



## Socioeconomic Consequences of Maternal Death: A Qualitative Study in Bunia, Democratic Republic of the Congo

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### Abstract

**Background:** High user cost is a known barrier to emergency obstetric care for the poor, contributing to excessive maternal mortality. Financial concerns about seeking healthcare may be compounded by an underestimation of obstetric risk and the cost of losing a wife.

**Methods:** Focus groups investigated the cost of marriage, obstetric care and maternal death in Bunia, Democratic Republic of the Congo in 2008.

**Results:** Marriage always required the groom to pay *bridewealth* to his bride's family, but the amount varied widely. Family duties defined a married woman's social role. The immediate family or household was responsible for healthcare expenditure. The capacity to pay for emergency obstetric care (EmOC) was low. Relatives and neighbours contributed to funeral expenditures, which were estimated higher than the average cost of EmOC. Under specific circumstances, bridewealth was partly returned after maternal death, or the widowed husband could marry a female relative of the deceased (*sororate*) reducing the amount of bridewealth due.

**Conclusion:** These customs reduced the socioeconomic consequences of maternal death. To improve women's access to care in obstetric emergencies, urgent reforms are needed to legal systems as well as health policy.

### Keywords

Emergency obstetric care, Bridewealth, Maternal mortality, Marriage, Sororate

### Introduction

Neglected obstetric emergencies are an important cause of death among women of child-bearing age in sub-Saharan Africa [1]. Pregnancy and childbirth are normal life events, but around 15% of deliveries will present complications, and timely access to emergency obstetric care (EmOC) reduces the risk of death or disability in such a situation [2]. Many factors influence the ability of a woman to access EmOC. In resource-poor settings, financial considerations contribute to delays in seeking EmOC, so when the cost of EmOC exceeds the capacity to pay, maternal and perinatal deaths tend to increase [3]. Gendered cultural and religious mores also impact on

the decision process in obstetric emergencies.

These issues were explored in the context of Ituri, in the northeast of the Democratic Republic of Congo (DRC). Rich in natural resources, [4] the region has been exposed to armed groups fighting for economic and political power [5]. Between 1998 and 2003, tens of thousands of people died and more were displaced [6]. Following national elections in 2006, international donors moved from humanitarian aid to developmental assistance; the re-introduction of user fees for healthcare was part of this process. An international non-Governmental Organization (NGO) had set up a humanitarian emergency hospital in the town of Bunia in 2003. This hospital, the only one providing free EmOC and performing 75% of all emergency caesarean sections in the Health Zone, was due to be closed in 2010 [7]. Before the conflict, user fees were the main source of revenue for healthcare providers in the DRC. Health insurance coverage was low and not compulsory.

Our study was conducted in 2008 in Bunia, the capital of Ituri. The estimated mean monthly family income was 75.5 US Dollars (USD) and many households were subsisting in the informal economy. The mean user cost for a caesarean section (CS) was USD 68.0, excluding transport and other costs unrelated to treatment. The mean user cost for a vaginal delivery was USD 12.1 [8].

Hospitals in Bunia mainly served the town population, for whom distance and time to reach an EmOC facility were both short. In spite of this, 15 maternal deaths were recorded over a seven month period in the Health Zone, covering an estimated 209,604 people living in the urban area and four nearby villages. Four women died outside an EmOC facility, and at least six of the 11 deaths in hospitals could have been avoided by earlier referral. The estimated maternal mortality ratio (MMR) in Bunia was 345 per 100,000 live births [9]. In 2010, the MMR estimate for the DRC was 540 maternal deaths per 100,000 live births, ranking the country 17<sup>th</sup> highest worldwide [10].

It is customary in Ituri to request the husband's approval before performing an emergency CS, which has a small possibility of death of the mother and/or child. Informed consent can only be expected when arguments in favour of the procedure outweigh the risk. The husband's perception of surgical risk may be biased by information from non-medical sources, or by general ignorance

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about the process of childbirth. When the risk is perceived as high, this will be an additional barrier to seeking EmOC. To assess the need for a CS a skilled professional has to medically examine the patient. In an obstetric emergency, minimising delays in deciding to seek and accept medical advice helps to reduce the risk posed by surgery. It was therefore important to find out more about possible reasons for such delays. While extreme poverty hampers the ability to access healthcare quickly, beliefs and practices surrounding marriage, childbirth and maternal death may further complicate the choice between attempting vaginal delivery and opting for CS.

The objective of this study was to compare the cost of a CS, the most common EmOC procedure, with the socioeconomic consequences of maternal death. Although the cost of losing a wife, mother or sister is intangible, the prevalent culture of *bride wealth* (the payment made by the groom to the bride's family) made it possible to explore the cost of marrying another woman after maternal death. The focus group discussions juxtaposed the user cost of an emergency CS with the costs related to maternal death, including the cost to a widower if he wanted to marry again. These comparisons aimed to draw a local framework for understanding user considerations when facing a vital choice with an uncertain outcome, in order to promote better healthcare seeking behaviour in an obstetric emergency and remove barriers.

## Methods

A qualitative approach was required to explore the factors driving the process of seeking and accepting emergency obstetric care when

needed. Focus groups were the chosen option, because they allowed participants to interact, and provided an opportunity for people with limited formal education to express and discuss their thoughts [11].

Nine focus groups, each composed of 12 to 20 adult volunteers, discussed ten open questions for two hours. The composition of the groups was as follows: Catholic men, Catholic women, Muslims<sup>a</sup>, students from the Université Shalom de Bunia (USB, Shalom University of Bunia), a male and a female group of students from the Institut Supérieur Panafricain de Santé Communautaire (ISPASC, a higher institute of community medicine), a male and a female group of unemployed people and an existing group of widowed women. A local nurse acted as moderator and took written notes in French, summarizing the discussions held in Swahili. Voice recording was omitted to avoid intimidation and the summaries contained no exact quotes of individual opinions. The lead researcher, who is fluent in both French and English, translated the moderator's notes to English. Conversion into USD was based on the official exchange rate of the Congolese Franc in January 2008 (one USD = 500 Congolese Francs).

Ethnicity influences traditions and ceremonies surrounding marriage, birth and death in many cultures. Direct questioning of people about their ethnicity was considered inappropriate in Bunia, and the ethnicity of focus group participants had to be left unknown. Respondents included in the study covered the widest possible spectrum of backgrounds and experiences, to ensure that customary variations within the study area were covered. The ethnic groups that were mentioned are listed in table 1.

<sup>a</sup>Only one Muslim woman volunteered to participate. She agreed to join the men's group.

Table 1: Payment for the first marriage of a nulliparous woman.

Ethnic Group	Focus Group <sup>a</sup>	USD conversion		Other	Notes
		min	Max		
Hema●	USB	1080	2560		Sometimes one cow will be returned after formal marriage
	Unemployed women	930	2180		Lowest estimate for uneducated girl
	Widows	1650	2220		
Hema North	Unemployed men	1545	2070		
	ISPASC women	1545	2070		
Hema South	ISPASC men	1440	1920		Part return of dowry when first child has first tooth
Ngiti (LenduBindi)	USB	830	1470		
	ISPASC men	655	890	Add blanket, clothes and spear	
Lubgara	USB	960	1280		
	ISPASC women	740	1640	Add clothes and agricultural tools	Level of education is important
Logo	ISPASC women	1295	1850	Add clothes	No payment if pregnant until after delivery
Lese	Widows	varies	varies	Add clothes, hoe and machete	Price expressed in goats
Kakwa	Widows	600	800		
Bira	Widows	465	630		
	ISPASC women	As above	As above	Add clothes	
	ISPASC men	As above	As above		
	Catholic men	585	790	Add clothes	
Nande	ISPASC men	350	600	Add clothes	Price expressed in goats
Lega	USB	420	600		Maniema
Nyanga	USB	465	630		North Kivu
Alur	Catholic women			3 goats, clothes, agricultural tools	Pre-payment for sex before marriage
	Unemployed women	465	630		
	ISPASC women	945	1630	Add clothes	
	ISPASC men	605	830	Add clothes and hoe	
	Widows	640	880	Add hoe	
Budu	Unemployed women	varies	varies		Haut Uele Price in palm oil drums
	Unemployed men	245	600	Prepayment of chickens, goat, cigarettes, bananas. Add alcohol and cola nuts to dowry	
	Muslims <sup>b</sup>	100	1000		

<sup>a</sup>Focus groups reporting: community health (ISPASC) students men and women; theology students (USB); Catholic men and women; unemployed men and women; widows; Muslims.

●Some focus groups subdivided the ethnic Hema group and their customs according to their place of residence either north or south of the district. One author (AB) identified a third group, also known as Hema Boga.

<sup>b</sup>Muslims expressed value in USD only. No mention of ethnic differences.

## Results

The study results are presented using the same structure as the question schedule for the focus groups. Emerging key themes are analysed in the discussion section. Questions specifically related to marriage intended to explore the community's opinion on what motivates a man to commit to wedlock, which implies the legal obligation to pay bridewealth. The rationale was to understand a husband's possible reasons for delaying the decision to seek EmOC for his wife.

The responses below are the translated summaries of the focus group discussions. In the absence of quotations, the accuracy of the content was repeatedly verified with the moderator.

### Why would a man want to get married?

Apart from the wish to have children and raise them in a family, marriage was considered necessary to acquire stability and gain respect. A man obtained the social status of a responsible adult through marriage. Some groups insisted that marriage was in accordance with God's will. Mutual assistance, extended kinship, sexual satisfaction and avoidance of promiscuity were mentioned.

### What is the bridewealth paid for a first wife? Describe and put a value to the factors influencing the amount to be paid.

All groups described different ethnic customs, with the single exception of Muslims who estimated the amount to be paid to be between USD 100 and USD 1000 depending on socioeconomic status and whether or not the bride was a virgin. Other groups expressed bridewealth in units of cows, goats, chickens, agricultural tools and/or clothing, but noting that actual payment usually consisted of money. A cow was valued at between USD 120 and USD 160 while a goat was valued at between USD 35 and USD 50<sup>ii</sup>. A gift of lower value before the celebration of marriage indicated the approval of the relationship by both families. Student participants pointed out that higher education could increase bridewealth for a girl by as much as 30%. Table 1 provides a detailed summary of different bridewealth estimates.

<sup>ii</sup>See discussion for more information about monetary value.

### What are the responsibilities (qualities) a man expects from his wife?

All groups agreed that a wife was expected to share household chores to reduce expenses, to take the major role in bringing up the children, to work in the field, to keep the house clean and to assist her in-laws. Other suggested important duties included procreation as well as providing and sharing sexual satisfaction of the husband. Obedience, respect, a welcoming attitude and kindness were mentioned. Additional comments included that a woman should be courageous and work hard (mentioned by widows), love her husband and family (included by widows and female ISPASC students), be faithful and complement the husband's opinions (mentioned by male ISPASC students).

### What are the costs when a woman has a caesarean section (including hospital, medicine, transport etc.)

The total estimated cost ranged from USD 150 to USD 200 with some groups making precise estimates. USB students listed item expenses as follows:

- USD 50 for the surgical intervention;
- USD 70 for food and other necessities during seven days of hospitalisation;
- USD 25 to USD 50 to buy clothes for mother and baby; and
- USD 2 daily for a caregiver

According to Muslim respondents, the price of a CS varied from USD 40 for the poor to USD 70 for wealthier people. Unemployed women estimated the cost of surgery was around USD 60, adding that

other expenses, including medicines, could increase the bill to USD 175. Catholic women estimated the average cost of delivering by CS at the Government Hospital to be USD 170, whereas Catholic men put the average at USD 150.

### How much would you pay for a caesarean section (including possibility of a loan)?

The groups did not question the necessity of having a CS in an obstetric emergency. The overall estimated ability to pay ranged from USD 20 to USD 150. The unemployed men set the limit for an acceptable loan at USD5; the Catholic men's group agreed on a maximum loan of USD 150. Muslims estimated that poor families would be able to repay a loan of up to USD 40 while those with higher incomes could afford a debt of USD 80. Unemployed women said it would be impossible to go beyond USD 25. The widows interviewed estimated their manageable debt level to be USD 20 to USD 30; male ISPASC students agreed on a loan possibly amounting to USD 30. One respondent in the Catholic women's group said she would accept to die in preference to taking a loan beyond USD 25.

USB students added the possibility of completing payment at a later stage if a woman or her family did not have the means to pay in full when the CS was performed. However, they added that the mother and child would be kept in hospital and only released when the debt was settled. Alternatively an object of the same value as the outstanding amount could be given in lieu of payment. In general, they would do everything possible to pay cash for medicine, which would otherwise be withheld.

### If a woman dies because of pregnancy or delivery, what happens to the bridewealth?

USB students reported that in some cultures the amount payable doubled if a woman died before the bridewealth had been paid, but there was no additional charge if she died after the full payment had been made. If a woman died shortly after the wedding and before she had delivered a child, part of the payment could be returned to the husband's family. Sometimes the family of the deceased woman received a compensation for the loss of a daughter.

Muslims said that some ethnic groups considered death as a natural occurrence and in that case the husband received no repayment. Other cultures would offer reimbursement while simultaneously imposing a fine to compensate for the loss of the deceased. They insisted that custom was strongly influenced by religious beliefs. Unemployed men also spoke about partial reimbursement of the husband's family among some ethnic groups, and others who considered maternal death as an accident and a loss without compensation.

Catholic women said that the Alur only buried a married woman if the bridewealth had been paid. If payment was outstanding at the time of death, the woman's relatives would threaten the husband's family by saying that the body could not be buried until payment was complete. If there were no children, part of the paid amount was returned. The same group said that Bira required any outstanding bridewealth to be paid immediately after a woman's death.

Female ISPASC students said that Bira, Hema and Alur charged the husband for the deceased if the full bridewealth had not been paid. Bira would not return any previous payments. Lubgara would return half of the bridewealth when a woman died.

Male ISPASC students said that, among the Bira, the deceased woman's family returned part of the payment after agreement with the husband's family, if maternal death occurred during a first pregnancy. Among the Nande, the woman's family would return the entire bridewealth or offer a girl from the same family to replace her. LenduBindi did not return anything if the woman had given birth before, whereas Alur would return part of the bridewealth.

Many participants brought up *sororate*, the custom or law decreeing that a widower should (or, in rare cases, must) marry his deceased wife's sister [12]. Catholic men, female ISPASC students and

widows agreed that Alur and Hema did not return any bridewealth after a woman's death, but sororate was accepted. The woman offered to take the place of the deceased wife could be the wife's sister or a cousin. Discussants emphasised that the persons concerned and their families all had to agree for this to happen. A small or symbolic additional payment would be demanded if the bridewealth had been fully paid previously; if a remaining sum was due, the husband would be charged for the deceased.

### **What does a man expect from a second wife (the woman he marries after the death of a first wife)?**

All but one group said that a second wife should look after the children of the deceased wife. Five groups included the desire to have (more) children and the good qualities of the previous wife as an expectation of a second wife. Two women's groups mentioned fear of death of the next wife and the husband's wish to live with her for the rest of his life. Two groups put the consolation of the bereaved husband as the first duty of a second wife, while one group concluded that the second wife was expected to love and respect her husband and to look after him. Another group agreed that a bereaved husband needed to take a second wife to maintain stability in society.

### **What is the amount of bridewealth for a second wife?**

Three groups insisted that the new wife should be considered separately, and that the same customs and obligations applied for the widower wishing to marry her. Most groups made a distinction between sororate, where the previous payment was taken into account, and situations where the next wife was chosen outside the family of the deceased. Considering the possibility of sororate, some people replied that there would be no additional charge; others said the amount demanded would be smaller or symbolic.

### **Are there any traditional customs to be observed after the death of a woman in childbirth? Who is supposed to look after the newborn child, if the baby was alive? Who has to feed the child and how?**

Three groups talked about the custom that, if both the mother and child had died, the foetus would be removed from the womb and the bodies buried separately. USB students specified that this only happened when the woman was more than five months pregnant and that not all ethnic groups followed this custom. In some traditions only women were allowed to attend the funeral.

Bira were said to demand that the widowed husband should wait "as long as possible" before getting married again. Among the Hema, the family of the deceased decided on a date for the remarriage of the bereaved husband.

Unemployed men, unemployed women, and male and female ISPASC students talked about beating the husband. Unemployed women said that traditions had changed among Christians but that it had been customary for the Logo to beat the husband. Unemployed men told about a similar custom among the Budu, but specified that this would be done only by "brutal" families. Male and female ISPASC students stated that beating was also part of Alur custom, while the Nande demanded a fine, in accordance with customary justice.

The widows' group said that the Alur would offer four goats to the sister of the deceased. Muslim discussants said that the widowed husband was often asked to marry the younger sister of the deceased woman.

Alur and Nande would leave any children born to the deceased woman with the grandmother or other relatives of the deceased whereas Bira would choose an aunt to look after the remaining children and find a breastfeeding woman in the family to feed the baby. Female ISPASC students added that if such a woman could not be found, the Bira would "make tattoos" on the breasts of another woman in the family until she had milk<sup>iii</sup>. Other ethnic groups would find a breastfeeding woman outside the family. According to the widows' group, the baby could be taken to an orphanage or be left

with a breastfeeding woman. Catholic women mentioned that the father might be left in charge of the baby. Sometimes a caregiver was found and the baby fed with diluted cow's milk, formula or soy milk. USB students said that, if HIV infection was suspected, people aware of the issue preferred to leave the baby in an orphanage.

<sup>iii</sup>Author's note: stimulating the breasts of a woman who has ever breastfed can induce nipple discharge.

### **What are the expenses to be expected for an adult woman's funeral?**

All groups agreed that burial costs for an adult woman were similar to those for an adult man. The widows said that normally the total expenditure would be between USD 300 and USD 500, depending on the social status and financial means of the family. Muslims made a cost estimate of USD 300, specifying that the greatest expenditure would be refreshments for visitors, since failure to do this would be severely criticised. Catholic women listed the coffin, a burial sheet and blanket, a dress, powder and perfume, and the burial cost at the graveyard, as well as food, estimating the total cost around USD 250, not including contributions from family and friends. USB students listed the same items, adding that money would be needed also for a radio announcement and family contributions, such as a cow, a goat and other goods.

Catholic men and unemployed men estimated expenses to be in the order of USD 150, the unemployed specifying that the bereaved husband would expect to receive contributions to help him cover the cost. Male ISPASC students specified that expenditure varied according to the socioeconomic status of the family of the deceased, indicating that Nande would offer at least a goat in addition to other expenses, and that LenduBindi would usually offer a cow and flour. Bira would spend at least USD 100 on the funeral, in addition to contributions from neighbours, friends and the community. Female ISPASC students added that the husband's family sometimes offered compensation to the family of the wife. Hema paid on average two cows, food and other expenses depending on status and means.

## **Discussion**

Under Congolese Law marriage cannot be celebrated unless bridewealth or part thereof has been paid, and failure to adhere to the agreement may result in the marriage being annulled [13]. Bridewealth is embedded in a complex system of wealth transfer and social relations. One anthropologist described paying bridewealth as "a means of establishing, defining, expressing or evoking social behaviour" [14]. To our knowledge, this study was the first to examine the practices surrounding the payment of bridewealth in relation to maternal death.

### **Key findings of the focus group discussions**

Responses about reasons for marrying and related expectations centred on the four traditional nuclear family functions: sexual/amorous, economic, reproductive and educative [15]. The role of the family in stabilising society was recognised. Acquiring responsibility as a husband was linked to a gain in respect, suggesting social pressure to get married.

The top estimates of bridewealth exceeded USD 2000, but the wide range of average values suggested disparity in wealth distribution between ethnic groups in the study area. According to local culture, it is the responsibility of the groom's parents to pay bridewealth to the bride's family. It can be paid over a period of time and the amount is not a direct reflection of the capacity of a married man to pay for goods and services.

Taking into account the risk of losing a wife in an obstetric emergency, the cost of having an emergency CS seemed small in comparison to the cost of a funeral. However, funeral costs were shared between the families concerned, with contributions from friends and neighbours. This confirmed Tanzanian findings that the nuclear family was generally responsible for healthcare expenses [16].

The groups agreed on very low manageable debt levels. Only one group set a limit of USD 150 for the highest acceptable loan. All other estimates were below USD 100, consistent with a low average family income. The declaration of a female participant that she would accept to die in preference to taking a loan beyond USD 25 is a stark reminder that financial hardship influences the decision to accept EmOC.

No rationale was given for beating the bereaved husband. ISPASC students mentioned the practice as part of customary justice which entitled the family of a woman who died in childbirth to punish her husband for failing to keep her alive. Although the meaning of "brutal" was not explored, the expression suggests that beating was no longer generally accepted.

Traditional female roles such as working in the field and acting as a housekeeper implied an economic role for women, but the possibility that married women could earn wages outside of the family home was not mentioned. This seems inconsistent with the statement that the value of bridewealth increased for girls who had completed some level of higher education. The scarcity of such women in Bunia could explain why the respondents in this study did not recognise their potential wider role in society.

### **Considerations regarding the practice of bridewealth and sororate**

It should be noted that paying bridewealth is a long-term obligation involving extensive negotiations prior to marriage. An author of this article (AB), who lives in the DR Congo, reported that the woman's family could prolong negotiations by increasing the value per head of cattle agreed upon beyond the commonly accepted range. This author (AB) confirmed that withholding burial of a married woman until bridewealth had been fully paid was common practice, but doubted that a fine could be imposed on the husband, simultaneous to (partial) reimbursement of bridewealth in case of maternal death.

Sororate is considered harmful by many as it does not take the cause of death into account [17]. Possible causes of maternal death, including HIV, were not discussed in the focus groups, which could explain why no link was made between sororate and HIV transmission. The reported HIV prevalence among pregnant women attending antenatal care in Bunia was 3.5% in 2006 [18]. The USB focus group participants, who had the highest level of education, specifically mentioned HIV within the context of the care of surviving babies. The effect of HIV on the practice of sororate deserves further investigation.

### **Legal and economic aspects**

Expectations of obedience reflect article 444-448 of Congolese Family Law, stating that married women are obliged to obey their husband and to obtain his authorisation for any legal transactions [19]. Since the study was conducted, a revision of the Family Law has been drafted, highlighting mutual respect and economic autonomy between married partners. At the time of writing, the revised law is awaiting promulgation. The DRC Constitution upholds the principle of gender equality and ratified the "Convention to Eliminate all forms of Discrimination against Women (CEDAW)"; Article 5 of CEDAW calls for the elimination of prejudices based on stereotyped roles for both men and women [20].

It is likely that the presence of aid workers in Ituri will have provided a temporary boost to the local economy, as was documented in North Kivu [21]. If this was the case, stabilisation in the region could cause the economic situation to decline over the coming years, further adding to the financial problems of the local community.

The transition from international humanitarian aid to developmental assistance in Bunia resulted in the re-introduction of user fees. At the time of this study, some health facilities required medicines to be paid before treatment. Interviewed women who had recently delivered by CS estimated the mean medical user cost at USD 68.0, which is around 90% of the average monthly family income in this area [8]. Thus, while study respondents indicated a general

willingness to pay, the capacity to pay was low.

In Ituri, the majority of healthcare users paid cash out-of-pocket, making the price of a CS an important element in the decision of service users. When the risk of vaginal delivery is underestimated, which can be the case for multiparous women, the unavailability of ready cash may further confound the decision process [22]. Health promoting messages have to take these considerations into account when emphasising the importance of early referral in an obstetric emergency. Considering that CS deliveries constituted 9.7 % of all expected deliveries in the Bunia Health Zone in 2008, [8] cultural objections against CS were unlikely. It would therefore seem that when a husband delays the decision to seek or accept professional advice during delivery, the main reasons are poverty and errors in risk estimation. Sororate, and partial reimbursement of bridewealth in cases of maternal death without offspring, can be interpreted as traditional ways of reducing the socioeconomic consequences of maternal death, safeguarding the money a man spent on a first marriage. Unlike the obligation to pay bridewealth for marriage to be lawful, these practices are based on local custom. Further revision of the relevant legal framework (Family Law) and related policy is advisable, taking into account the possible harmful effect of these traditional practices. In the meantime, it is important that recent law changes improving the position of married women are implemented.

A change in the method and/or level of income taxation would make it possible to raise more money locally, allowing the State to fund EmOC by spreading the burden collectively over the entire community. Another option would be some form of joint funding, combining private health insurance with other sources, such as government and donor support, if only to cover the period during which government structures are being rebuilt.

### **Limitations of the study**

US dollars were widely used in local trade, so the valuation of goods and services could be either in Congolese Francs or in USD. Since monetary comparison with other countries was not intended, estimates in USD do not accurately reflect purchasing power parity (PPP). Prices may have changed since 2008. Congolese residents and legal experts concur in their opinion that the legal framework and local customs relevant to the study remained unchanged.

### **Conclusions**

Unimpeded access for women who need EmOC is a human right and a necessity for reducing avoidable maternal and perinatal deaths, and out-of-pocket payments remain an obstacle to healthcare access during childbirth. The acceptance of sororate in conjunction with bridewealth arrangements has reduced the social consequences of maternal death in this region. Such practices are inconsistent with women's rights.

National health policy has to reduce barriers to access. If good quality EmOC services are to be sustained, finance needs to be found to cover the provider cost. More research is needed on the effect on maternal health of customs and laws impeding women's rights, so that findings can be used to advocate change. Effective political and social solutions are urgently needed to ensure access to essential and potentially life-saving health resources, with particular emphasis on childbirth and maternal health issues.

### **Authors Contributions**

DD, TO'D and BF conceived the study and designed the study protocol; DD carried out the field work; DD and TO'D drafted the manuscript; BF critically revised the manuscript for intellectual content. AB provided details on recent changes in customs and laws. All authors read and approved the final manuscript. DD is guarantor of the paper.

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## Competing interests

None declared

## Ethical Approval

Ethical approval was obtained from the Research Ethics Committee of the Liverpool School of Tropical Medicine (LSTM) (Reference number 06.30). The Director of the Institut Supérieur de Techniques Médicales, a nursing college in Bunia, acted as a facilitator. The local health authority approved the proposal.

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