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# Violence against health care workers in a crisis context: a mixed cross-sectional study in Eastern Democratic Republic of Congo

Samuel Lwamushi Makali<sup>1,2,3,4\*</sup>, Jean Corneille Lembebu<sup>1</sup>, Raïssa Boroto<sup>1</sup>, Christian Chiribagula Zalinga<sup>1</sup>, Daniella Bugugu<sup>1</sup>, Emmanuel Lurhangire<sup>1</sup>, Bigirinama Rosine<sup>1</sup>, Christine Chimanuka<sup>1</sup>, Pacifique Mwene-Batu<sup>1,2,7</sup>, Christian Molima<sup>1</sup>, Jessica Ramirez Mendoza<sup>5</sup>, Giovanfrancesco Ferrari<sup>6</sup>, Sonja Merten<sup>6</sup> and Ghislain Bisimwa<sup>1,2,3</sup>

## Abstract

**Background** Health Care Workers (HCWs) in conflict zones face high levels of violence while also playing a crucial role in assisting the population in distress. For more than two decades, the eastern provinces of the Democratic Republic of the Congo (DRC), have been wracked by conflict. This study aims to describe the state of violence against HCWs and the potential prevention mechanisms in eastern DRC.

**Methods** In North and South Kivu, between February 5 and 21, 2021, we conducted a mixed cross-sectional convergent study in health facilities (health centers and hospitals). An anonymized self-administered questionnaire was sent to HCWs about their experience of violence in the 12 months prior to the study. In-depth individual interviews with HCWs, present on the day of the investigation, were also done to explore their experience of violence. A descriptive analysis of the quantitative data and a thematic analysis of the qualitative data was carried out.

**Results** Of a total of 590 participants, 276 (45.9%) reported having experienced violence in the 12 months before the study. In North Kivu, aggressors were more frequently the patients (43.7% vs. 26.5%) and armed group members (14.3% vs. 7.9%) than in South Kivu. Most respondents (93.5%) reported verbal aggression (insults, intimidation, death threats). Other forms of physical aggression including with bare hands (11.2%), firearm (1.81%), and stabbing (4.7%). Only nearly one-tenth of the attacks were officially reported, and among those reported a higher proportion of sanctions was observed in South Kivu (8.5%) than in North Kivu (2.4%). The mechanisms proposed to prevent violence against HCWs were community initiatives and actions to strengthen the health system.

**Conclusions** In Eastern DRC, HCWs face multiple and severe forms of aggression from a variety of individuals. The effects of such levels violence on HCWs and the communities they served could be devastating on the already pressured health system. Policy framework that defines the roles and responsibilities for the protection of HCWs and for the development and implementation of preparedness measures such as training on management of violence are possible solutions to this problem.

**Keywords** Violences, Health care workers, Health crisis, Eastern DRC

\*Correspondence:  
Samuel Lwamushi Makali  
samuelmakali11@gmail.com

Full list of author information is available at the end of the article



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## Background

The issue of violence against health care workers (HCWs) has become an increasingly important problem across the world in recent years, further worsened with the arrival of epidemics and pandemics that have terrified the whole humanity to date [1–3]. The World Health Organization (WHO) defines aggression as “the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community that results in, or has a high likelihood of resulting in, injury, death, psychological harm, maldevelopment or deprivation» [4, 5]. The WHO has also developed models to help countries implement strategies to prevent and mitigate violence in the health sector [6].

Although the protection and respect of HCWs is crucial for the Geneva Conventions of 1949 and their additional protocols [7, 8], HCWs continue to come under aggression around the world. During armed conflicts, HCWs are often obliged to offer the minimum care without safeguarding the medical ethics to preserve their lives [9, 10]. However, efforts have already been made in some countries to develop multidisciplinary response against HCW's aggression or protect them in armed conflict [11–14].

There has been very little research done on this issue in DRC. A study conducted in Katanga, in pacific context, showed that 80% of HCWs were subjected to some form of aggression [15]. Aside from this work, aggression against HCWs in the DRC is reported in isolation. In 2021, 127 incidents of aggression against HCWs by armed groups were reported in the six provinces of the Eastern DRC [16]. Of these six provinces, North and South Kivu have been suffering from more than 25 years of violent instability with a high number of deaths linked to armed conflicts [17]. Insecurity and instability began with the arrival of more than two million displaced people fleeing the 1994 genocide in Rwanda, followed by the various wars in DRC (1996, 1998, 2004) and the proliferation of non-state armed groups that still operate in some areas today [18]. Furthermore the region experienced its first Ebola epidemic [19] in a context of mistrust between the population and the relief workers [20] before plunging into the Covid-19 pandemic [21, 22]. There are several problems integrated in the response to Ebola in North Kivu, including the mistrust of the population, scepticism of the disease's existence and attacks on medical facilities [23, 24]. In the last few years, aggression on HCWs have been reported in these two provinces, ranging from minor physical assaults to the destruction of health infrastructure and in some cases, death [16, 25].

The objective of this study was to investigate the current state of aggression against HCWs (frequency, profile of aggressors, possible causes and types of aggression) and to identify the factors contributing to aggression

against HCWs while determining the mechanisms in place that may contribute to the prevention of such aggression in a comparative and descriptive way across both provinces. This was done in light of the complex instability and the occurrence of epidemic diseases in these two provinces.

## Methods

### Study settings

This study was carried out in the two eastern DRC provinces, North and South Kivu. The health system of the country is organized into three levels: the central level representing the decision-making and normative framework at the level of the capital, the secondary regulatory level represented by the provincial health divisions (PHD) and the operational level, the health zone (HZ), directed by the central office of the health zone (COZ). The HZ is further subdivided into three levels of patient care which are the primary care provided by the health centers (HC), the secondary care provided by the general referral hospitals (GRH), and the tertiary care provided by the teaching hospitals. Both provinces have been experiencing armed conflict and have been affected by all waves of the Covid-19 pandemic and the deadliest Ebola epidemic (10th epidemic) [26]. More than 100 armed groups are thought to operate in the DRC's eastern region [27]. This study considered only the secondary and operational levels including general referral hospitals (GRH), secondary hospitals and Health Centres (HC) in rural and urban areas.

### Study design and period

This is a mixed cross-sectional convergent study [28] which entailed the simultaneous collection of both quantitative and qualitative data. The triangulation of these two approaches allowed to ensure the methodological consistency from both quantitative results and qualitative findings [29]. The study was carried out from the 5th to the 22nd of February 2021.

### Selection of health zones and study participants

The selection of the study areas was made by convenience, considering accessibility during the survey period.

Overall, the study was carried out in two Provincial Health Divisions (PHD), three Central office of the zone (COZ), 24 Health Facilities (HF) including three Health Centers (HC), 14 hospitals and two teaching hospitals, in the two provinces. The persons who participated in the quantitative survey were HCWs who were present on the day of the visit from the investigators in their respective hospitals and institutions; and who provided consent to participate in the interview.

Participants in the qualitative surveys were identified in different categories of HCW from the selected HZs. The study team interviewed a total of 29 participants, including four health authorities, 12 members of general hospital coordination and administrative staff, and 13 HCWs.

#### Data collection

The study team collected quantitative data using an anonymous self-administered questionnaire to capture HCWs' experience of aggression. The questionnaire included questions related to the socio-demographic data (age, gender, profession, workplace) of the participants, whether they experienced aggression or witnessed aggression towards their colleagues, the kind of aggression they experienced, the aggressor's profile, as well the mechanisms for reporting the aggression and whether prevention strategies were in place. Even though the questionnaire was anonymous, 98% of respondents answered despite their workload facing the epidemics.

To collect qualitative data, the research team developed an interview guide in French. The interview guide contained questions relating to the respondent's experience of aggression and the mechanisms in place to reduce such aggression. Four interviewers (two in South Kivu and two in North Kivu) with a master's degree in public health and prior training in qualitative methods conducted the interviews.

Data collection was facilitated by a preparatory phase consisting of preparing the respondents in advance through the provincial health divisions of the two provinces. The self-administered questionnaires were distributed to the participants in the facilities and were collected during working hours and a few hours later.

#### Data analysis

The quantitative data collected were encoded in Epi Info 7 and analyzed with Stata 16. Descriptive statistics (frequency and proportion) were calculated for the categorical variables. The chi-square test with a significance threshold  $<0.05$  was used to compare the proportions of the variables across the two study settings (North Kivu and South Kivu).

The qualitative data were recorded in the form of audio files with Sony dictaphones in French and Swahili. These audios were then transcribed into a Word file only in French. A deductive thematic analysis [30] was conducted, based on a thematic framework comprised of two main themes inspired by the study research objective: (1) Respondents' experience with aggression against HCW, description of the types of violence, the perpetrators, the possible causes of aggression); (2) the mechanisms in place to prevent such violence (i.e. the strategies in place to prevent and mitigate aggressions). Verbatims from the interviewees' own words were chosen as illustrative

quotes. To maintain the anonymity of the interviewees, the quotes were cited by the respondent's number according to the order of interviews, without specifying the province or health zone from which they came from.

## Results

### Characteristics of the participants and aggression frequency

A total of 590 out of 602 HCWs (98%) were able to complete the self-administered questionnaire (Table 1). Almost half of the HCWs (45.8%) had experienced violence in the 12 months prior to our study.

Most respondents to the self-administered questionnaires were men (66.3% in South Kivu and 53.5% in North Kivu), and the age group most represented was between 35 and 50 years old (54.9%). Nurse and laboratory technician were the most represented (47.09) followed by medical doctors (25.5%). Other respondents also administrative and security members (11.6%) and other practitioners (dentist, physiotherapist, pharmacist) (15.8%).

### Profile of perpetrators and types of aggression

Perpetrators of violence included patients (32.9%), their relatives (58.4%), members of armed groups who may (11.5%) or may not (10.3%) have relationship with the patients and, other members of the community (23.1%) (Table 2). Regarding the patient him/her-self acting as the aggressor, a significant difference was observed between the two provinces, with a higher proportion of patients violently aggressing HCWs in North Kivu (43.7%) than in South Kivu (26.5%) ( $p=0.003$ ). Furthermore, attacks committed by a member of an armed group were cited more frequently in North Kivu (14.3%) than in South Kivu (7.9%), with no statistical difference in proportions ( $p=0.105$ ). Other aggressors included community members (23.2%), and relatives who employed an armed group to attack HCWs (11.5%).

Verbal assaults were the most frequently reported type of violence (93.5%). Physical assaults with bare hands (11.2%), stabbings (4.7%), assaults with firearms (1.8%), and other types ( $n=0.73$ ) were also reported in both provinces. Stabbings were reported at a significant higher rate in North Kivu (10.6%) than in South Kivu (1.2%).

### Reporting of aggression and proportion of punished aggressors

Half of the respondents reported the aggression experience to a relative in both provinces. Almost a tenth of the aggression (9.4%) were officially reported by the health system or the police, of which only 6% for which legal action was taken, with a higher proportion of legal proceedings in South Kivu (8.5%) than in North Kivu (2.4%) (Fig. 1).

**Table 1** General characteristics of participants in the two provinces

Variables	Total [N(%)]	South-Kivu [N(%)]	North-Kivu [N(%)]	p-value
<b>Aggression in last 12 months (590)</b>				0.067
Yes	276 (45.85)	172 (42.79)	104 (52.00)	
No	314 (52.16)	223 (55.47)	91 (45.50)	
No response	12 (1.99)	7 (1.74)	5 (2.50)	
<b>Age range (n = 579)</b>				0.883
< 35 years	198 (34.20)	137 (34.86)	61 (32.80)	
35–50 years	318 (54.92)	214 (54.45)	104 (55.91)	
> 50 years	63 (10.88)	42 (10.69)	21 (11.29)	
<b>Sex (n = 397)</b>				<b>0.015</b>
Female	150 (37.78)	91 (33.70)	59 (46.46)	
Male	247 (62.22)	179 (66.30)	68 (53.54)	
<b>Type of health structure (n = 499)</b>				<b>&lt; 0.001</b>
Primary	68 (13.63)	34 (9.42)	34 (24.64)	
Secondary	415 (83.17)	324 (89.75)	91 (65.94)	
Tertiary	16 (3.21)	3 (0.83)	13 (9.42)	
<b>Profession (n = 550)</b>				0.368
Doctors	140 (25.45)	88 (23.28)	52 (30.23)	
Dentist/ Physiotherapist/ Pharmacist	87 (15.82)	63 (16.67)	24 (13.95)	
Nurse/Laboratory technician	259 (47.09)	182 (48.15)	77 (44.77)	
Administration / Security / Others	64 (11.64)	45 (11.90)	19 (11.05)	

### Proposed prevention strategies against violence

Four types of actions were proposed as strategies to prevent violence by the respondents: (1) political actions to curb armed groups (24.3%), (2) actions to improve health system (capacity building of HCWs, strengthening of collaborative relationships, amicable conflict resolution, improving the management of human resources and compensation) (55.3%), (3) improve the socio-economic well-being of the community (44.6%), and (4) actions to support professional organisations (doctors' and nurses' associations) in their activities (0.7%) (Table 3).

### Perceptions of health workers on their experience of aggression

With the qualitative data analysis we equally explored (a) the respondents' experience with aggressions, and (b) the solutions they proposed.

### Respondents' experience with aggressions

In most cases patients themselves were the source of violence. Furthermore, the aggressors included accompanying members of the patient such as family members or close friends. It was often reported, close friends would ignite the anger of the entire community to reach the health facility and threaten the HCWs. However, the study also revealed that HCWs were attacked by armed groups. Further, aggression was also instigated among HCWs due to hierarchy resentment and sometimes conflict of interest in the workplace (e.g., belonging to a particular tribe) and escalated to be one of the roots of aggressions by the community.

« ... But for another [person] it was the patient him/her-self who had to attack the care provider always in the same context not having accepted the diagnosis of Covid-19 that had to be communicated ... » (Respondent 8).

« ... these are really threats of the community kind but much more at the level of the nursing staff often it is linked to conflicts of interest .... when, above all, you are not a native, so the natives want at all costs that you can really leave their environment, either their hospital or their health center or the central office of the zone... » (Respondent 10).

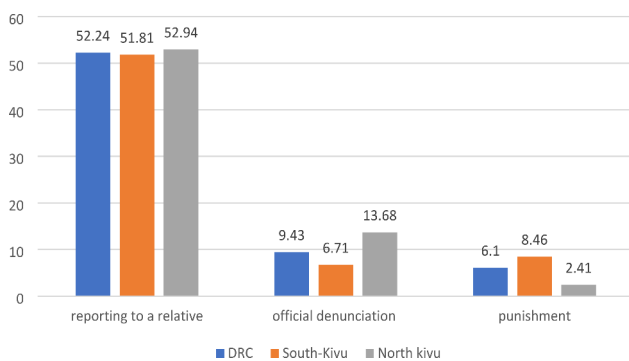
Aggression against HCWs occurred during the sudden onset of deadly epidemic diseases (Ebola and Covid-19). The primary cause of aggression was the community's lack of acceptance, knowledge, and disinformation about the diseases. Anyone involved in the fight against these diseases was part of a conspiracy of the international community to kill the population as highlighted by the following quote:

« ... the titular nurse who was murdered because of this Ebola epidemic situation; she was blamed for what?... eating "dirty" money if I can translate literally. That she was making money on the back of sick people... » (Respondent 2).

The qualitative data also show that the worsening of the patient's condition or the patient's death leads to the

**Table 2** Profile of aggressors and types of assaults on health workers who experienced violence

Variables	Total [N(%)]	South-Kivu [N(%)]	North-Kivu [N(%)]	p-value
<b>Profile of the aggressor in last 12 months</b>				
Patient (n= 273)				<b>0.003</b>
Yes	90 (32.97)	45 (26.47)	45 (43.69)	
Non	183 (67.03)	125 (73.53)	58 (57.31)	
Family member of the patient (n =274)				0.566
Yes	160 (58.39)	97(57.06)	63(60.3)	
Non	114 (41.61)	73(42.94)	41(39.42)	
Community member (n =272)				0.111
Yes	63 (23.16)	34 (20.00)	29 (28.43)	
Non	209 (76.84)	136 (80.00)	73 (71.57)	
Member of an armed group (n =261)				0.105
Yes	27 (10.34)	13 (7.98)	14 (14.29)	
Non	234 (89.66)	150 (92.02)	84 (85.71)	
Family member attached to an armed group (n =253)				0.852
Yes	29 (11.46)	18 (11.18)	11 (11.96)	
Non	224 (88.54)	143 (88.82)	81 (88.04)	
<b>Types of aggression in last 12 months</b>				
Verbal aggression (n =276)				0.378
Yes	258 (93.47)	162 (94.19)	96 (91.31)	
Non	18 (6.53)	10 (5.81)	8 (7.69)	
Physical assault barehanded (n =276)				0.362
Yes	31 (11.23)	17 (9.88)	14 (13.46)	
Non	245 (88.77)	155 (90.12)	90 (86.54)	
Stabbing (n =276)				<b>&lt; 0.001</b>
Yes	13 (4.71)	2 (1.16)	11 (10.58)	
Non	263 (95.29)	170 (98.84)	93 (89.42)	
Assault with firearm (n =276)				0.914
Yes	5 (1.81)	3 (1.74)	2 (1.92)	
Non	271 (98.19)	169 (98.26)	102 (98.08)	
Other assaults (n =274)				0.271
Yes	2 (0.73)	2 (1.17)	0 (0.00)	
Non	272 (99.27)	169 (98.83)	103 (100.00)	



**Fig. 1** Reporting the aggression and proportion(%) of legal action (punishment) taken for aggressors

aggression against the HCWs by the family members, as the family members believe the patient received inadequate care due to negligence or mismanagement of care by the HCWs.

« ... unfortunately, this patient had died, and it was the staff team that had pointed fingers where to say that no..., it is so-and-so..., it is because he had not done this, and the family members verbally assaulted the person there... » (Respondent 11).

Another reason for aggression towards the administrative staff was in relation to the fees for health services. Patients and their relatives felt at times they were over-charged for the services received.

« ... The verbal aggression first of all towards me personally, it is related to the billing... you bill a patient and the patient does not agree to pay these expenses and at a certain moment at the health center, the hospital blocks him/her, he/she is going to try to escape ... while escaping he is caught, he starts the fight and also inflammatory remarks... » (Respondent 4).

**Table 3** Strategies to prevent violence against health workers as proposed by study participants

Variables	Total [N(%)]	South-Kivu [N(%)]	North-Kivu [N(%)]	p-value
<b>Political actions (n = 530)</b>				0.466
Yes	129 (24.34)	86 (23.43)	43 (26.38)	
No	401 (75.66)	281 (76.57)	120 (73.62)	
<b>Health system (n = 528)</b>				0.573
Yes	292 (55.30)	200 (54.50)	92 (57.14)	
No	236 (44.70)	167 (45.50)	69 (42.86)	
<b>Community actions (n = 527)</b>				0.538
Yes	235 (44.59)	166 (45.48)	69 (42.59)	
No	292 (55.41)	199 (54.52)	93 (57.41)	
<b>Professional corporations (n = 527)</b>				0.803
Yes	4 (0.76)	3 (0.82)	1 (0.62)	
No	523 (99.24)	362 (99.18)	161 (99.38)	

A low level of schooling and lack of education among the population on health-related issues and the different diseases and health services were also reported as causes of aggression during this period.

*« ... Ah it's education, you must educate the population. That's what I can say. Educate the population through awareness. Because especially... I tell you that, the people who attacked us were especially during the Ebola period... » (Respondent 5).*

Among the verbal forms of aggression in health facilities and in the community, intimidation, insults, and death threats were the most frequently types of aggression reported. Some people working in the Ebola response and the HCWs raising awareness and providing information sessions about the reality of the Ebola virus disease have been marginalised and given mocking nicknames.

*« ... They think that we are accomplices, and they say that they have already given us the money to do this. That's why I told you that they even burned the house of the pastor where he carried the wash basin, they burned down the houses... » (Respondent 9).*

Sadly, severe forms of physical aggression were also observed during the study and included the killing of HCWs while performing their duties. Other HCWs were victims of direct physical aggression including in the forms of barehanded blow, stone throwing, and the use of firearms. As a result, HCWs suffered severe physical consequences including injuries and fractures.

*« ... You must also know that there were even deaths here, attacked by armed groups, of health care workers who were on their mission. They were shot (mentioning a place), they died like that ... There were two deaths that day after the attack. Two deaths by*

*armed groups... Several times during especially this past Ebola response here, our staff were molested, our vehicles were stoned. We even missed being stoned on the ground ... » (Respondent 12).*

Furthermore, beyond the direct aggression HCWs were also victims of indirect aggression such as destruction of property and receiving death threatening leaflets.

*« ... then I had received flyers at home, they came to drop it off saying that I would be kidnapped ... » (Respondent 1).*

#### Mechanisms in place to reduce aggression

Respondents described some measures already in place aiming at preventing aggression against HCWs. At the community level for example, to address the lack of knowledge of Ebola and Covid-19 epidemics, awareness sessions were organized through community dialogue with the help of political and administrative authorities. Another measure mentioned and established in various HZs was psychosocial care for patients.

*« ... .... We were obliged to involve the political and administrative authorities, such as the chief of the district, who helped us to raise awareness among the population through community dialogues organised in different villages.... » (Respondent 7).*

At the level of health structure, some hospitals have invested in security services to ensure the security of the health facilities and to prevent violence from happening within the facility enclosure. Furthermore, administrative procedures and standards have been put in place by the different heads of services and include disciplinary measures for any misbehaviour to ensure a certain degree of conviviality.

« ... we try to make them aware of the fact that they should always keep professional secrecy and behave like a community, the conviviality between the team must be fused together but... there are also disciplinary measures which are there... » (Respondent 10).

« ... To limit that, well... at least for our structure we have the gate first. And then members of a security company help us block... when one comes to physically attack ... » (Respondent 12).

## Discussion

The purpose of this study was to determine the patterns of violence against HCWs and to describe their experience of violence in the eastern North and South Kivu provinces of DRC affected by armed conflict and as well as during the recent Ebola and Covid-19 pandemics [31, 32].

### The frequency of attacks on health care workers

In this study, 46% of our respondents reported having experienced aggression in the exercise of their profession at least once in the 12 months prior to the interviews which is consistent with previously documented studies including in Nigeria (40%) [33]. However, a higher prevalence of violence against HCWs has been reported in Cote D'Ivoire (78%) [34], Egypt (59.7%), Saudi Arabia (67.4%), Palestine (80.4%) [35], in Iraq (85%) [36], and even in the province of Katanga in DRC (80.1%) [15] which, moreover, was not experiencing armed conflict nor an Ebola epidemic during the study period. The prevalence variations could be attributed to methodological differences including the choice of respondents (doctors, nurses or all HCWs including administrative staff), definitions of violence employed, the type of care or health facilities investigated (huge variations have been documented in teaching hospitals and psychiatric facilities for example). Furthermore, due to the differences between geographical scope (urban vs. rural) of the studies and the socio-political context in the different regions is difficult to make comparisons. The only study previously conducted in DRC in 2015, included over 2,000 HCWs from medical to receptionists, technicians, and administrative staff from over 400 health facilities located in a province not affected by armed conflict. As such, the large proportion of the incidents were verbal in nature (almost 60%) [15].

### Types and causes of violence against health workers

Regarding the many types of violence recorded, this study found that verbal violence (insults, intimidation, threat of murder) was the most prevalent (93,5%) and that physical violence (killing, hitting and wounds including those

inflicted by stones) and other types had a very low prevalence. Indeed, a WHO report published in 2019, reported some attacks in the DRC against Ebola treatment sites resulting in the death of some staff [37]. These results are also in line with those of Al Nazi et al. in Saudi Arabia (83% for verbal abuse and 5% for physical abuse) [38], et Rafeea et al. in Bahrain (78% for verbal abuse and 11% for physical abuse) [39]. However, a study done in Katanga in the DRC reported a lower prevalence of verbal aggression (57%) than in the present study [15]. This disparity could be explained by the fact that Katanga is a stable security zone. Other studies, such as that conducted in Egypt by Abdellah et al., showed similar findings but with lower estimates of the prevalence of non-physical violence [40].

In North Kivu [41], there was a higher incidence of stabbing [42] than in South Kivu, which aligns with findings from a study about conflict dynamics during the Ebola outbreak by Kraemer et al. Indeed, the researchers found that conflict dynamics are much higher in North Kivu and Ituri Province compared to other provinces in the DRC [43]. Furthermore, in the study areas of North Kivu there are multiple armed groups (whose members are part of the local communities) and that commonly use knives and machetes. Aggression using firearms were not widely reported but are significant because of their devastating consequences. A similar trend was reported in Ethiopia, Malawi and Kenya, regarding emotional abuse and sexual harassment among co-workers [44–47] and in Pakistan regarding some incidents of firearm violence [48]. Beyond verbal and physical violence, HCWs reported receiving death threats via messages on small papers.

The main factors contributing to violence against HCWs were attributed to deeply rooted mistrust over the health response emanating from rumours about the two epidemics and confirmed by previous studies [49, 50], as well as a perception of negligence by HCWs and dissatisfaction with patient's care. These may be the consequence of the low level of education among the population and their lack understanding of the disease [23]. Indeed, Mueller et al. reported an increase in violence against HCWs during the Ebola outbreak in North Kivu [20] that can be explained by the perception of Ebola as a conspiracy not only to raise money but also to exterminate a part of the population [51]. Cai et al. in China reported that the perpetrators' perception of professional misconduct after the death of a loved one was the main cause of the various forms of aggression towards HCWs [52]. The same is true when the perpetrator was the patient him/her-self, acts for aggression were attributed to dissatisfaction with the care received which could be due to insufficient personnel or neglect [38, 53]. It should be pointed out that improving the communication between HCWs and patients or family members would be a good solution

to limit the majority of violence in health care services [54].

### **The profile of aggressors of HCWs**

At 58.4%, most of the perpetrators were family members. They not only assaulted the caregivers, but they were able to bring and entice other members of the community to commit aggression.

These findings support the observations of a systematic review on aggression against HCWs in emergency departments [55], as well as other studies conducted in Palestine [35], in Turkey [56] and Saudi Arabia [53] where the majority of the perpetrators were relatives. This could be explained by the fact that the patient's relatives frequently arrive in large numbers to inquire about the patient's condition and calls for the need for health facility policies to restrict the number of accompanying members. Furthermore, relatives have ongoing concerns throughout the patient's hospitalization that the HCWs may not be able to address causing major frustrations and their inability to accept the worsening of the patient's condition or death often exacerbates into violence. This study reveals that a small proportion of the aggression reported by HCWs was attributed to members of armed groups primarily in North Kivu. Aggression by armed groups could have more long-term devastating effects than those caused by high-frequent-low-intensity events of aggression (i.e., verbal aggression committed by relatives), but the consequences have to our knowledge not been the subject of research. It is worth mentioning however, that HCWs might feel compelled to not disclose the perpetrator of such aggression and in fact almost half of them prefer not to disclose the information. In many circumstances, identifying the armed-group affiliation could be very difficult particularly when there is lack of clarity on whether an individual is acting on their own accord or on behalf of an armed group. A global review shows that only 5% of the literature available on violence against healthcare was conducted in contexts of armed-conflict [57]. The ICRC estimates that a large proportion of violence against health care in conflict affected contexts is underreported [58].

### **Declaration aggression, mechanisms of prevention of aggression and prosecution of perpetrators**

Less than one tenth of the cases of violence in the present study (9.43%) were officially reported, and only 6% of those cases were prosecuted. Similar low levels of reporting were described by Al Anazi et al. in Saudi Arabia (16,4%) [38] and Al Bashtazy et al. in Jordan (16,6%) [59] described. However, when compared to other studies conducted in Palestine (40%) and Turkey (35%) [60] our results show that the level of reporting in DRC is very poor. This difference might be linked to methodological

differences (the definition of officially reported in our study excludes when aggression was reported to a relative) and above all because in the DRC there are no domestic legislation and regulations to protect HCWs against aggression. Although we did not explore the reasons for lack of reporting; other reasons explaining the low prevalence of reporting have been described elsewhere and include: fear of negative consequences such as revenge, fear of losing one's job, the perception that reporting is useless when not supported by management or by a response to the victim, the absence of an adequate system for managing violence against HCWs, and the normalization of aggression in the workplace [15, 59, 61, 62].

Some of the aggression prevention mechanisms proposed by the respondents had already been put in place by various health structures. Community-level actions such as awareness raising and community engagement to improve communication were identified; furthermore, strengthening the health system with the use of security, implementing disciplinary measures in the workplace, capacity building of HCWs, strengthening collaborative relationships between staff, resolving conflicts amicably, and improving the planning of human resources and compensation have been established (55.3%) in some health facilities. These measures are consistent with studies recommending the need for strengthening the security system to reduce aggression [38, 48], increasing the penalties for various offences, strengthening disciplinary measures [63], awareness raising [48] and training of HCWs to improve their communication skills with patients [46].

### **Limitations and strengths of the study**

It would have been preferable to include political and administrative authorities as well as the community in the interviewees to get their opinions on aggression against HCWs. However, we were constrained by limited resources. The fact that in the quantitative study we recruited only HCWs who were conveniently accessible and present the day of the survey does not allow us to generalise the findings to all HCWs.

Finally, due to the sensitivity of the issue in the context of security instability, some HCWs declined to have their interviews recorded. In this case, the interviewer took notes directly during the interview. Nevertheless, we are confident of the results of the study with a 98% response rate.

The strength of this study was the preparatory phase of data collection involving the health authorities (provincial health division heads) to inform HCWs of the arrival of the data collection team and the importance of this research in the 2 provinces. This was one of the major factors that enabled us to reach the greatest number of



respondents despite the sensitive nature of the research topic.

## Conclusions

In a setting where ongoing armed conflicts continue to destabilize the entire healthcare sector, our study shows that HCWs are subjected to various types of violence during epidemic emergencies.

This aggression is perpetrated by patients, their families, members of the community and armed groups as well as by on-duty colleagues, demonstrating that HCWs are not protected, nor respected. There is reluctance to report aggression and sanctions are ineffective in a country where there are no legal frameworks to protect HCWs. As a result, enacting strong and appropriate regulations to protect HCWs, as well as training them in appropriate approaches to manage aggression, is critical. Public distrust of the health system is a major gap that needs to be filled in order to reduce attacks on the HCWs.

## Abbreviations

COZ	Central office of the health zone
DRC	Democratic Republic of Congo
GRH	General Reference Hospital
HC	Health Centers
HCWs	Health Care Workers
HF	Health Facilities
HZ	Health Zone
ICRC	International Committee of the Red Cross
NGO	Non Governmental Organization
PHD	Provincial Hospital District
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
WHO	World Health Organization

## Acknowledgements

We sincerely thank all the HCWs who contributed to this research.

## Authors' contributions

SLM substantially contributed to study design, data collection, gave significant input to data analysis and discussion, significantly contributed to the manuscript writing and revision. JCL and RB substantially contributed to data collection, gave significant input to data analysis and the manuscript revision. PM, BR and CM substantially contributed to study design, data collection and the manuscript revision. CCZ, DB, EL and CC substantially contributed to data collection, and contributed to the manuscript writing and revision. GF, JRM, SM and GB substantially contributed to study design, gave significant input to data discussion, contributed to the manuscript writing and revision. All authors read and approved the final manuscript.

## Funding

This study was conducted through seed funding of a research project on violence against health workers in Iraq and DRC by ELRHA (Enhancing Learning and Research for Humanitarian Assistance) through their Research for Health in Humanitarian Crises (R2HC) program.

## Data Availability

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

## Declarations

### Ethics approval and consent to participate

The study protocol was approved by the ethics committee of the Catholic University of Bukavu (UCB/CIES/NC/003/2021). Then we obtained written authorizations from the Ministry of Public Health represented by the heads of division of these two provinces (N°251/53/DPS-NK/2021 for North Kivu and N° 008/CD/DPS-SK/2021 for South Kivu). After explaining the objectives of the study, all interviewees gave their verbal consent to participate.

### Disclaimer

Jessica Ramirez Mendoza confirms that the views and opinions expressed in this publication do not in any way constitute the official view or position of the ICRC. Every effort has been made to comply with my duty of discretion regarding activities undertaken during my employment/missions with the ICRC.

### Consent for publication

Not applicable.

### Competing interests

The authors declare that they have no competing interests.

### Author details

- <sup>1</sup>Ecole Régionale de Santé Publique, Université Catholique de Bukavu, Bukavu, Democratic Republic of the Congo
- <sup>2</sup>Hôpital Provincial Général de Référence de Bukavu, Bukavu, Democratic Republic of the Congo
- <sup>3</sup>Centre de Connaissance en Santé en RDCongo, Kinshasa, Democratic Republic of the Congo
- <sup>4</sup>Ecole de Santé Publique, Université Libre de Bruxelles, Bruxelles, Belgium
- <sup>5</sup>International Committee of the Red Cross, Geneva, Switzerland
- <sup>6</sup>Department of Epidemiology and Public Health, Swiss Tropical and Public Health Institute, University of Basel, Basel, Switzerland
- <sup>7</sup>Faculté de Médecine, Université de Kaziba, Kaziba, Democratic Republic of the Congo

Received: 13 March 2023 / Accepted: 17 September 2023

Published online: 03 October 2023

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