

# Fistula and Other Adverse Reproductive Health Outcomes among Women Victims of Conflict-Related Sexual Violence: A Population-Based Cross-Sectional Study

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**ABSTRACT: Background:** Sexual violence (SV) is being used widely as a weapon of war. However, few studies have investigated its health effects. The objective of the present study is to investigate the relationship between sexual violence and several serious reproductive health conditions including fistula. **Methods:** We conducted a cross-sectional study among 320 women living in Goma, the Democratic Republic of Congo. We assessed the association of four outcomes: fistula, chronic pelvic pain, desire for sex, and desire for children, with SV in two contexts: conflict-related and nonconflict-related. Two groups of women: those who experienced conflict-related sexual violence (CRSV) and those who experienced nonconflict-related sexual violence (NCRSV), were compared with women who had not experienced SV. Data were collected by trained interviewers using a standard questionnaire. **Results:** Compared with women who did not experience SV, after adjustment for potential confounders, women who experienced CRSV were significantly more likely to have fistula (OR = 11.1, 95% CI [3.1–39.3]), chronic pelvic pain (OR = 5.1, 95% CI [2.4–10.9]), and absence of desire for sex (OR = 3.5, 95% CI [1.7–6.9]) and children (OR = 3.5, 95% CI [1.6–7.8]). Women who experienced NCRSV were more likely to report absence of desire for children (OR = 2.7, 95% CI [1.1–6.5]), and seemed more likely to report chronic pelvic pain (OR = 2.3, 95% CI [0.95–5.8]), although the difference was not statistically significant. Women who experienced NCRSV did not have higher odds for fistula and absence of sexual desire. **Conclusion:** Conflict-related sexual violence can contribute to women's adverse reproductive health outcomes. Its impact is more devastating than that of NCRSV. (BIRTH 41:1 March 2014)

**Key words:** armed conflict, chronic pelvic pain, fistula, reproductive health, sexual violence

During past and current armed conflicts in many regions of the world, women and girls are often victims of a particular form of violence: rape used as weapon. The Democratic Republic of Congo, which

has been in the throes of armed conflict since 1996, is a glaring example of such atrocities. Since 1998, the two eastern provinces—North and South Kivu—have been partially under the control of several rebel forces

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who are using rape to terrorize communities and destroy them (1).

Even apart from the context of armed political conflicts, the aftermath of rape and sexual abuse is physical, psychological, and long lasting (2–4). Recently, the combined efforts of women's organizations, health experts, and governments have raised public awareness about rape as a public health concern (5,6). It has been shown that such violence has damaging effects on some aspects of reproductive health such as: high-risk sexual behavior (7,8), chronic pelvic pain (9,10), bleeding during pregnancy (11,12), sexually transmitted diseases including HIV/AIDS (7,8), lack of interest in sex (13), and low-birthweight (14). Sexual violence used as a weapon of war is known to be different from the one committed as an isolated act of aggression in terms of severity of the violence and number of perpetrators (1,15). Its impact on reproductive health may be different also.

To assess and document an impact of armed conflict-related sexual violence, we investigated some important reproductive health outcomes of three groups of women living in the Democratic Republic of Congo: those who experienced conflict-related, sexual violence, those who experienced sexual violence that was not conflict-related, and those who had never experienced such acts. Reproductive health outcomes studied include fistula (traumatic or obstetric), chronic pelvic pain, desire for sex, desire for children, and pregnancy prevalence and results.

## Methods

### *Study Design and Population*

Between July and August 2012, we conducted a cross-sectional study among women of reproductive age (15–45 years old) who were living in Goma. We compared three groups of women with different experience of sexual violence (SV): those who suffered conflict-related sexual violence (CRSV), those who suffered SV that was not conflict-related (NCRSV), and those who had not suffered any SV. They were compared with respect to several adverse reproductive health outcomes.

Goma is the capital of the North-Kivu province with a population estimated at around 400,000. From a small town of marginal importance in 1996, it has turned into a regional multi-ethnic, military, and economic center since the beginning of the armed conflict (16). We chose the *Collectif Alpha Ujuvi*, a nongovernmental organization, as collaborator. The *Collectif Alpha Ujuvi* aims to empower women by teaching them literacy in Swahili, a common language in Central Africa. They also hold peaceful conflict-resolution meetings aiming at resolving disputes on land ownership between neighbors and avoid the use of violence. In various ways,

the *Collectif Alpha Ujuvi* provides support to communities, including women who experienced CRSV, and was able to provide access to potential participants.

Sample size was calculated before data collection with Hsieh formulas (17). Computations were done for each of the reproductive health outcomes investigated for  $\alpha = 0.05$  and  $\beta = 0.80$ , assuming an odds ratio of 2 and a prevalence of exposure to violence of 24 percent. Calculations yielded samples sizes comprised between 170 and 255. To compensate for possible respondent attrition, 320 women were interviewed in accordance with available funding.

### *Data Collection Procedures*

Data were collected using a standard questionnaire administered in Swahili, except in French for one woman, through individual interviews. Potential participants were identified in four Goma neighborhoods through the teachers of literacy sessions and leaders of the peaceful conflict-resolution meetings. We informed them about the study and asked them to spread the word among women living in their neighborhoods. More specifically, we asked them to let women know that a researcher wanted to talk to women aged between 15 and 45 years. Any woman interested in participating was told by the respective leaders to meet the primary investigator and interviewers on a set date, time, and place. Recruited participants were either interviewed on the *Collectif Alpha Ujuvi's* premises or another mutually agreed location. At the beginning of the interview, we ascertained age eligibility, then explained that we were interested in talking to women regardless of their experience with SV. Age was the only inclusion and exclusion criterion. Qualified participants were then asked to give their informed consent before completion of interview.

Interviews were conducted by two locally recruited interviewers who spoke both French and Swahili. They had experience as social workers for women with different needs including those who had experienced CRSV. They were trained and supervised to minimize information bias during interviews. The specific hypotheses of the study were not disclosed to them or to the *Collectif Alpha Ujuvi's* employees.

### *Variables*

#### *Exposure variable*

During the interviews, women were asked if they had been raped or experienced other forms of forced sexual acts. Any SV committed after 1996 by armed men,

military personnel, or bandits, in areas where clashes between government militaries and rebellion took place, was considered CRSV. SV experienced in other contexts was considered NCRSV. Circumstances surrounding the aggression such as: number of aggressors and assaults, and length of sequestration if detained, were recorded for both CRSV and NCRSV.

### *Reproductive health outcomes*

For all participants, we obtained self-reported information on the following reproductive health outcomes: traumatic or obstetric fistula (fistula), chronic pelvic pain, desire for sexual intercourse, and desire for bearing children.

Fistula was defined as presence of communication between vagina and bladder or rectum resulting in incontinence. To assess if participants have suffered from fistula, the following question was asked: "Have you ever had a fistula?" If "yes" when and in what circumstances did this condition developed? For women who experienced SV and became pregnant, cases of fistula reported could be traumatic or obstetric because women were not specifically asked if the condition was developed immediately after the assault or eventually during the childbirth which occurred after their rape. Chronic pelvic pain was defined as a recurrent, chronic or constant pain in the lower abdominal region, distinct from dysmenorrhea. Women were asked the following question: "Are you suffering from chronic pelvic pain? Since when are you having this problem?" When asking both questions, definitions for fistula and chronic pelvic pain were used to help women identify the outcome of interest. For both fistula and chronic pelvic pain, time of onset was ascertained to ensure that those taken into account occurred after the experience of SV for those who experienced it.

Desire for sex and desire for bearing children were ascertained by asking women if they were interested in having sexual intercourse and if they were willing to have another child. The reasons why women were willing or not willing to have children in the near future were also recorded with an open-ended question.

Additional information on pregnancy outcome was obtained from women who experienced NCRSV and CRSV. They were asked if they became pregnant after the aggression, and the outcome of the pregnancy: live birth, miscarriage, or abortion. They were also asked about their desire for abortion and whether any attempt made to do so.

### *Covariates*

Sociodemographic characteristics that might cause bias in our investigation were ascertained. They were chosen based on the literature and their association with

SV or the reproductive outcomes of interest. They included: age, marital status, tribe, number of children, religion, education, and occupation.

### *Data Analysis*

Data collected were analyzed using SPSS software, version 17.0 (IBM Corp., Somers, NY, USA). Bivariate (Chi-square and bivariate logistic regression) and multivariate analyses (multiple logistic regressions) were conducted for each of the reproductive health outcomes. The Hosmer–Lemeshow test was used to evaluate goodness of fit of logistic regression models. Multivariate models included all covariates that attained a  $p$  of 0.25 or less in the bivariate analyses. For women who experienced CRSV or NCRSV, odds ratios for each of the four reproductive health outcomes were estimated, using women who did not experience SV as the reference group. Additional regression models were fitted using the NCRSV as reference group to compare directly women who experienced CRSV to those who experienced NCRSV.

## **Results**

### *Sociodemographic Variables and Experience of SV*

The final sample comprised 320 women, age ranged from 15 to 45 years (mean = 27.7, SD = 8.22). The majority (64.4%) were married, whereas 17.8 percent and 13.1 percent were, respectively, single or separated/divorced at the time of the interview. Almost half of participants (48.4%) identified themselves as Hutu. Most of women were Christian (91%) and had completed less than primary education (66.3%). Among those with less than primary education (212), 38 percent never went to school. In terms of occupation, most women were involved in small trades or farming. Number of children ranged from 0 to 14 (Mean = 3.84, SD = 3.04).

Table 1 shows the distribution of sociodemographic characteristics by experience of SV. There were significant differences (chi-square  $p < 0.05$ ) among the three groups with respect to age, marital status, and occupation. More women who experienced CRSV were 25 years old and older, either separated/divorced or widowed, and reported as occupation, either farmers or traders. Women who experienced NCRSV tended to be less educated than the other two groups, although the differences were not statistically significant ( $p = 0.076$ ). There was a tendency toward larger family size among women who experienced CRSV, although the difference was not statistically significant ( $p = 0.11$ ). On the basis

of these results, we used age, number of children, marital status, occupation, and education as covariates in the multiple regression analyses. For those multiple regression models, the first two covariates were categorized as described in Table 1.

Over 60 percent of women who experienced CRSV were assaulted by more than one man compared with 10 percent of those who experienced NCRSV (Table 2).

### *Reproductive Health Outcomes and Sexual Violence*

In our study, 7.6 percent, 17.1 percent, and 3.8 percent of the participants suffered fistula, chronic pelvic pain, or both issues, respectively.

Prevalence of fistula (obstetric or traumatic) and absence of desire for sex were highest among those who experienced CRSV. Differences between NCRSV and those who did not experience SV for these two outcomes were negligible. Prevalence of chronic pelvic

pain and absence of desire for children were lowest among those with no experience of SV, intermediate among those who experienced NCRSV, and highest among those who experienced CRSV (Fig. 1).

Bivariate statistical analyses showed that the above observations were statistically significant ( $p < 0.0001$ ) (Table 3). Odds of having a fistula were 10.4 (95% CI 3.9–27.9) for those who experienced CRSV when compared with those who never experienced any SV. Considering only women who experienced SV in either context, odds ratio of having fistula was 4.2 (95% CI 1.5–13.4) for those assaulted by two or more men compared with those assaulted by one man. Just among those who experienced CRSV, comparable odds were 2.7 (95% CI 0.7–10.6).

In the multiple logistic analyses, odds ratios for the four reproductive health outcomes were estimated after adjusting for the covariates age, marital status, education, occupation, and number of children (Table 4). In each case, women with no experience of SV constituted the reference group. For women who experienced CRSV,

**Table 1. Sociodemographic Characteristics of Three Groups of Women with Different Experience of Sexual Violence (SV).**

Sociodemographic variables		Experience of SV				
		Never (n = 203)	NCRSV (n = 50)	CRSV (n = 67)	p <sup>a</sup>	
	n		%			
Age	≤18	57	20.7	18.0	9.0	0.005
	19–24	77	27.6	26.0	11.9	
	25–29	60	17.2	22.0	20.9	
	30–34	38	10.8	16.0	11.9	
	≥ 35	88	23.7	18.0	46.3	
Marital Status	Single	57	19.7	16.0	13.4	< 0.0001
	Married	206	70.4	58.0	50.7	
	Separated/Divorced	42	6.4	20.0	28.4	
	Widowed	15	3.5	6.0	7.5	
Tribe	Hutu	155	52.2	44.0	40.3	0.41
	Hunde	34	9.8	14.0	10.4	
	Other	131	40.0	42.0	49.3	
Religion	Christian	287	89.5	94.0	94.0	0.51
	Muslim	7	2.0	2.0	3.0	
	Other local religious group	21	8.5	4.0	3.0	
Education	Less than primary school	212	63.0	80.0	65.7	0.076
	Secondary school, alphabetization <sup>b</sup> or vocational training	108	37.0	20.0	34.3	
Occupation	Farmer	62	17.7	12.0	29.9	0.002
	Trader	120	34.0	36.0	49.2	
	Jobless or Stay at home	91	29.6	38.0	17.9	
	Other	47	18.7	14.0	3.0	
Number of children	0	47	19.2	10.2	4.5	0.11
	1–4	152	43.4	65.3	47.7	
	5–9	109	34.0	20.4	44.8	
	10 and more	11	3.4	4.1	3.0	

<sup>a</sup>p for chi-squared test. <sup>b</sup>Teaching adult women how to read and write in Swahili. Never, Women never experienced sexual violence; NCRSV, Women experienced nonconflict-related sexual violence; CRSV, Women experienced conflict-related sexual violence.

odds ratio for fistula remained high at 11.1 (95% CI 3.1–39.3), and odds ratio for chronic pelvic pain was 5.1 (95% CI 2.4–10.9). Odds ratios for absence of desire for sex and absence of desire for children were both 3.5 (95% CI 1.7–6.9; 1.6–7.8). For those who experienced NCRSV, odds ratio for chronic pelvic pain was 2.3 (95% CI 0.95–5.8), odds ratio for absence of desire for children was 2.7 (95% CI 1.1–6.5). For those who experienced CRSV and did not desire to have children, reasons given were: “pregnancy and child associated with painful experience of aggression,” “rejection by husbands,” and “negative perceptions of men.” “Difficulty in caring for

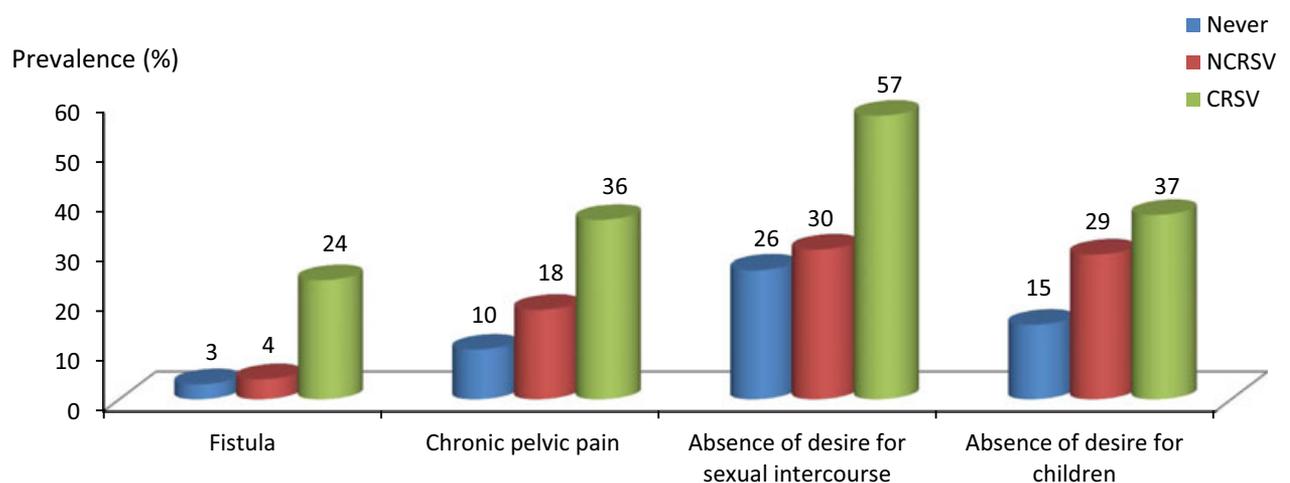
the children they already had” was cited by all women who experienced SV as reason for not desiring more children. Participants who still desired having children gave these reasons: “still young and healthy to bear children,” “need to have a big family,” and “need to bear children to keep their husbands.”

To compare directly the two groups of women who experienced SV, additional regression models were fitted using the NCRSV as reference group and the same covariates. Results showed that odds ratios for women who experienced CRSV were 9.5 (95% CI 1.6–56.4) and 2.2 (95% CI 0.8–5.7), respectively, for fistula and

**Table 2. Characteristics of Aggression.**

Characteristics of aggression		NCRSV (N = 50) No. (%)	CRSV (N = 67) No. (%)
Has experienced forced sexual intercourse		44 (88)	67 (100)
Has experienced other types of SV		8 (16)	5 (7)
Persons identified as responsible for SV	Militia/armed men/men in uniform/bandits	0 (0)	67 (100)
	Husband	14 (28)	0 (0)
	Close persons, civil or unknown	35 (70)	5 (7)
Frequency of perpetrated SV	Hunters	1 (2)	0 (0)
	One isolated episode of aggression was experienced	30 (60)	58 (87)
	SV experienced over a period of time	20 (40)	9 (13)
Number of men implicated in aggression	One	44 (90)	23 (34)
	Two	4 (8)	20 (30)
	Three or more	1 (2)	24 (36)
Number of times SV was experienced	One time	38 (76)	58 (87)
	Two or more times	12 (24)	9 (13)

SV, Sexual violence; NCRSV, Women experienced nonconflict-related sexual violence; CRSV, Women experienced conflict-related sexual violence.



**Fig. 1. Prevalence of adverse reproductive health outcomes by experience of sexual violence (SV). Never, Women never experienced sexual violence, NCRSV, Women experienced nonconflict-related sexual violence; CRSV, Women experienced conflict-related sexual violence.**

for chronic pelvic pain. Women who experienced CRSV were also more likely to report an absence of desire for sexual intercourse (OR = 2.5; 95% CI 1.1–6.1).

### *SV, Pregnancy, and Induced Abortion/Miscarriages*

Pregnancy, induced abortion, and miscarriage were investigated among all women who had experienced SV. About half of the women were pregnant since the SV. Most of the pregnancies were carried to term. Among the 16 women who experienced CRSV and had a fistula, seven reported a pregnancy after their rape.

Compared with those who experienced NCRSV, more women who experienced CRSV were willing to abort and would have done so if appropriate care was available. In this group, three abortions were attempted

under unsafe conditions and another three women reported miscarriages (Table 5).

## Discussion

### *Main Findings*

Our study demonstrated that CRSV is associated with increased odds of fistula, chronic pelvic pain, absence of desire for sexual intercourse, and absence of desire for children. As it included two groups of women who experienced sexual violence within different contexts, we were able to estimate the odds ratio for these adverse outcomes for CRSV over and above the odds related to sexual violence itself.

### *Strengths and Limitations*

This study has the following strengths: 1) the relatively large sample size compared with previous research, 2) the ability to include two forms of sexual violence, and 3) being population-based allowing the estimation of the prevalence of sexual violence. However, we recognize that there are inherent limitations in our study that warrant caution in interpretation of results. The first and most predominant is the voluntary nature of the participation, which could render our sample unrepresentative and our results biased. Nevertheless, we are confident that our sample was reasonably similar to the target population with respect to relevant characteristics. In our sample, education, marital status, and mean of number of children were in the same range as reported in the 2007 Demographic Health Survey of

**Table 3. Prevalence of Reproductive Health Outcomes by Category of Experience of Sexual Violence (SV).**

<i>Experience of SV</i>	<i>Never</i>	<i>NCRSV</i>	<i>CRSV</i>	<i>p<sup>a</sup></i>
n	203	50	67	
Fistula (%)	3	4	24	< 0.0001
Chronic pelvic pain (%)	10	18	36	< 0.0001
Absence of desire for sexual intercourse (%)	26	30	57	< 0.0001
Absence of desire for children (%)	15	29	37	< 0.0001

*Never, Women never experienced sexual violence; NCRSV, Women experienced nonconflict-related sexual violence; CRSV, Women experienced conflict-related sexual violence. <sup>a</sup>p-value for chi-squared test.*

**Table 4. Odds Ratios for Reproductive Health Outcomes, Results of Logistic Regression Analysis.**

<i>Reproductive health outcomes</i>	<i>Experience of SV</i>	<i>OR (crude)</i>	<i>OR (adjusted<sup>b</sup>)</i>	<i>p<sup>c</sup></i>	<i>Goodness of fit, test's p<sup>d</sup></i>
Fistula	Never <sup>a</sup>	1.0	1.0	–	–
	NCRSV	1.4 (0.3–7.1)	1.2 (0.2–7.0)	0.8	1.0
	CRSV	10.4 (3.9–27.9)	11.1 (3.1–39.3)	< 0.0001	0.6
Chronic pelvic pain	Never <sup>a</sup>	1.0	1.0	–	–
	NCRSV	1.9 (0.8–4.7)	2.3 (0.95–5.8)	0.06	1.0
	CRSV	4.9 (2.5–9.6)	5.1 (2.4–10.9)	< 0.0001	0.3
Absence of desire for sexual intercourse	Never <sup>a</sup>	1.0	1.0	–	–
	NCRSV	1.3 (0.6–2.5)	1.4 (0.6–2.9)	0.4	1.0
	CRSV	3.8 (2.1–6.8)	3.5 (1.7–6.9)	< 0.0001	0.4
Absence of desire for children	Never <sup>a</sup>	1.0	1.0	–	–
	NCRSV	2.3 (1.1–4.9)	2.7 (1.1–6.5)	0.02	1.0
	CRSV	3.4 (1.8–6.4)	3.5 (1.6–7.8)	0.002	0.8

*Never, Women never experienced sexual violence; NCRSV, Women experienced nonconflict-related sexual violence; CRSV, Women experienced conflict-related sexual violence. <sup>a</sup>Reference category; <sup>b</sup>Adjusted for age, marital status, education, occupation, and number of children. <sup>c</sup>p for this variable in multivariate logistic regression model. <sup>d</sup>Indicates the p of Hosmer–Lemeshow test conducted for each logistic regression model.*

the Democratic Republic of Congo (18). The proportion of women exposed to sexual violence in any context before the time of this study (36%) was higher than the 24.8 percent obtained in the Demographic Health Survey (18) but similar to the 39 percent reported in a more recent population-based study conducted in eastern Democratic Republic of Congo (19). The prevalence of fistula among the women who had not experienced sexual violence (3%) is higher than the one reported for the North-Kivu province in the Demographic Health Survey (1%) but similar to the general prevalence of this condition in developing countries (2%) (20).

We are also confident that no significant bias was present in our results particularly in those on fistula and chronic pelvic pain. For our results to be biased, women who participated in this study and suffered CRSV should have more fistula or chronic pelvic pain than women who suffered CRSV and did not participate. We recruited participants outside the medical environment, and did not offer any medical assistance; hence it was unlikely that we had attracted disproportionately those who had the conditions. It was even more unlikely that a higher disproportional participation occurred among those who experienced CRSV than the other groups. Moreover, the odds ratios for fistula and chronic pelvic pain for the group of women who experienced CRSV were as high as 11 and 5, respectively, and thus unlikely to be accounted for by sampling bias.

The second limitation is that the study is cross-sectional and could not establish the temporal sequence of events objectively. We tried to overcome this limitation by designing questions to assure that the reproductive health outcomes reported were developed after the experience of SV.

**Table 5. Pregnancy, Induced Abortion, and Miscarriages According to the Context of Sexual Violence (n = 117).**

<i>Outcomes</i>	<i>NCRSV n/N (%)</i>	<i>CRSV n/N (%)</i>
Pregnancy after assault	28/50 (56)	31/67 (46)
Pregnancy carried on to term	28/28 (100)	27/31 (87)
Willing to abort	7/28 (25)	17/31 (55)
Would abort if appropriate care was available	6/28 (21)	12/31 (39)
Attempted abortions	1/28 (3)	3/31 (10)
Successful induced abortion	0/28 (0)	1/31 (3)
Safe conditions of abortion	0/28 (0)	0/31 (0)
Unsafe conditions of abortion	1/28 (3)	3/31 (10)
Miscarriages	0 (0)	3/31 (10)

*NCRSV, Women experienced nonconflict-related sexual violence; CRSV, Women experienced conflict-related sexual violence.*

A third limitation of our study is that both fistula and chronic pelvic pain were self-reported. To avoid erroneous reporting, questions were clearly formulated so that women could easily identify these two conditions.

### *Interpretation*

In our study, women reporting CRSV were older than in the other two exposure groups. A possible explanation of this age difference is that young women who experienced this stigmatizing violence could be more inclined to isolate themselves or relocate after their rape.

To date, there exists no published report that includes comparison of the health effects of sexual violence according to its context, that is, whether it was conflict-related. Although there existed four reports which involved fistula and sexual violence, none can provide risk estimates because neither comparison groups nor baseline prevalence were present (21–24). A hospital-based study found that few cases (4%) of the treated fistula are related to sexual violence and most of the women suffered this condition for obstetric reasons and inappropriate abortion or stillbirth management (23). Yet, at least two studies suggested the possibility that fistula could be a result of CRSV because they reported substantial proportions of this condition (15% and 29%, respectively) among women who experienced CRSV (21,22). Besides, a study based on multicountry demographic health surveys on four African developing countries' found a link between exposure to sexual violence and incontinence, used as a proxy for fistula (24). Our study has confirmed such possibilities. Furthermore, we estimated that the risk of traumatic/obstetric fistula associated with CRSV was appallingly high. Hence, we have challenged effectively the conventional depiction of fistula as only a resultant of poorly assisted childbirth (20,25) and conclude that fistula can directly or not result from sexual violence when it is perpetrated during armed conflicts. It is likely that the injury is a consequence of the extreme violence. Among the 16 women victims of CRSV who suffered from fistula, 81 percent were gang raped by two or more men, sometimes involving foreign objects.

Sexual abuse has been previously associated with chronic pelvic pain (9,10,26,27). In our study, the prevalence of this condition among those who suffered from NCRSV was 18 percent, almost double that of women who had never experienced SV. Among women who experienced CRSV, the prevalence showed an even more devastating picture, with 36 percent of them suffering from this condition. The extreme violence could be directly responsible. Alternatively, as previous studies have demonstrated, posttraumatic

stress associated with sexual abuse may lead to the condition (28).

We found that the experience of sexual violence significantly reduced women's desire for sexual intercourse, which was consistent with previous studies (13). It also reduced women's desire for children. Childbearing is an important part of African culture, partly because of the value placed on continuation of the lineage (29). This finding was supported by our results with 85 percent of women who never experienced sexual violence still wanting children when almost 40 percent of them already had five or more. The adverse effect of CRSV was shown by the finding that, when 48 percent already had five or more children, a lower percentage, 63 percent, of those exposed to CRSV want more.

Half of the victims of CRSV who became pregnant were willing to abort. This is partially consistent with previous findings that the likelihood of induced abortion is higher among victims of intimate partner violence (30,31). As abortion is illegal in the Democratic Republic of Congo (32), the law forces women raped during the conflict to carry an undesired pregnancy to term without regard to the psychological trauma. Consequently, 10 percent of victims of conflict-related rape who became pregnant attempted to abort under unsafe conditions, putting their lives at risk. Considering the possibility of underreporting such action, many more women might be putting their lives at risk just because they could not access a this needed service.

### Conclusion

The Democratic Republic of Congo's armed conflict is creating a critical humanitarian disaster in the populations of the eastern provinces. It forces people to flee from home, losing almost everything they possess. This study demonstrated that, above such dire deprivation, the sexual violence perpetrated during the armed conflict has devastating and persistent health and social consequences. With comparison to women who suffered sexual violence that was not related to armed conflict, we are able to conclude that sexual violence when perpetrated as a weapon of war has greater and more lasting effects. To help women face these challenges and to alleviate suffering, adequate health services should be provided and community support should increase. In particular, fistula repair should be extensively offered. Women with fistula are often rejected by their own community and society (33) while suffering from medical consequences such as vulval dermatitis and recurrent urinary tract infections (34). As the United Nations General Assembly suggests (35): efforts should be made to prevent this condition within a human rights-based framework. Fundamen-

tally, the governments and institutions engaged in this conflict must take steps to end the conflict and ensure safety for every person living in this country.

### Disclosure of Interests

The authors declare that they have no conflict of interest.

### Ethics Committee Approval

The Ethics Committee of Université de Montréal (Comité d'éthique de la recherche en santé) reviewed the study objectives, design and precaution taken to avoid stigma, and mechanisms to guarantee confidentiality (individual interviews, in closed space, outside the woman's house) and safety of the research team. It also ensured that support will be offered to participants who experienced SV in case of need. In fact, an agreement was concluded with the Collectif Alpha Ujuvi for them to provide assistance to any participant who expressed the need after taking part in this study. This nongovernmental organization provides help to women in various aspects of life. Participants were informed about that source of assistance at the end of their interview and with the consent form translated in Swahili. Along with its partners (e.g., HEAL Africa, CARITAS), the Collectif Alpha Ujuvi provides a range of services including health care, psychosocial assistance and education. Data collection began after the approval of the committee was granted.

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