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Key mental health differences in conflict-related sexual violence and how sex, severity, and early intervention impact on improvement: a retrospective observational study

Santiago Martínez Torre[1†], Luis Sordo[2,3,4†], María José Sagrado Benito[1*], Augusto E. Llosa[1], Angie Carrascal Maldonado[1], Retsat Dazang Umar[5], Joshua Usman[5] and Cristina Carreño Glaría[1]

Abstract

Background Conflict-related sexual violence (CRSV) is a significant health and human rights issue in humanitarian contexts, but there is a need of further research on differences between sexes in terms of severity of symptoms and improvement. Consequently, we explored the differences in severity and outcomes among male and female survivors of CRSV who received mental health and psychosocial support (MHPSS) in an armed conflict setting.

Methods We retrospectively analysed medical records from 3442 CRSV survivors in a MHPSS programme in Borno State, Nigeria, between 2018 and 2019. Patient characteristics, severity (measured with Clinical Global Impression of Severity Scale [CGI-S scale]), and improvement (measured with Clinical Global Impression of improvement [CGI-I] scale) were assessed by an attending counsellor. We assessed predictors for severity and improvement using a multivariable logistic regression analysis and time to improvement by sex using Kaplan Meier (K–M) curves and Cox regression.

Results We included 3442 patients who had at least one CRSV event in this study (2955 [85.9%] female, 486 [14.1%] male, one unknown). The most prevalent categories of symptoms were depression (49.9%; n = 1716), post-traumatic (25.6%; n = 879), and anxiety (20.3%; n = 697) symptoms. Most patients had mild (59.0%; n = 1869/3170) or moderate (36.4%; n = 1153/3170) symptoms at baseline, with 4.7% having severe symptoms (n = 148/3170). The logistic regression analysis (n = 1106), showed male patients had a 59% higher odds of severe symptoms at baseline than female patients (aOR 1.59; 95% CI 1.04–2.45). Among males, those older than 55 years had three times higher odds of presenting severe symptoms than younger patients (aOR 3.65; 95% CI 1.43–9.34). Women aged 36–55 years were more likely to present improvement than younger female patients (aOR 1.32; 95% CI 1.11–1.58). For both sexes, prompt attention after a CRSV event (≤ 3 days) positively predicted improvement (aOR 13.9; 95% CI 1.48–130 males, aOR 2.11; 95% CI 1.22–3.64 females) compared to late attention. Time to improvement did not differ between sexes, with an average of at least three consultations needed to achieve improvement.

[†]Santiago Martínez Torre and Luis Sordo are co-authorship.

*Correspondence:
María José Sagrado Benito
mariajose.sagrado@barcelona.msf.org
Full list of author information is available at the end of the article

Conclusions Our study suggests that psychological attention of survivors within the first 72 h should be a priority. MHPSS programmes addressing CRSV should be inclusive to all patients, and gender-neutral approaches to ensure access, safety, confidentiality, and non-discrimination for all survivors should be developed.

Keywords MHPSS, Humanitarian, Sexual violence, Gender, Sex, Therapeutic duration

Background

Conflict-related sexual violence (CRSV) is a form of gender-based violence (GBV) that is directly or indirectly linked to a conflict or violence caused by armed groups [1], and is sometimes illegally and immorally used by armed actors to terrorise the population [2] or as a form of torture [3, 4]. Over the past three decades, CRSV has received increased attention [1], and has been reported in more than 50 countries and humanitarian settings, in environments where humanitarian assistance is provided to people affected by armed conflicts, natural disasters, or economic crises [5, 6]. Moreover, previous research support that approximately one in five displaced women in humanitarian settings has experienced sexual violence [7]. In conflict-affected regions of northeast Nigeria, a recent descriptive study found that among displaced adult women, 33% reported experiencing sexual violence [8]. However, this is probably an underestimation of the actual prevalence given the multiple existing barriers to care and stigma associated with sexual violence [7–9].

Moreover, CRSV has dramatically escalated with the increased insurgency of non-state armed groups in Borno State [10], where after more than a decade since the conflict began, people are regularly exposed to high levels of violence, insecurity and displacements. In addition, internally displaced persons (IDPs) are particularly vulnerable to sexual violence [8]. To date, around 80,000 IDPs live in challenging situations integrated into the host community and five IDPs camps in Pulka and Gwoza villages, where the medical humanitarian organisation Médecins Sans Frontières (MSF) provided service from 2017 until 2021 [11]. Mental health and psychosocial support (MHPSS) programmes are part of the MSF humanitarian response during disasters and conflict, and they are frequently incorporated into larger health-care programmes that provide primary and secondary health-care services. The MSF MHPSS intervention provides counselling sessions, psychosocial support groups, psychoeducation, psychosocial stimulation, and psychological first aid, in addition to psychological and pharmaceutical treatment [12].

Aside from medical consequences [13, 14], there is evidence that survivors of CRSV have a higher prevalence of poor mental health outcomes or long-term psychological distress and social consequences than the general population in conflict areas affected by other stressors [7, 9, 15–17], and may have a slower pattern of recovery [18, 19]. These patients present with higher rates of mood and anxiety disorders [20, 21], specifically post-traumatic stress disorder (PTSD), depression [22, 23], and somatic complaints [24]. Consequently, ensuring appropriate care for survivors of CRSV in humanitarian settings should integrate comprehensive medical, social, and psychological care [25–27]. Programmes and interventions addressing CRSV must be integrated as a basic part of any humanitarian response, considering the international public health and human rights issue it entails [28, 29].

Although CRSV has gained recognition as a significant problem in need of an urgent humanitarian response, this response has largely focused on women, leaving significant gaps for male survivors. Globally, 17% of the male population in conflict settings reported having experienced some form of GBV or CRSV [30], which does not represent the magnitude of the problem since male CRSV tends to be underestimated [31]. Most prior research has focused on the prevalence of male survivors in a variety of humanitarian contexts and conflict settings, on better understanding the characteristics that affect seeking care, documenting perpetrators' information, and assaults patterns, or on assessing the prevalence of other forms of interpersonal violence [15, 16, 32–34]. Other studies have pointed out that CRSV against men has particular social, physical, and mental consequences compared with CRSV against women, which, combined with a lower rate of reported assault complaints due to stigma and cultural factors [9, 35], demonstrate gender differences in the health impact and access to care of survivors.

However, research on differences between sexes in terms of the factors associated with severity, improvement, or the number of mental health consultations needed to observe improvement remains scarce. To contribute to greater knowledge and to expand the findings of an earlier paper on the same population in a conflict-affected region of northern Nigeria [36], this study aims to explore differences in severity and outcomes between male and female survivors of CRSV.

Methods

Study design and study participants

For this retrospective cohort study, we analysed routinely collected data from 3442 patients over 15 years of age presenting for MHPSS services at MSF-supported

facilities between January 2018 and December 2019 in Pulka and Gwoza, Borno State, Nigeria. For this study, we included all patients who had experienced a CRSV event and who had participated in at least one consultation.

Data collection and procedures

MHPSS activities were conducted by lay counsellors and mental health community workers trained and supervised by clinical psychologists and remote psychiatrist, following the World Health Organization (WHO) Mental Health Gap Action Program (mhGAP) guidelines [37]. A comprehensive Health Information System and reference data collection guidelines were used as primary sources for team training and data quality monitoring. An attending counsellor collected all data from patients, who were routinely asked to provide their sociodemographic and clinical characteristics, with two binary options for sex category due to country restrictions [38]. The counsellor recorded patients' knowledge about the MHPSS services or which other structure the patient was referred from. A clinical evaluation was performed at every consultation to assess severity of symptoms. The counsellor identified up to three symptoms that the patient classified by importance into eight mental, neurological, and substance use (MNS) symptom categories. These MNS symptom categories were developed using a consultative process with MSF experts, the International Disease Classification 10 (ICD-10) manual, and the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV). MNS symptoms categories were: (1) somatoform symptoms, (2) anxiety-related symptoms, (3) post-traumatic symptoms, (4) depression-related symptoms, (5) psychosis-related symptoms, (6) behavioural symptoms, and (7) cognitive symptoms. Finally, based on the symptoms´ severity, the counsellor decided which MNS symptom category the patient was assigned to.

All potential traumatic events (including CRSV) were the factors that may risk the patient's psychological and physical integrity and have triggered the MNS symptom category. The counsellor could record more than three events to understand the background of the psychological troubles a patient may present. Afterwards, the counsellor had to identify, prioritise, and sort the events into three event categories according to their importance (event 1 [main event], event 2, and event 3). The logic to prioritise the events is similar to the one explained for symptoms. The precipitating events were grouped into four categories: (1) medical, (2) violence, (3) separation or loss and (4) disasters/catastrophes. The violence category included the sexual violence event or CRSV. For this study, we included all patients who had experienced a CRSV event that was classified into one of the three event categories. The date of the event occurrence was recorded and classified into the following categories "more than 1 year", "from 4 to 12 months", "from 1 to 3 months", "from 1 to 4 weeks", "from 4 to 7 days", and "from 1 to 3 days".

Severity of symptoms at baseline was measured at registration using the Clinical Global Impression of Severity Scale (CGI-S) and categorised according to a 7-point scale. In this study, we refer to severe symptoms as symptoms categorised with 5, 6, or 7 points in CGI-S scale, compared with moderate symptoms (4 points), and mild symptoms (1, 2, and 3 points). Treatment outcome was measured at every session with the Clinical Global Impression-Improvement (CGI-I) scale. In this study, we defined an improvement outcome as a CGI-I score of 1, 2, or 3 points during treatment and at termination. We defined a substantial improvement outcome as a score of 1 or 2 points on CGI-I during treatment and at termination. The CGI scale is a validated universal tool routinely used in research and clinical practice [39].

Sessions took place on a weekly basis and lasted approximately 45 min. The counsellor and the patient decided the day of the week the session took place during the intervention. The intervention consisted of a first consultation (patient admission), a series of successive follow-up weekly consultations, and a final consultation (end of treatment). Consequently, the first consultation corresponded to day 0; the second consultation corresponded to day 7, the third to day 14, and so on, setting a correlation between the number of consultations and the time in days. Supplementary Materials contain further detail about the MSF MHPSS program data collection system.

Statistical analysis

Descriptive analysis for patients' characteristics was carried out disaggregated by sex, and variables were summarised using percentages or means with standard deviations (SD) or medians with interquartile ranges (IQR), as appropriate. Groups were compared using Pearson's chi-squared testing or Fisher's exact test (for categorical variables) and Student's t-test or Wilcoxon Mann–Whitney testing (for continuous variables), setting statistical significance at $p < 0.05$. Potential significant variables were identified and introduced into multivariable logistic regression models to understand how sex influenced the severity of symptoms according to CGI-S and improvement according to CGI-I. Sex (Male/Female), age by groups (> 55 years/36–55 years/ ≤ 35 years), category of symptoms (Anxiety/Post-traumatic/Depression/Somatoform/Psychotic/Behavioural/Cognitive), and main CRSV event date (1–3 days/ > 3 days) were introduced into a multivariable logistic regression model as independent variables, and severe

symptoms (Yes/No) and improvement outcome (Yes/No) as dichotomous dependent variables. For this study, our main analysis was to analyse the dependent variable of "improvement outcome" (scores 1, 2, and 3 in the CGI-I scale). However, during the development of this study, it was decided to repeat the analysis using the "substantial improvement outcome" variable (scores 1 and 2 in the CGI-I scale). Models were presented using adjusted odds ratios (aOR) with corresponding 95% confidence intervals (CI) and p-values. Pearson's R correlation coefficient was used to identify covariates that were correlated, considering $r > 0.5$ as the range for collinearity. Multicollinearity has been considered through an inspection of correlation coefficients using variance inflation factor values. The goodness of fit was considered for all models using the Hosmer–Lemeshow Goodness-of-Fit Test (acceptable model fit if $p > 0.05$). Pseudo R^2 was considered for all models as a measure of variance (range from 0 to 1). We used K–M survival analysis to compare the event functions between sexes and estimate the hazard ratio (HR) for improvement, displaying the cumulative survival function on a linear scale according to the number of consultations. Despite the weekly correlation between the number of consultations and the days, a complementary survival analysis was performed using time in days instead of the number of consultations. We considered the Log-rank test of equality across strata to compare the hazard functions of the groups to confirm the hypothesis that there were no differences between categories, accepting the hypothesis that the surviving functions are the same if p value > 0.05. Patients who were lost to follow-up (LTFU) after the first consultation, had a single intervention by design, or were undergoing treatment were excluded from the logistic regression analysis and were censored in the Kaplan–Meier analysis, as they did not have data to determine whether they symptoms had improved or not. Data were analysed using STATA SE v15.

Results

A total of 3442 patients in the project database had at least one CRSV event meeting the criteria for inclusion into one of the 3 main categories. Of these, 2955 (85.9%) identified as female and 486 (14.1%) as male (sex data missing for one patient). The mean age at enrolment for females was 34.2 years (SD 14.7), and 41.5 years (15.9) for males. Over two-thirds (84.2%; n = 2888/3432) of the sample reported having been forcibly displaced, and self-reported being illiterate (80.1%; n = 2749/3432). The most prevalent categories of symptoms were depression (49.9%; n = 1716) and post-traumatic (25.6%; n = 879) symptoms, followed by anxiety symptoms (20.3%; n = 697). Most patients were classified as having mild (59.0%; n = 1869/3171) or moderate (36.4%; n = 1153/3171) symptoms at baseline, with less than 5% having severe symptoms (4.7%; n = 148/3171). Most of the dates of occurrence of the CRSV event were over 3 days, and up to 1 year before admission (95.5%; n = 1274/1334), with only a small percentage of events occurring within the first 72 h of admission (4.5%; n = 60/1334) (Table 1). Of the 3442 patients, 67.9% (n = 2336; 325 male and 2011 female) were either LTFU, had only attended the first consultation, or were undergoing treatment, and were therefore excluded from the logistic regression analysis, leaving 1106 patients for the analysis.

The multivariate analysis to explore the factors that affected severity of symptoms showed that male patients had a 59% higher odds of severe symptoms at baseline compared to female patients (aOR 1.59; 95% CI 1.04–2.45). Compared with patients with somatoform symptoms, those with psychotic (aOR 23.4; 95% CI 7.44–73.4), cognitive (aOR 8.65; 95% CI 1.11–67.3), and behavioural symptoms (aOR 4.91; 95% CI 1.21–19.9) had a higher probability of presenting severe symptoms. When disaggregated by sex, it was observed that male patients older than 55 years had three times higher odds of presenting severe symptoms than male patients aged 35 years and younger (aOR 3.65; 95% CI 1.43–9.34), and female patients with behavioural symptoms (aOR 11.7; 95% CI 1.89–72.6) and psychotic symptoms (aOR 33.9, 95% CI 7.87–146.7) had a higher probability of presenting severe symptoms than female patients with somatoform symptoms (Table 2).

After a median follow-up of 2 weeks (3 sessions), 1030 (93.1%) of 1106 patients reported an improvement in symptoms. The multivariate analysis to explore the factors that affected improvement of symptoms showed that patients aged 36–55 years had a higher probability of presenting improvement than those younger than 35 years (aOR 1.22; 95% CI 1.04–1.44). Sex did not affect the probability to show an improvement outcome. Patients with psychotic symptoms had a 22% reduction in the odds of presenting improvement than patients with somatoform symptoms (aOR 0.22; 95% CI 0.07–0.71). The same analysis disaggregated by sex showed that among female patients, those aged 36–55 years had a higher probability of experiencing improvement than those younger than 35 years (aOR 1.32; 95% CI 1.11–1.58). Female patients with depression (aOR 0.57; 95% CI 0.35–0.93) and psychotic (aOR 0.07; 95% CI 0.00–0.60) symptoms had lower odds of experiencing improvement than female patients with somatoform symptoms, whereas male patients with post-traumatic symptoms had a higher probability of improvement than male patients with somatoform symptoms (aOR 4.84; 95% CI 1.03–22.7). Survivors who

Table 1 Baseline characteristics of the population, events distribution, and number of consultations

	Male (n = 486)	Female (n = 2955)	*p* value	Total (n = 3442)
Mean age	41.5 years	34.2 years	< 0.001	35.2 years
(range)	(16–90)	(16–97)		(16–97)
Age groups				
16–35	210 (43.2%)	1865 (63.1%)	< 0.001	2075 (60.3%)
36–55	192 (39.5%)	813 (27.5%)		1005 (29.2%)
> 55	84 (17.3%)	277 (9.4%)		361 (10.5%)
Personal status				
Displaced	387/484 (80.0%)	2501/2947 (84.9%)	0.023	2888/3432 (84.2%)
Resident	97/484 (20.0%)	446/2947 (15.1%)		544/3432 (15.9%)
Education status				
Illiterate	310/485 (63.9%)	2438/2946 (82.8%)	< 0.001	2749/3432 (80.1%)
Literate	175/485 (36.1%)	508/2946 (17.2%)		683/3432 (19.9%)
Category of symptoms				
Depression	201 (41.4%)	1515 (51.3%)	< 0.001	1716 (49.9%)
Post-traumatic	131 (27.0%)	748 (25.3%)		879 (25.6%)
Anxiety	111 (22.8%)	586 (19.8%)		697 (20.3%)
Somatoform	15 (3.1%)	72 (2.4%)		87 (2.5%)
Psychotic	15 (3.1%)	21 (0.7%)		36 (1.1%)
Behavioural	10 (2.1%)	9 (0.3%)		19 (0.6%)
Cognitive	3 (0.6%)	2 (0.1%)		5 (0.2%)
Main event date				
> 3 days	165/171 (96.5%)	1109/1163 (95.4%)	0.259	1274/1334 (95.5%)
1–3 days	6/171 (3.5%)	54/1163 (4.6%)		60/1334 (4.5%)
Event 1 (main event)				
Sexual violence	260 (53.5%)	1678 (56.8%)	< 0.001	1938 (56.3%)
Family member killed	47 (9.7%)	397 (13.4%)		444 (12.9%)
Property destroyed	49 (10.1%)	198 (6.7%)		247 (7.2%)
Other events	130 (26.7%)	682 (23.1%)		813 (23.6%)
Event 2				
Sexual violence	141/466 (30%)	894/2913 (30.7%)	< 0.001	1036/3380 (30.7%)
Family member killed	64/466 (13.7%)	424/2913 (14.6%)		488/3380 (14.4%)
Property destroyed	61/466 (13.1%)	237/2913 (8.1%)		298/3380 (8.8%)
Other events	200/466 (43.2%)	1358/2913 (46.6%)		1559/3380 (46.1%)
Event 3				
Sexual violence	91/389 (23.4%)	529/2580 (20.5%)	0.062	620/2969 (20.9%)
Family member killed	5/389 (1.3%)	114/2580 (4.5%)		119/2969 (4.0%)
Property destroyed	94/389 (24.2%)	476/2580 (18.4%)		570/2969 (19.2%)
Other events	199/389 (51.1%)	1461/2580 (56.6%)		1660/2969 (55.9%)
Severity of illness (CGI-S)				
Mild (1, 2, 3 points)	261/473 (55.2%)	1608/2697 (59.6%)	0.001	1869/3171 (59.0%)
Moderate (4 points)	173/473 (36.6%)	980/2697 (36.3%)		1153/3171 (36.4%)
Severe (5, 6, 7 points)	37/473 (8.2%)	109/2697 (4%)		148/3171 (4.7%)
Number of consultations				
1	51/227 (22.5%)	260/1388 (18.7%)	0.047	311/1616 (19.3%)
2	72/227 (31.7%)	586/1388 (42.2%)		658/1616 (40.7%)
3	87/227 (38.3%)	479/1388 (34.5%)		566/1616 (35.0%)
4	12/227 (5.3%)	48/1388 (3.5%)		60/1616 (3.7%)
5	4/227 (1.8%)	8/1388 (0.6%)		12/1616 (0.7%)
≥ 6	1/227 (0.4%)	7/1388 (0.5%)		8/1616 (0.5%)

Table 1 (continued)

Sex missing for 1 patient. Age group missing for 1 patient. Self-reported status missing for 11 patients. Education missing for 10 patients. Category of symptoms missing for 4 patients. Main event date missing for 2108 patients. Event 2 missing for 62 patients. Event 3 missing for 473 patients. Severity of illness missing for 271 patients. Number of consultations missing for 1826 patients. *p* values were obtained from chi-squared test and Fisher's exact test

Table 2 Factors associated with presenting severe symptoms according to CGI-S disaggregated by sex

	Male		Female		Total	
	aOR (95% CI)	***p* value**	**aOR (95% CI)**	***p* value**	**aOR (95% CI)**	***p* value**
Age by groups						
> 55 years	3.65 (1.43–9.34)	0.007	1.48 (0.82–2.67)	0.184	1.86 (1.15–3.00)	0.010
36–55 years	1.91 (0.78–4.69)	0.155	0.88 (0.54–1.43)	0.617	1.02 (0.68–1.55)	0.896
≤ 35 years (Ref.)	1	–	1	–	1	–
Sex						
Male	–	–	–	–	1.59 (1.04–2.45)	0.034
Female (Ref.)	–	–	–	–	1	–
Category of symptoms						
Somatoform (Ref.)	1	–	1	–	1	–
Anxiety	0.45 (0.08–2.57)	0.376	0.34 (0.08–1.35)	0.127	0.42 (0.15–1.20)	0.108
Post-traumatic	0.39 (0.07–2.22)	0.296	1.85 (0.55–6.23)	0.318	1.31 (0.50–3.43)	0.578
Depression	0.23 (0.04–1.32)	0.102	0.63 (0.19–2.14)	0.469	0.51 (0.19–1.35)	0.180
Psychotic	10.7 (1.59–71.7)	0.015	33.9 (7.87–146.7)	< 0.001	23.4 (7.44–73.4)	< 0.001
Behavioural	1.63 (0.16–15.9)	0.671	11.7 (1.89–72.6)	0.008	4.91 (1.21–19.9)	0.026
Cognitive	3.41 (0.18–64.3)	0.413	22.1 (0.99–493.7)	0.051	8.65 (1.11–67.3)	0.039
Main CRSV event date						
1–3 days	1.59 (0.16–15.5)	0.686	2.13 (0.64–7.10)	0.214	2.08 (0.72–6.01)	0.173
> 3 days (Ref.)	1	–	1	–	1	–

Reference category (Ref.). *p* values and OR from the multivariable logistic regression models. Total model: Hosmer–Lemeshow goodness-of-fit test = 0.1110; Pseudo R^2 = 0.1227. Female model: Hosmer–Lemeshow goodness-of-fit test = 0.6195; Pseudo R^2 = 0.1092. Male model: Hosmer–Lemeshow goodness-of-fit test = 0.2100; Pseudo R^2 = 0.1671. All models are adjusted by event 1 and event 2 as independent variables. CGI-S = clinical global impression of severity scale. CRSV = conflict-related sexual violence. aOR = adjusted odds ratio

presented to care within 1–3 days after a CRSV event had higher odds to show improvement than those who presented after more than 3 days (aOR 2.36; 95% CI 1.41–3.98). This association persisted when the analysis was disaggregated by sex (aOR 2.11; 95% CI 1.22–3.64 for female patients, and aOR 13.9; 95% CI 1.48–130 for male patients) (Table 3).

To explore the patterns of improvement across sexes, we did a K-M analysis to assess the probability of improvement using the number of consultations as the time component (Fig. 1). The cumulative probability of improvement on the third consultation did not differ between male and female patients (0.85 [survival function 0.15; 95% CI 0.12–0.17] for male patients compared to 0.89 [survival function 0.11; 95% CI 0.08–0.13] for female patients). There were no differences between male and female patients in terms of the number of consultations needed to achieve improvement (HR 1.02; 95% CI 0.87–1.21; $p = 0.76$). Finally, we used the log-rank test to compare the hazard functions of the groups to confirm the hypothesis that there were no differences across sexes, accepting the hypothesis that the surviving functions were the same ($p = 0.3918$).

We performed two complementary analyses: a complementary logistic regression analysis using the outcome "substantial improvement" and a complementary survival analysis using time in days instead of the number of consultations (shown in supplementary materials). Both analyses yielded similar findings to those presented in the main article. Female patients aged 36–55 years had also a higher probability of presenting substantial improvement than to younger female patients (aOR 1.33; 95% CI 1.11–1.60). All survivors, regardless of their sex, who presented to care within 72 h had two times higher odds of presenting substantial improvement than those who did not (aOR 2.58; 95% CI 1.54–4.34 for all patients) (Table 4 in supplementary materials). And finally, patients with psychotic symptoms had a lower probability of substantial improvement than patients with somatoform symptoms (aOR 0.06; 95% CI 0.00–0.47). The complementary K-M curve using the variable time in days also showed no difference in improvement outcome between sexes (HR

Table 3 Factors associated with presenting an improvement outcome according to CGI-I disaggregated by sex

	Male		Female		Total	
	aOR (95% IC)	***p* value**	**aOR (95% IC)**	***p* value**	**aOR (95% IC)**	***p* value**
Age by groups						
> 55 years	0.89 (0.51–1.55)	0.704	1.09 (0.82–1.44)	0.539	1.10 (0.86–1.41)	0.442
36–55 years	0.70 (0.45–1.09)	0.116	1.32 (1.11–1.58)	0.002	1.22 (1.04–1.44)	0.014
≤ 35 years (Ref.)	1	–	1	–	1	–
Sex						
Male	–	–	–	–	1.02 (0.83–1.26)	0.813
Female (Ref.)	–	–	–	–	1	–
Category of symptoms						
Somatoform (Ref.)	1	–	1	–	1	–
Anxiety	3.91 (0.82–18.4)	0.085	0.86 (0.52–1.43)	0.569	1.03 (0.64–1.64)	0.900
Post-traumatic	4.84 (1.03–22.7)	0.045	0.76 (0.46–1.26)	0.303	0.95 (0.60–1.52)	0.855
Depression	3.15 (0.68–14.6)	0.141	0.57 (0.35–0.93)	0.026	0.69 (0.44–1.09)	0.119
Psychotic	1.70 (0.23–12.1)	0.597	0.07 (0.00–0.60)	0.015	0.22 (0.07–0.71)	0.011
Behavioural	1.25 (0.12–12.7)	0.846	3.16 (0.72–13.7)	0.125	1.35 (0.48–3.77)	0.560
Cognitive	3.40 (0.19–58.8)	0.399	–	–	0.45 (0.05–4.27)	0.490
Main CRSV event date						
1–3 days	13.9 (1.48–130)	0.021	2.11 (1.22–3.64)	0.007	2.36 (1.41–3.98)	0.001
> 3 days (Ref.)	1	–	1	–	1	–

Reference category (Ref.). *p* values and OR from the multivariable logistic regression models. Total model: Hosmer–Lemeshow Goodness-of-Fit Test = 0.1365; Pseudo R^2 = 0.0158. Female model: Hosmer–Lemeshow Goodness-of-Fit Test = 0.1360; Pseudo R^2 = 0.0191. Male model: Hosmer–Lemeshow Goodness-of-Fit Test = 0.5566; Pseudo R^2 = 0.0372. All models are adjusted by Event 1 and Event 2 as independent variables. A total of 1826 patients were excluded from this logistic regression analysis. CGI-I = Clinical Global Impression Improvement. CRSV = conflict-related sexual violence aOR = adjusted odds ratio

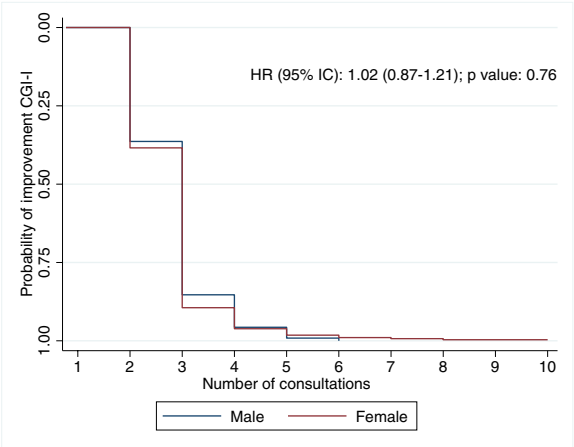

Fig. 1 Kaplan–Meier curve for improvement between sexes. The Kaplan–Meier curve shows that the cumulative probability of improvement on the third consultation dropped to 0.85 for males (survival function 0.15; 95% CI 0.12–0.17) and 0.89 for females (survival function 0.11; 95% CI 0.08–0.13). Log-rank test: $p = 0.3918$. CGI-I = Clinical Global Impression of Improvement. HR = hazard ratio

1.02; 95% CI 0.84–1.24; $p = 0.85$), with a log-rank test that also confirmed the hypothesis that the surviving functions were the same ($p = 0.4237$) (Fig. 2 in supplementary materials).

Discussion

Our analysis of nearly 3500 survivors of CRSV points to the importance of early interventions in MHPSS programmes addressing CRSV. Moreover, the existence of relevant differences in severity and probability of improvement in terms of sex, prompt access, and age indicate that the survivors' characteristics should be considered when programming MHPSS interventions.

The characteristics of our study population with a proportion of 14% of male patients are in line with other CRSV cohorts, in which a vast proportion of survivors exposed to CRSV were female [40, 41]. The age distribution of CRSV survivors shown in our study, where female patients were younger than male patients, is also consistent with the existing literature [42]. Those findings could be the result of gender-cultural norms or stigma around CRSV, but it can also mean the existence of unconsidered access barriers or a lack of male prioritisation in MHPSS activities. We also found that most patients reported having been forcibly displaced and presented to care with mild or moderate symptoms [43].

We also had high dropout rates, which are common in MHPSS programmes, as research in the field shows that many patients' care is stopped after the first consultation in those settings [44]. Patients in our cohort frequently struggled with depression and post-traumatic

stress symptomology. We also highlight that those female patients with depression and psychotic symptoms had a lower odds of improvement, unlike male patients with post-traumatic symptoms. Studies offering evidence on the category of symptoms or disorders that influence improvement have resulted in contradictory findings and led to much debate on the topic [45–48]. These findings could be more related to the symptoms´ severity than to the categories themselves, as supported by the results obtained in a previous paper [49]. Further research should investigate if classification by severity of symptoms rather than diagnosis among victims of CRSV could better predict improvement.

We found that receiving MHPSS support within 72 h after a CRSV event was associated with a greater probability of improvement than receiving support after 72 h. Numerous publications and protocols support the finding that CRSV survivors should have access to support within 72 h after the assault [27, 50–52]. Moreover, the finding that a greater majority of patients presented to care more than 72 h after the assault is similar to findings in other humanitarian contexts [33], and while our study was restricted to patients who received support, it is well understood that most survivors do not [53]. However, those patients who sought treatment earlier may differ from those who did not. Therefore, these differences could have influenced improvement by including better adherence, different coping mechanisms or treatment expectations. Nevertheless, our findings provide quantitative evidence of the benefits of prompt MHPSS services for CRSV and further support the importance of this promptness in all survivors, regardless of their sex.

We found that male survivors in this cohort seeking treatment had higher odds of severe symptoms at baseline compared to female survivors. These findings could be related to the noted tendency for male patients to seek help later than female patients after the assault [33]. Consequently, male survivors could tend to present higher severity than female survivors due to time-related aggravation of their symptoms [54]. Barriers and stigma are well described and likely to result in the prolonged suffering of survivors [28]. In contrast to mentioned prior research suggesting that male survivors could face greater difficulties in achieving improvement than female survivors [30–32], this study found no differences between male and female in the probability of improvement, highlighting similar improvement patterns in terms of the number of consultations and time across sex. The lack of differences in treatment response patterns may be due to other underlying factors: different forms of sexual violence and GBV, or severity classification, could probably better predict an improvement outcome, as pointed out by previous research in the same database [36, 49]. Therefore, additional evidence on CRSV survivors' characteristics, probability of improvement and treatment duration is needed.

Results from this study also showed that, on average, a minimum of 3 sessions is necessary to show an improvement in both sexes. This finding is consistent with the results of a previous study on a broader dataset, which showed that 3 sessions was the threshold at which patients had an increased probability of improvement [36]. However, since around half of our patients did not return after the first consultation, we cannot know whether these patients showed improvement after a single consultation, or whether they abandoned treatment because of lack of improvement or because of the described access barriers to follow-up in the MHPSS programme. Therefore, we can neither discount that improvement trends among treatment seekers who dropped out may differ from the source population, nor assess the effectiveness of a single session in this group. Nevertheless, there are very few studies on mental health intervention efficacy in conflict settings that include sex or gender-disaggregated analysis. The majority of the studies available to compare our results against focus on the effectiveness of therapeutic modalities in high-income countries on young adults with abuse-related post-traumatic stress disorder, but no consensus exists on treatment modality or duration, especially in relation to differences between sexes [55, 56].

Additionally, our current findings also support an age difference in terms of severity and improvement among sexes: we found that male patients older than 55 years tended to present higher baseline severity than younger male patients. In conflict-settings, sexual assault against male minors and adolescents is usually perpetrated by single and unarmed assaulters, typically involving less associated violence compared to assaults against older male survivors [33, 42]. To our knowledge, this could explain the differences between age in men and the severity of symptoms, although further age-disaggregated research should be carried out. By contrast, middle-aged women had a higher probability of improvement compared to younger ones. These differences based on age had already been highlighted by other authors, although without reaching robust conclusions that can be compared with our findings [57]. However, improvement likely also depends on individual coping mechanisms, which may vary with age [58]. These differences could also be explained by the different roles of women by age in the communities, which expose them to other profiles of perpetrators or forms of sexual violence or GBV [1]. These prevailing gender norms that manifest in CRSV against women also appear in sexual violence against men [3].

In summary, our results suggest that male patients present greater severity at admission, but both sexes highly benefit from early interventions and present similar patterns of response. Therefore, guaranteeing the same access and facilities for male survivors than for female is considered by some authors as a priority [59]. In fact, survivors' needs and health-seeking behaviour vary by sex: compared to female survivors, who more commonly attend Maternal and Child Health (MCH) units that integrate GBV, male survivors are more prevalent at integrated treatment clinics for victims of violence [31]. Furthermore, improving access to care for male survivors is challenging, as they are less often identified by the interventions as beneficiaries than female survivors [60]. Gender-neutral access to care to provide equal opportunities to all survivors should be considered when programming MHPSS interventions addressing CRSV. This is especially relevant in situations where services exclusively target single-sex or gender survivors. Also, community engagement strategies and health promotion activities addressing differences between sexes in access to health care should be developed. There is a need for strong staff education and sensitisation around services inclusivity [61] to ensure safety, non-discrimination, and confidentiality. Additionally, gender differences conditioning CRSV/GBV must be considered by professionals when proposing different therapeutic approaches and planning interventions. Finally, further research on the sex, age, and severity classification perspective is required to better explore the needs of male and female survivors of CRSV and to better adapt and improve MHPSS programmes.

The following limitations should be kept in mind when viewing our results. By design, this study only investigated associations between baseline characteristics, severity, and improvement, and did so in a unique conflict-affected setting. The main limitation of our study is inherent to our cohort: most of the patients were female and were no longer under care after the sixth follow-up consultation, and as with other conflict settings, the programme was affected by a large dropout rate. For these reasons, 1826 patients were excluded from the logistic regression and survival analysis as censored, potentially indicating that these patients' care was truncated before presenting an improvement outcome. Consequently, characteristics and trends of the patients excluded may differ from those of the patients included in our results. Therefore, this study analyses a subsample of individuals who were able to continue the intervention after the first session and showed an improvement outcome within a limited consultation period. Consequently, although our findings are robust, their interpretation should consider this fact. This study utilised routinely collected MHPSS programme data under field conditions and therefore, despite training and regular supervision, it is subject to human and data entry errors, which could affect quality. In addition, some results might be confounded by external and environmental factors that occurred outside of counselling sessions. As explained in the methodology, in this study we focused on survivors of an event of CRSV, for this reason, the data must be carefully extrapolated to other patients who suffer from different potentially traumatic events or symptoms in these contexts. Moreover, this study could not assess the prevalence and influence of all forms of GBV, including intimate partner violence (IPV), and other forms of interpersonal violence. Furthermore, by recording the date of the event following intervals, chronic abuse exposures were not considered in this study. This study is limited by its specific context and care provider (MSF), which further limits broad generalisability: despite the real-life setting, the uniqueness of the data and the large number of beneficiaries involved, we only analysed the population that sought care and completed the intervention, and therefore belongs to a very specific MHPSS program in a concrete region of Nigeria. Our findings should thus be extrapolated with caution to other humanitarian settings. As can be expected in a conflict setting, many patients did not strictly adhere to the 7-day session periodicity, so data were therefore also analysed using time instead of number of consultations as presented in supplementary material. Lastly, as the MHPSS programme in Nigeria was ongoing at the time of analysis, some patients with chronic and severe mental disorders were still undergoing treatment and were thus excluded from the analysis.

Conclusions

There are some clear operational implications for healthcare quality that arise from this study: early detection, referral, and psychological attention within the first 72 h should be a priority for MHPSS programmes, as this is when survivors most benefit from psychological care and social support, and have a higher probability of improvement. We also consider that MHPSS interventions must be an essential part of the initial response to address CRSV in conflict settings to guarantee the early attention for all survivors. Furthermore, MHPSS programmes addressing CRSV should be inclusive to all patients and not target single sex or gender survivors exclusively, given that male patients had a higher probability of presenting severe symptoms than female patients, but both present similar patterns of recovery and benefit from early attention. Besides gender-neutral approaches to ensure all survivors' access, safety, confidentiality, and non-discrimination should also be developed in interventions. In addition, we also highlight the importance of considering

patients' age, since this affects severity and improvement. Finally, further research needs to be conducted to inform appropriate and effective responses to the physical and mental health outcomes of survivors of CRSV, and further analyses on sex, age, symptoms, and survivors' characteristics should be performed to identify and address the most vulnerable patients in MHPSS services.

Abbreviations

CGI	Clinical global impression
CGI-I	Clinical global impression of improvement
CGI-S	Clinical global impression of severity
CI	Confidence interval
CRSV	Conflict-related sexual violence
DSM-IV	Diagnostic and statistical manual of mental disorders-IV
GBV	Gender-based violence
HR	Hazard ratio
ICD-10	International disease classification 10
IDPs	Internally displaced persons
IPV	Intimate partner violence
IQR	Interquartile range
K–M	Kaplan–Meier
LTFU	Lost to follow-up
MCH	Maternal and child health
mhGAP	Mental health gap action program
MHPSS	Mental health and psychosocial support
MNS	Mental, neurological, and substance
MSF	Médecins Sans Frontières
aOR	Adjusted odds ratio
PTSD	Post-traumatic stress disorder
SD	Standard deviation
WHO	World Health Organization

Supplementary Information

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Supplementary Material 1.

Supplementary Material 2.

Supplementary Material 3.

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Author contributions
SMT, CCG, and MJSB conceived the study and participated in its design, literature research, data cleaning, statistical analysis, drafting of the manuscript, and coordination. LS and AEL participated in the study conceptualisation, data interpretation, and technical review of the manuscript. RDU and JU supported the study conceptualisation, data collection, and curation. CCG, AC and SMT additionally oversaw the study and provided final technical and editorial review of the manuscript. SMT, MJSB and LS have directly accessed and verified the underlying data of this article. All other authors provided rigorous review and approved the final draft prior to submission.

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Availability of data and materials
No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate
This retrospective analysis was performed using anonymous, de-identified data that had been routinely collected for clinical purposes. As such, it did not require individual consent. As this study used routine programmatic data and took the necessary steps to protect patient confidentiality, it was exempted from full review by the MSF Ethical Review Board and the National Health Research Ethics Committee of Nigeria (NHREC).

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Author details
[1]Médecins Sans Frontières, Carrer de Zamora, 54, 08005 Barcelona, Spain. [2]Department of Public Health and Child Health, Faculty of Medicine, Complutense University, Madrid, Spain. [3]Consortium for Biomedical Research in Epidemiology and Public Health (CIBERESP), Madrid, Spain. [4]Health Research Institute, San Carlos University Hospital (IdISSC), Madrid, Spain. [5]Médecins Sans Frontières, Abuja, Nigeria.

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