20%) of the patients thought fistula occurs due to high parity. A patient said,

"…this thing did not happen to me in my first pregnancy, it happened in my 8th one after giving birth to many children, the passage gets weak and can lead to urine coming out…and I want it to stop…my neighbour has 3 children, it did not catch them(sic), be see me with the problem…" …**A 40-year-old Patient with OF**

Death of foetus: Ten percent (30%) of the patients reported that fistula occurred due to death of a child in utero.

"…my baby died inside my belle (sic), I believe as my baby died, it tore my body, now I am leaking. But I should have stopped since baby deid and has come out of my body…see what it has causes me."…**A 20-year-old Patient with OF**

Prevention of obstetric fistula

Preventive measures mentioned by all the women include seeking medical care at the onset of labour and utilisation of ANC services, prevention of early marriage and pregnancy, engagement of women in income generating activities and saving money so as to afford maternal health care during pregnancy and delivery in the absence of sponsors. A patient stated,

"…women should come quickly to hospital to deliver, we should delay marriage till maturity, we need our own money to take care of ourselves too…" ….. **A 25-year-old OF patient**

Preventive measures proffered by the relatives include establishment if linkages and referral services to bigger hospitals in complicated deliveries, health education/empowerment of the girl child, encouragement of spouses and family members to give support for ANC and delivery services.

A relative agreed that,

"…*we do not know this problem. They should tell us. The cost of ANC is plenty. Transport to hospital, drugs, food, it is not easy for women. …..* **A 30-year-old relative**

Factors that determine utilization of maternal health care services

This domain revealed that perception about utilizing Antenatal care (ANC) services, cost of services, transportation to health facility, spousal consent were critical determinants of utilization of maternal health services

Perception about utilizing ANC services

All the women saw it needful to utilise antenatal care during pregnancy and preferred hospital-based deliveries to traditional birth attendants. Even though, they agreed that not all of them were able use hospitals and antenatal care services. A participant said,

"…*I really believe we should come to the hospital for our pregnancy, I prefer the hospital, but the traditional women are also there for us.* … **A 22-year-old Patient with OF**

All of them stated that the frequency of ANC visit should range from 4 to more than 10 times per pregnancy. Majority (90%) of the women thought that a woman should seek medical care on the day that labour starts whereas 10% thought it should be after a day or more.

"…we normally visit the hospital for antenatal up to 6 times before I deliver, the nurse and doctors are helping us to have a safe delivery….once the pain starts and baby is pushing down, I rush to the hospital." … **A 30-year-old Patient with OF**

Majority (70%) of the participants stated that the minimum duration a woman should labour before seeking maternal health service was 2 hours and maximum was 24 hours as reported by the patients.

Based on the findings from the relatives, 80% of them thought that a woman should seek medical care on the day of labour onset whereas 20% thought it should be after a day or more. Also, the relatives reported that the minimum duration a woman should labour before seeking maternal health service was 4 hours and maximum was 5 days. A relative mentioned that,

"…I believe my sister should rush to the hospital immediately she notices anything…we don't want the child to come out like that without any help. Sometimes, they stay a while so that the pains increase before moving but wasting too much time is not good." … **A 30-year-old Relative**

Cost of services

Findings from the discussion showed that 60% of the patients delayed seeking maternal health care services due to financial constraint. 50% of the patients' received financial support from their husband, 20% from both their parent and spouses, 10% from parents, spouse and self, 10 % from parents only and 10% had no support.

> *"…the source of payment for my antenatal and delivery was my husband. He is trying his best; my daddy too has helped me a lot. This condition does not allow people to help you."* … **A 41-year-old Patient with OF**

All the patients and their relatives stated that Antenatal services were not expensive but find it difficult to pay for services.

> *"…the money is not much, it is a token…but we cannot pay because we do not have the money. Each time I want to come for antenatal, I must collect money from my husband. So, I can be shifting the date until the money is complete…my mother supports me sometimes."*… **A 32-year-old Patient with OF**

Transportation: Twenty percent (20%) of patients reported that lack transportation to the hospital and bad weather were significant determinants in utilizing maternal health services. A participant stated that,

> *"… For some of us, to get vehicle to the hospital is a big problem. Sometimes, no transport money, or no vehicle in the night, good hospital is far from my area so it is a big problem for us. If they road is good, maybe cars will be coming to my area.* … **A 39-year-old Patient with OF**

Spouse Consent: All respondent said, they need to inform their spouse before seeking maternal care**.** Spousal refusal was reported by a few (10%) of the patients. Regarding whom gives permission for the patients to seek medical care, half (50%) of the women said it was their husband, a third (30%) of the patients is based on personal approval and 20% was their parents. 10% of the patients had no reason for delay or failure to utilise maternal health care services. A patient exclaimed,

> *"…my husband must approve my movement. But he never stops me from visiting the hospital when the need arises. I have to inform him first, then he checks his pocket to know if he can fund me. If there is money, then I go..."*

Consequences of obstetric fistula

This revealed that obstetric fistula patients suffer isolation and reject [7][15]ion, shame, depression, divorce, low income and other morbidities.

Psychosocial consequence

The psychosocial consequences of obstetrics fistula were isolation and rejection by community members as reported by 80 % of women. Some of the patient suffered shame, depression, and verbal abuse from community members. 20% of the women complained that their children couldn't associate well with other children as they make gest of them and even discriminate them.

A woman said "…*I cannot go where people are gathered so I have to stay at home all the time. I don't know what they will say when they perceive the smell of urine on my body…they will talk about me from a distance".* Another stated that,

> "…*sometimes I just feel sad and unhappy…why me? What did I do wrong…"?*

Regarding support and acceptance from family members, half (50%) of women receive support and acceptance from their family members. However, 50% are being rejected and stigmatized by family members. Some patients complained of refusal to eat their food by relatives and family members. A patient said that,

> *"….it became very sad. People don't want to visit me. They avoid me without letting me know. They behave as if I am carrying a big disease in my body."* … **A 33-year-old Patient with OF**

Most of the patients (80%) are either divorced or separated from spouses and live with their parents or relatives. The maximum duration of divorce was 7 years and minimum were 2 years. 10% have remarried and 10% are still with their spouses.

Economic consequence

Financially, 70% of the patients have been disadvantaged due to fistula as their business has been unproductive due to refusal to patronise by community member. On the other hand, 20% of the women have not been affected by fistula and 10% have resorted to farming as an occupation due to poor patronage. A woman complained that…

> "…*I used to sell potatoes in the market before this problem started, I had to stop because of the problem, and even people around the market were looking at me. So I left the business. When I get better, I can start something again."* … **A 36-year-old Patient with OF**

Health consequence

Majority of the women complained of itching vagina, irregular menstrual flow, abnormal vaginal discharge, pain on urination and. Others mentioned lower abdominal pain, loss of weight, backache and foot drop. Most participants also listed headache, tiredness and suicidal ideation. A few complained of loss of baby during delivery. A participant stated that,

"…inside my body is always itching me, milky fluid comes out, abdominal pains, especially if I want to urinate. My flow is heavy and painful… it gives me headache too. … **A 31-year-old Patient with OF**

A relative stated that,

"…My elder sister wants to kill herself, she said she is tired of the problem, she feels better now in the hospital, the surgeons and nurses help to talk to her and reassured her of good health. They prayed for her too… I hope she does not say that again." … **A 22-year-old relative whose sister has OF**

Discussion

Prolonged labour, home deliveries, delay in seeking care, early parity and high parity were listed by respondents as possible causes of obstetric fistula. This finding is common in literature as most other studies [2,24,29-31] revealed similar causes. This shows that respondents have an idea about the cause of their problem. This knowledge should also be available for husbands, and their communities in order to improve care and support. This similarity in finding is attributable to similar sociodemographic features of the people in these studies. Women and their care givers enumerated ways of preventing obstetric fistula. These preventive strategies were from hindsight.

In the discussion with relatives, the relatives stated that prevention of obstetric fistula can be achieved by establishment if linkages and referral services to bigger hospitals in complicated deliveries, health education/empowerment of the girl child, encouragement of spouses and family members to give support for ANC and delivery services. [32]. This shows that relatives of patients with obstetric fistula have learned about the condition while in the hospital. They would have benefitted from conversations with the health workers and listened to the health education and counselling sessions occurring in the Fistula Centre.

Most patients and relatives stated that factors that determine their utilization of maternal health care services were perception of ANC services, cost of services and transportation to health facility. They also agreed that spousal consent were critical determinants of utilization of maternal health services. Perception of antenatal services was seen as a significant determinant of utilization of health care services. Majority believed it is important to attend antenatal care during pregnancy and in addition, they preferred hospital-based deliveries to Traditional Birth Attendants. Not all women were able to utilize these services because of cost. Cost of services is a big issue leading to poor utilization of maternal healthcare services. [7]. [29]This is due to the fact that they pay out of pocket for the services and at the time of the delivery, they had no money to attend ANC or even deliver in the hospital. They got support from husband, parents, and family members. This was similar to finding in a systematic review done in Calabar [3], Zambia [7] and Ilorin [4]. All the patients and their relatives stated that Antenatal services were not expensive but find it difficult to pay for services. This presents a huge challenge to access to services. A community-based health insurance scheme can help reduce the problem of out of pocket expenditure on health matters [30]. The creation of poverty eradication activities like women business funding, grants for women cooperatives and farming activities.

Lack of transportation made a fifth of respondents not to utilize maternal health services**.** This situation has led to morbidity and mortality of women in hard-to-reach communities and rural settings. This finding highlights the need for provision of functional Primary Health Care Centres near where people work and live. This finding was similar to over 52% of papers reviewed by in a systematic review done in Calabar[3], Zambia[7] and Tanzania[15]. [35]. This is usually the case as most women live in rural areas, while obstetric fistula centres are in urban centres. This presents a significant barrier. [15,34]. In other situations, it could be that the women are unwilling to travel due to treatment from drivers and passengers who perceive ethe smell from the women with obstetric fistula [7]. Most rural health centres do not have an efficient referral system once the decision has been made. More critical is the absence of ambulance services in primary health facilities, and in areas where transport is available, it is the responsibility of the family to pay.[15,35]. In a typical African setting, spousal consent was required before seeking antenatal care services.[13] All respondent stated that they need to inform their spouse before seeking maternal care. Even though most times husbands agree while only in 10% of cases there was spousal refusal. This finding is similar to studies done in Calabar [3], Ilorin [4], Zambia [7].The power of husbands in our society is significant, thus, conversations on birth preparedness should involve the husbands and other family members.[18,36]. This will ensure collective agreement among family members on need to access maternal services without avoidable delays.

Obstetric fistula usually leaves unforgettable consequences to the patient and family. Patients suffer significant health, psychosocial and economic sequalae. [2]. They suffer psychosocial consequence like isolation and rejection, shame, depression, verbal abuse, discrimination, divorce, and separation was prevalent. Studies done in Calabar [3], Ilorin [4], and Zambia [7] have shown similar findings. A surprising economic consequence was low patronage due from community members. This may be due to the inadvertent smell from leaking urine and faeces experienced by these women. To mitigate this, they have resorted to farming as an occupation due to poor patronage. There is a need to encourage women to

take up farming as they revealed this was their new occupation once formal petty trading stops due to customer reactions to them. Farming can be enhanced by providing seeds, land, grants, loans to improve the economic power of women. [37]

Because of Obstetric fistula, majority women have had varying health conditions like **v**aginal itching, irregular menstrual flow, abnormal vaginal discharge, and pain on urination. These women were also faced with lower abdominal pain, loss of weight, backache, foot drop, headache, tiredness, and suicidal ideation because of obstetric fistula. Another devastating sequalae of obstetric fistula was loss of baby during delivery.[2] Several studies [2,3,30,33,35-40] have document these complications. These constellation of health problems further worsens the situation for these women. It is important that early treatment and diagnosis should be implemented to prevent this silent scourge among rural women. Of utmost importance is the need to initiate primordial preventive strategies like legislation on early marriage, compulsory female education, availability of referral services in rural communities. These strategies will aid the reduction in obstetric fistula cases in communities in Nigeria. [4], [34]

The limitation of this study is that it is a health facility based, thus community outlook may not have been fully captured. But almost all women around the North Central part of Nigeria would seek treatment in the Fistula centre

Conclusion

This study has revealed that prolonged labour, home deliveries, caesarean section, delay in seeking care, early parity, high parity, and death of foetus in utero are possible causes of obstetric fistula. Patients also suffer significant health, psychosocial and economic sequalae like isolation and rejection, shame, depression, divorce, low income, and other morbidities. Lack of transportation and consent of spouse before seeking maternal care can hinder the utilization of maternal health services.

Obstetric fistula can be avoided by seeking medical care at the onset of labour and utilisation of ANC services, prevention of early marriage and pregnancy, and engagement of women in income generating activities. The prevention of obstetric fistula can be achieved by creation of referral services to bigger hospitals in complicated deliveries, health education/empowerment of the girl child, encouragement of spouses and family members to give support for ANC and delivery services.
There is a need to improve awareness about the condition to galvanize communities in helping prevent obstetric fistula prevention should be incorporated into programmes designed to provide girls with opportunities enabling them to delay marriage and empowered to take decisions on medical emergencies. The government needs to initiate programs targeted at poverty eradication, facilitate significant economic opportunities for women and improve the socio-economic life of the communities. Furthermore, the government should subsidize payment for maternal health services via health insurance and incentives for utilization of maternal health services. Formal education up to secondary school should be made free and mandatory for girls. Legislation against negative cultural practices such as early marriage and childbearing and gender inequality should be implemented. An improvement in transport system for pregnant women is vital in accessing skilled attendants.

List of abbreviations

CI, Confidence interval; OR, Odds ratio

Declarations

Ethics approval and consent to participate

Ethical approval for the study was given by the Bingham University Teaching Hospital Ethical Committee. (NHREC/21/05/2005/00617). Written informed consent was obtained from each respondent before the conduct of interviews after adequate information was given to the respondents by the interviewers. Confidentiality and privacy were respected during interview. Respondents were informed that there were no penalties or loss of benefit for refusal to participate in the study or withdrawal from it. There was no risk of harm or injury to the participants during or after the study is conducted.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

No conflict of interest associated with this work.

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Contribution of Authors

We declare that this work was done by the authors named in this article and all liabilities pertaining to claims relating to the content of this article will be borne by the authors. Idoko Lucy conceived, designed, and supervised the work from conception to publication this work. Olaniyan Steve T, Ijairi Japari M, Ezekiel Aaron,

Mufutau Ayobami A, collected and analysed the data and participated in drafting the manuscript. Okafor Kingsley also took part in draft of the manuscript, review of literature, presentation of themes. All authors reviewed and approved the manuscript for publication.

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