Association between severity of symptoms and minimum mental health treatment duration in humanitarian contexts: a retrospective observational study

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Summary

Background Understanding and optimising mental health and psychosocial support (MHPSS) interventions in humanitarian crises is crucial, particularly for the most prevalent mental health conditions in conflict settings: anxiety, depression, and post-traumatic stress disorder. However, research on what is the most appropriate length of psychological intervention is lacking in this setting. We aimed to establish which factors are most closely related to improvement and to determine the required number of consultations needed to achieve this improvement.

Methods We retrospectively analysed records from 9028 patients allocated to treatment for anxiety, depression, and post-traumatic symptoms from the MHPSS programme in Borno State, Nigeria, from January 2018 to December 2019. Patient characteristics, severity (Clinical Global Impression of Severity Scale, CGI-S scale), and clinical improvement were assessed by an attending counsellor (CGI-I scale) and by the patient (Mental Health Global State, MHGS scale). Improvement was defined as scores 1, 2, and 3 in the Clinical Global Impression of Improvement (CGI-I) scale, and as a decrease of at least 4 points in the MHGS scale. We investigated the associations between the category of symptoms, the severity of illness, and improvement of symptoms using multivariable logistic regression. We used Kaplan–Meier (KM) curves to assess the number of consultations (i.e., time of treatment) needed to achieve improvement of symptoms, by symptom category and symptom severity.

Findings The patients included were referred to treatment for anxiety (n = 3462), depression (n = 3970), or post-traumatic symptoms (n = 1596). Median age was 31 years (range 16–103), and 84.3% were female. Patients categorised as severe were less likely to present improvement according to the CGI-I scale (OR 0.11, 95% CI 0.05–0.25), while none of the other categories of symptoms showed significant results. Overall, three or more consultations were associated with improvement in both scales (OR 3.55, 95% CI 1.47–8.57 for CGI-I; and OR 3.04, 95% CI 2.36–3.90 for MHGS). KM curves for the category of symptoms showed that around 90% of patients with anxiety, depression, or post-traumatic symptoms, as well as those with mild or moderate severity, presented improvement after three consultations, compared with six consultations for those with severe symptoms.

Interpretation Classification by severity among patients with anxiety, depression, or post-traumatic symptoms could predict the probability of improvement, whereas classification by symptoms could not. Our study highlights the importance of classifying patient severity in MHPSS programmes to plan and implement the appropriate duration of care. A major limitation was the number of patients lost to follow up after the first consultation and excluded from the logistic regression and KM analysis.

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Keywords: MHPSS; Humanitarian; Severity; CGI-S scale; Therapeutic duration

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Research in context

Evidence before this study
We searched PubMed for the terms "MHPSS", "consultation", "session", "severity", and "improvement" up to June 30th, 2023, to identify studies reporting research on MHPSS programmes. Although MHPSS programmes have gradually gained wide acknowledgement as a main integrated component of all humanitarian crises' responses, few studies have focused on improving programmes efficacy, optimisation, and outcome replication in clinical practice. Identified studies suggest that short-term psychotherapy may be an effective intervention format in MHPSS programmes, supported by positive results of brief interventions. Furthermore, some authors launch a recommendation to increase the number of individual sessions, but without specifying the exact number of consultations, or separating this recommendation by either diagnosis or severity. To our knowledge, a priority research challenge is to identify the factors that influence patients' improvement, and therefore, better define the length of mental health interventions patients must engage to see positive results.

Added value of this study
In this retrospective cohort study, we characterised individuals according to symptoms and severity at presentation to

determine the minimum number of consultations needed to present an improvement outcome. We found that baseline severity predicted the probability of improvement, whereas classification by symptoms did not, setting a minimum threshold of six sessions for patients with higher baseline symptom severity, and at least three sessions for those with lower severity to show improvement. Our findings support the importance of prioritising baseline severity classification and performing a diagnostic classification based on big spectrums, especially in contexts with task-shifting models.

Implications of all the available evidence
Our findings support that brief psychological interventions can contribute to effectively scale up MHPSS programmes in emergencies and conflict settings, as this optimisation will help greatly support service planning and provision, to ultimately reduce mental suffering and improve the wellbeing and functioning of the affected population. Nevertheless, it would be highly beneficial to recreate these findings and methodologies in a variety of settings to more accurately define the minimum number of sessions required to observe improvement and to support planning and implementation of MHPSS interventions.

Introduction

Populations in distress face an increased risk of short-term or long-term mental health consequences, largely due to lived violence-related stressors. These mental health consequences include social, behavioural, psychological, and psychiatric problems.[1] Recent findings estimate that mental health problems affect around 20% of people in conflict settings, while severe mental health disorders have a prevalence of 5%. Among the most prevalent mental health conditions are anxiety, depression, and post-traumatic stress disorder (PTSD).[2,3] Moreover, these disorders cause a great disease burden on populations, as they affect years of life lost due to disability and premature mortality.[4,5] For this reason, in these contexts, it is a priority to protect and support the mental health and psychosocial wellbeing of the population.[6]

In northeast Nigeria, after more than a decade since the conflict began, people are regularly exposed to high levels of violence and potentially traumatic events. Since 2014, an increase in conflict-related violence with nearly daily attacks on civilians by rebel groups had a substantial impact on Borno State, causing the displacement of more than 2 million people and thousands of deaths. To date, a substantial number of the population is living in camps for internally displaced persons (IDPs) or are otherwise unable to return home. Among

those individuals are those in Pulka and Gwoza, where the medical humanitarian organisation Médecins Sans Frontières (MSF) provided service until 2021. Pulka and Gwoza are two villages located 20 km apart surrounded by military forces, where around 80,000 IDPs live in challenging situations, integrated into the host community (50,000 people) and five IDP camps. Basic needs remain largely unmet, and humanitarian access is limited.

During the past decades, the increase in people affected by conflict has coincided with a growing interest of humanitarian actors in the mental health of affected populations,[7] and the publication of studies on mental health and psychosocial support (MHPSS) interventions.[8–10] MHPSS programmes are part of the humanitarian responses during disasters and conflict, and they are frequently incorporated into larger health-care programmes that provide primary and secondary health-care services in health facilities and in the community. The MSF MHPSS intervention provides counselling sessions, psychosocial support groups, psychoeducation, psychosocial stimulation, and psychological first aid, in addition to psychological and pharmaceutical treatment.[1] However, these initiatives are often affected by insecurity, limited resources, difficulties in access to care, and, consequently, high dropout rates.

While some studies focus on the factors that predispose patients to certain disorders or that are associated with severity of symptoms,[11–13] there is a gap in understanding the connections between diagnosis, severity of symptoms, and patients' improvement, and thus on how to adapt intervention length to patient characteristics. In high-income countries, a high level of agreement exists regarding the length of the therapy, based on previous research.[14] However, there is a dearth of information on what the optimal length of therapy should be in humanitarian settings. Some studies suggest that short-term psychotherapy may be an effective intervention format in MHPSS programmes, supported by positive results of brief interventions and singles-session therapy.[15,16] Furthermore, they succeeded in drawing a linear trend between the number of sessions and reduction of distress symptoms, launching a recommendation to increase the number of individual sessions, but without specifying the exact number of consultations or separating this recommendation by either diagnosis or severity. In addition, there is a lack of studies on MHPSS efficacy and on strategies to optimise MHPSS programmes in humanitarian settings.[10,17,18] Consequently, research focused on MHPSS is essential to develop effective programmes and optimise the number of sessions, considering symptomatology, diagnosis, and severity.

To expand the findings of an earlier paper on the same population in a conflict-affected region of northern Nigeria,[19] this study aimed to further characterise MHPSS programme patients according to symptoms and severity at presentation, and to determine correlates of improvement and the number of consultations needed to achieve this improvement, per symptom and severity categories.

Methods
Study design
In this retrospective cohort study, we included all 9028 patients older than 15 years who participated in the MHPSS programme between January 2018 and December 2019, at MSF-supported facilities in Pulka and Gwoza, Borno State, Nigeria, and who were allocated to treatment for anxiety, depression, and post-traumatic symptoms. We focused on these three symptoms because anxiety, depression, and post-traumatic stress disorders are among the most frequent mental health disorders in conflict settings.[2,3] A total of 6154 patients (68%) were excluded from the logistic regression analysis and were censored in the Kaplan–Meier (KM) analysis after the first consultation, as they did not have a subsequent evaluation to determine whether their symptoms improved or not. These included patients who were lost to follow-up after the first consultation, who had a single-session intervention by design, or who were undergoing treatment at the time of the analysis.

Data collection
MHPSS activities were conducted by lay counsellors trained and supervised by clinical psychologists and remote psychiatrist, following the WHO Mental Health Gap Action Program (mhGAP) guidelines.[20] A comprehensive Health Information System and reference data collection guidelines were used as primary sources for team training and data quality monitoring. Data were collected from patient records after each session by the attending counsellor.

At registration, patients were routinely asked to provide their sociodemographic characteristics and clinical information. The counsellor identified up to three symptoms that were classified by severity according to the patient into eight mental, neurological, and substance use (MNS) symptom categories. These MNS symptom categories were developed and adapted to lay counsellors' practice through a consultative process with MSF experts to replace the clinical diagnosis, on the basis of the International Classification of Diseases 10 (ICD-10) manual, and the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV). MNS symptom categories consisted of (1) somatoform symptoms, (2) anxiety-related symptoms, (3) post-traumatic symptoms, (4) depression-related symptoms, (5) psychosis-related symptoms, (6) behavioural symptoms, (7) cognitive symptoms, and (8) other symptoms. The MNS symptom category is determined by the most predominant symptom the patient presents. Therefore, based on the symptoms severity the counsellor must decide which MNS symptom category he assigns the patient to. This study included only patients classified in symptom categories 2, 3, and 4, corresponding to anxiety, post-traumatic, and depression symptoms categories.

Symptom severity at baseline was assessed by the counsellor at the initial consultation using the seven-point Clinical Global Impression of Severity Scale (CGI-S).[21] In this study, we refer to mild severity for those with a CGI-S score of 1, 2, or 3 points, moderate with 4 points, and severe with 5, 6, or 7 points. Severity was also assessed with the Mental Health Global State (MHGS) scale, in which patients rated severity on the basis of how the symptoms interfered with their daily life and functioning.[22] Based on six questions, the MHGS scale scores ranged from 1 to 30 points, with higher values reflecting greater severity. The CGI scale is a universal tool routinely used in research and clinical practice, and the MHGS scale was developed by MSF for use in humanitarian contexts and has demonstrated cross-cultural utility.[22]

Treatment outcomes were assessed at each session using the Clinical Global Impression of Improvement (CGI-I) scale and the MHGS scale variation. We defined improvement as CGI-I scale scores of 1 ("very much improved"), 2 ("much improved"), and 3 ("minimally improved"). We defined substantial improvement as CGI-I scale scores of 1 and 2.[21] We also defined

improvement when the total score in the MGHS scale decreased by at least 4 points between baseline and the end of the intervention.

Sessions took place on a weekly basis and lasted approximately 45 min. The day of the session was decided by the counsellor and the patient during the intervention. The number of sessions was counted from the start of the treatment, consisting of a first consultation, a series of successive follow-up consultations, and a final consultation that indicated the end of treatment. The first consultation corresponded to day 0 or patient intake, the second consultation to day 7, the third to day 14, and so on. Therefore, there was a correlation between the number of consultations and time under care (time in days).

Given the greater accuracy in patient response and its programmatic value, we based the main results on the overall number of consultations instead of time, and we measured them by the initially defined dependent variable of improvement outcome. Supplementary Materials contain a complementary analysis using the outcome of substantial improvement according to the CGI-I scale (i.e., 1 and 2 points), and the corresponding survival analysis using time in days instead of the number of consultations.

Statistical analysis

A descriptive analysis of patients' characteristics was carried out disaggregated by symptom category (depression, anxiety, and post-traumatic symptoms). Variables were summarised using percentages or means, standard deviations (SD) or medians, and interquartile ranges (IQR), as appropriate. Groups were compared using Pearson's chi-square test or Fisher's exact test (for categorical variables) and Student's t-test or Wilcoxon Mann–Whitney test (for continuous variables), as appropriate, with statistical significance set at $p < 0.05$. We identified potential significant variables and introduced them into multivariable logistic regression models to understand the effects of the category of symptoms and the severity of illness on improvement outcome measured with CGI-I and MHGS. Models were presented using odds ratios (OR) 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 was considered through an inspection of correlation coefficients using variance inflation factor (VIF) 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 KM survival analysis to compare the event functions (improvement outcome) between groups, and the hazard ratio (HR) for improvement during treatment was obtained through a Cox regression, first according to the

number of consultations, and then according to time in days. We displayed the cumulative survival function on a linear scale by category of symptoms or severity according to CGI-I scale and MGHS scale. 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 differences between categories, rejecting the hypothesis that the surviving functions are the same if the $p < 0.05$. Data were analysed using STATA SE v15. Further statistical analysis information about the performed complementary analysis can be found in the Supplementary Materials.

Ethics

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).

Role of the funding source

Results

A total of 9028 patients were analysed (84.3% female), among whom 68.2% (n = 6154) were lost to follow-up, had only a single-session intervention or were undergoing treatment. CGI-I and MHGS scale measurement showed that 31.1% (n = 2805) of patients showed improvement at the end of treatment, with only 0.7% (n = 69) reporting a worsening or persistence of their symptoms. Depression (44.0%; n = 3970) was the most frequent category of symptoms, followed by anxiety (38.3%; n = 3462), and post-traumatic symptoms (17.7%; n = 1596). Mean age at enrolment was 35.2 years (SD 14.1), with those presenting symptoms of anxiety more likely to be younger (p < 0.001). Most patients were illiterate (77.3%, n = 6977) and their self-reported status showed that the majority (70.9%; n = 6396) were forcibly displaced. Those who were illiterate and those forcibly displaced were more likely to have post-traumatic symptoms (p < 0.001). At patient intake, most patients ranked their symptoms as mild (56.1%, n = 5064) or moderate (34.9%, n = 3154) severity

at baseline; 4.7% (n = 422) ranked them as severe (according to CGI-S). Patients presenting with anxiety symptoms were more likely to rank them as mild at baseline (p < 0.001), while those with post-traumatic symptoms were more likely to rank them as severe (p < 0.001) (Table 1). Further description of the patients that were lost to follow-up, had only a single-session intervention, or were undergoing treatment can be found in the Supplementary Materials.

After a median follow-up of 2 weeks (three sessions), 2364 (26.2%) of 9028 patients reported an improvement in symptoms. Multivariable logistic regression showed that patients categorised as severe were less likely to show improvement according to CGI-I scale (OR 0.11; 95% CI 0.05–0.25). Additionally, having three or more consultations was associated with improvement for both the CGI-I (OR 3.55; 95% CI 1.47–8.57) and the MHGS scale (OR 3.04; 95% CI 2.36–3.90). By contrast, symptoms were not significant predictors of improvement (Table 2).

As can be seen in Fig. 1, 90% of patients with anxiety or post-traumatic symptoms and 88% of patients with depression symptoms presented improvement after three consultations. The HR for the consultation period was not significant (0.92 [95% CI 0.84–1.01]; p = 0.092), suggesting that the probability of presenting an improvement outcome did not differ between the categories of symptoms. Similar results were found using the MHGS, where 82% of patients presented improvement after three consultations, with no difference between categories of symptoms either (0.90 [95% CI 0.81–1.00]; p = 0.057).

Fig. 2 shows the KM curves for severity, where 91% of those with mild and 90% of those with moderate severity presented improvement after three consultations. On the contrary, 72% of patients categorised as severe presented an improvement outcome after three consultations. Among those categorised as severe at baseline, 97% showed improvement only after six consultations. The HR of 0.73 (95% CI 0.61–0.87; p = 0.001) suggested improvement was 27% less likely throughout the consultation period for those with severe symptoms than for those with mild and moderate symptoms. Similar results were found using the MHGS scale.

The study's complementary analysis that explored the factors associated with presenting a substantial improvement outcome provided similar results, whereby patients with severe symptoms were also less likely to show substantial improvement according to the CGI-I scale than patients with mild and moderate symptoms (OR: 0.16; 95% CI 0.10–0.26). Symptom categories were not significant predictors of substantial improvement either (Supplementary Table S5 in Supplementary Material). The KM curves for substantial improvement by time in days between severity categories showed slower patterns of recovery than the KM curve by number of consultations (Supplementary Figure S4 in Supplementary Material). 61% and 56% of patients with mild and moderate severity presented improvement on day 14 ± 2 under care, and among those categorised as severe at baseline, 75% showed improvement on day 35 ± 2. The resultant HR of 0.73 (95% CI 0.56–0.95; p = 0.021) also suggested

	Anxiety (n = 3462)	Post-traumatic (n = 1596)	Depression (n = 3970)	p value	Total (n = 9028)
Female	2868 (82.8%)	1352 (84.7%)	3390 (85.4%)		7610 (84.3%)
Male	594 (17.2%)	244 (15.3%)	580 (14.6%)	0.009	1418 (15.7%)
Mean age, years	33.6	39	35.1	<0.001	35.2
Median (range), years	30 (16–103)	36 (16–90)	32 (16–97)		31 (16–103)
Age group					
16–35 years	2253 (65.1%)	778 (48.8%)	2387 (60.1%)		5418 (60.0%)
36–55 years	946 (27.3%)	581 (36.4%)	1193 (30.1%)		2720 (30.1%)
>55 years	236 (7.6%)	237 (14.9%)	390 (9.8%)	<0.001	890 (9.9%)
Reported status					
Displaced	2148 (62.1%)	1258 (79%)	2990 (75.4%)		6396 (70.9%)
Resident	1301 (37.6%)	328 (20.6%)	962 (24.3%)	<0.001	2591 (28.7%)
Education					
Illiterate	2528 (73%)	1341 (84%)	3108 (78.3%)		6977 (77.3%)
Non-illiterate	880 (25.4%)	244 (15.3%)	825 (20.8%)	<0.001	1949 (21.6%)
Severity of illness (CGI-S)					
Mild (1, 2, 3 points)	2435 (70.3%)	779 (48.8%)	1850 (49%)		5064 (56.1%)
Moderate (4 points)	824 (23.8%)	618 (38.7%)	1712 (45.4%)		3154 (34.9%)
Severe (5, 6, 7 points)	100 (2.9%)	110 (6.9%)	212 (5.6%)	<0.001	422 (4.7%)

41 patients for self-reported status; 102 patients for education; 388 patients for severity of illness (CGI-S). p values are obtained from chi-squared test, Fisher's exact test, or Student's t-test.

Table 1: **Baseline characteristics of the population.**

	Improvement by CGI-I		Improvement by MHGS	
	OR (95% CI)	p value	OR (95% CI)	p value
Category of symptoms				
Anxiety (Ref.)	1	–	1	–
Depression	1.76 (0.73–4.25)	0.207	1.10 (0.85–1.41)	0.474
Post-traumatic	0.83 (0.32–2.11)	0.696	1.11 (0.78–1.56)	0.558
Baseline severity of illness (CGI-S)				
Not severe (1–4 points) (Ref.)	1	–	1	–
Severe (5–7 points)	0.11 (0.05–0.25)	<0.001	0.62 (0.38–1.01)	0.055
Number of consultations				
<3 (Ref.)	1	–	1	–
≥3	3.55 (1.47–8.57)	0.005	3.04 (2.36–3.90)	<0.001
Gender				
Male (Ref.)	1	–	1	–
Female	2.98 (1.35–6.54)	0.006	1.17 (0.86–1.59)	0.308
Age at enrolment	1.01 (0.98–1.04)	0.253	1.00 (0.99–1.01)	0.249

Reference category (Ref.). p values and ORs from the multivariable logistic regression models. CGI-I model: Hosmer–Lemeshow Goodness-of-Fit Test = 0.6623; Pseudo R^2 = 0.1229. MHGS model: Hosmer–Lemeshow Goodness-of-Fit Test = 0.1310; Pseudo R^2 = 0.0449. A total of 6154 patients were excluded from the logistic regression analysis. CGI-I = Clinical Global Impression of Improvement; MHGS = Mental Health Global State; OR = odds ratio.

Table 2: Factors associated with presenting an improvement outcome according to CGI-Improvement and MHGS scales.

improvement was 27% less likely for patients with severe symptoms at baseline than for those with mild and moderate symptoms. Further results of the study's complementary analyses can be found in the Supplementary Materials.

Discussion

Results presented here contribute to filling a gap in the mental health literature by examining the relationship between symptom severity in common mental disorders and length of therapy in a large cohort of people living in a conflict setting. In this context, we found that classification by severity best predicted improvement, and we determined the number of consultations needed to see this improvement for different severity groups. If replicated elsewhere, similar findings could offer a way to optimise the minimum length of therapy in contexts, where patients' access to care is often compromised.

The characteristics of our sample are consistent with characteristics in other cohorts in similar settings, presenting a similar prevalence of symptoms, with relatively low proportions of patients categorised as having severe symptoms. Patients with prevailing symptoms of anxiety or depression tended to score lower on the CGI severity scale than did those with post-traumatic symptoms, which is also consistent with other studies.[11–13,15,23] Also consistent with previous research, the intervention had a lower percentage of men than women, with an average of 15.7% of male patients.[12,13,15,16] This finding could be the result of gender-cultural norms, but also could represent the existence of unconsidered access barriers or a lack of male prioritisation in community-based MHPSS activities.

As rated by the counsellor, improvement was less noticeable in those with greater baseline severity scores. The fact that presenting high severity scores predisposes to a lower probability of improvement is not in line with previous research,[15] although some authors point out that presenting higher levels of distress could be a predictor of low functioning.[16] In our sample, a higher baseline severity was also associated with a greater number of sessions required to show improvement. The most severe patients are also the most vulnerable, which means that they urgently need to improve, but they also need a longer length of treatment to do so. We found that patients with severe symptoms had a 27% lower probability of prompt improvement according to the number of consultations than patients with mild or moderate symptoms. Other studies have reported similar results in high-income countries.[24–26] Unfortunately, these studies focused only on patients with depression in high-income countries so the results should be extrapolated with caution.

However, contrary to findings in other settings, the symptom category did not independently predict improvement.[27] This difference could potentially be explained by our study's use of symptom categories instead of clinical diagnoses. However, this finding does not imply that simplified symptom categories are not necessary to guide interventions and help professionals in their activity. In humanitarian contexts, focusing on severity assessment may be a priority. Besides, because of the task-shifting model in MHPSS programmes, the counsellors would only have to distinguish essentially between two big spectrums: the psychosis spectrum and the anxiety-depression-post-traumatic spectrum.
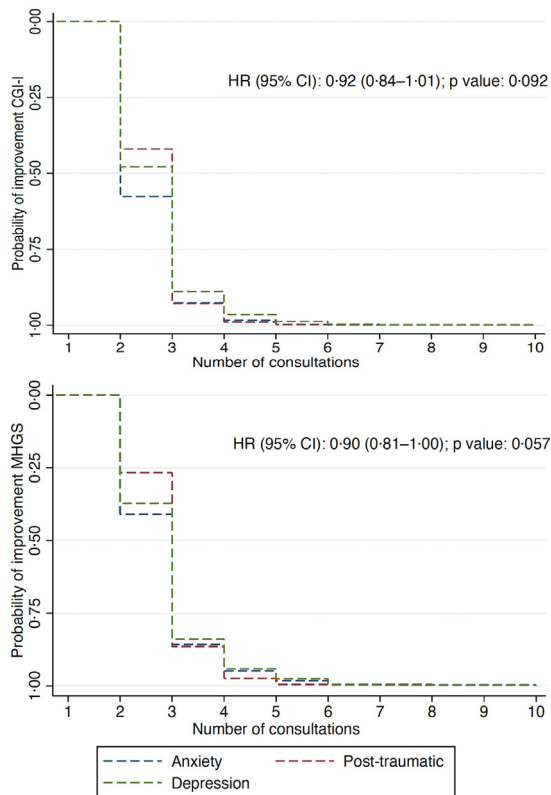
Fig. 1: Kaplan–Meier curves among symptom categories for improvement according to CGI-scale and MHGS scale. Kaplan–Meier curve for the category of symptoms using the CGI-I scale shows cumulative probability of improvement on the third consultation dropped to 0.9 for anxiety (survival function 0.1; 95% CI 0.08–0.12) and post-traumatic symptoms (survival function 0.1; 95% CI 0.07–0.13), and 0.88 for depression (survival function 0.12; 95% CI 0.1–0.14). The same results were observed when analysed according to the MHGS scale. Log-rank test: p < 0.001: Differences exist between patients with depression, anxiety, and post-traumatic symptoms according to the number of consultations (we reject the hypothesis that the survivor functions are the same). CGI-I = Clinical Global Impression of Improvement; MHGS = Mental Health Global State; HR = hazard ratio.

Fig. 2: Kaplan–Meier curves among severity categories for improvement according to CGI-scale and MHGS scale. Kaplan–Meier curve for baseline severity (mild, moderate, and severe categories) using CGI-I scale shows cumulative probability of improvement on the third consultation dropped to 0.91 for mild (survival function 0.09; 95% CI 0.07–0.11) and moderate (survival function 0.1; 95% CI 0.08–0.12), and 0.72 for severe (survival function 0.28; 95% CI 0.2–0.4). The cumulative probability of improvement on the sixth consultation was 0.97 for severe (survival function 0.03; 95% CI 0.01–0.07). The same results are observed according to the MHGS scale. Log-rank test: p < 0.001: Differences exist between patients categorised as mild, moderate, and severe according to the number of consultations (we reject the hypothesis that the survivor functions are the same). CGI-I = Clinical Global Impression of Improvement; MHGS = Mental Health Global State; HR = hazard ratio.

Our results showed a proportional relationship between the number of sessions and improvement, in line with other studies.[28,29] Currently, some researchers support the importance and efficacy of even a single session as a therapeutic approach in humanitarian settings, where continuous access to mental health care is often hindered by violence, displacement, and other challenges.[30–32] Although a high number of patients did not return after the first consultation, we cannot know if they showed improvement, were still under care when the data was analysed or were lost to follow-up. Therefore, we cannot discount that a single session has been effective for these patients. Results from this study found that improvement, as valued by the counsellor and patient
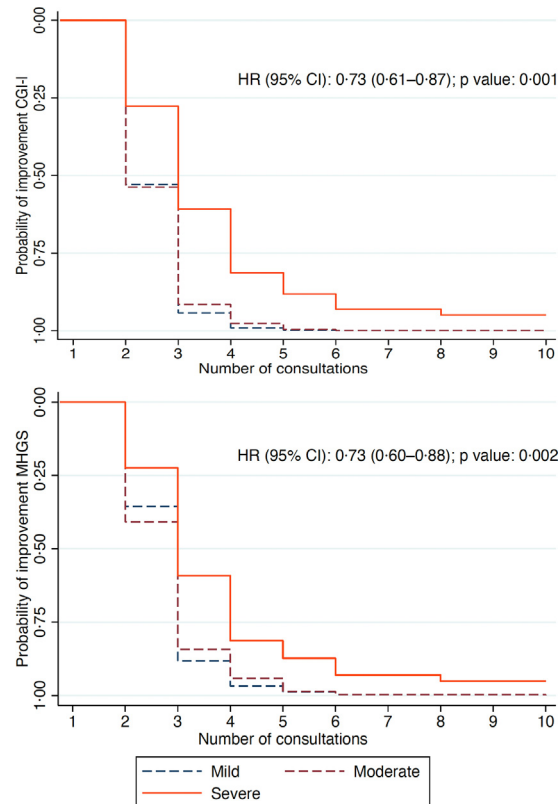
was noted after three sessions for those with a mild or moderate level of baseline severity, suggesting that on average a minimum of three sessions is necessary. This is supported by the notion that patients might derive greater value from treatments with short-term interventions than from those with a longer perspective of consultations.[26] Differences in context, populations, and methodology notwithstanding, our findings vary with those of others who found that a minimum of seven sessions are required for improvement.[14,33]

Nonetheless, in our study, patients categorised as severe required at least six consultations to reach similar improvement outcomes. This finding is consistent with

the exploratory results obtained in a previous paper in the same dataset demonstrating a 6-session threshold at which patients categorised as severe were more likely to improve.[19] Previous studies in higher income settings found that patients with higher levels of distress took eight more sessions to reach a similar recovery level than patients with lower levels of distress.[14] Some other studies found similar improvement ratios for patients with depression, namely 50% for the same range of 3–6 sessions,[34] while others reported a consensus of 25% improvement between sessions 3 and 4, and 50% between sessions 8 and 10.[33,35] Another study concluded that 40% of patients improved within two sessions, and up to eight sessions were necessary to achieve improvement in 60% of patients, but it did so without differentiating levels of severity.[26] It is important to note, however, that most studies did not determine the average number of sessions necessary for improvements among those with elevated clinical severity. Of note, there is ample evidence that chronic conditions require a greater number of sessions than acute ones to achieve improvement.[36] Additionally, studies offering evidence on the optimum number of sessions have resulted in a wide range of findings and led to much debate on the topic.[34,37]

The present study highlights that high dropout rates are not unusual in MHPSS programmes, potentially indicating that the care of many patients is truncated after the first consultation, already reported by other authors.[28,29] The main implication of this major limitation is that we cannot specify whether these patients were discharged after a single session intervention or have abandoned treatment due to lack of adherence, unmet expectations, or possible contextual difficulties or access barriers in continuing follow-up in the MHPSS programme.[38] However, this study found that, among patients who completed follow-up, improvement occurred from the third session in most cases of mild and moderate severity, bringing a new perspective to a highly relevant discussion and a very new field of research in mental health treatment and psychosocial intervention optimisation in humanitarian settings. In addition, our results support the importance of brief intervention strategies, as previously reported by other studies,[13,15] since a large majority of patients improved after the third or sixth consultation, depending on severity, corresponding to less than a month to a month and a half of treatment.[16] Fine-tuning the number of estimated sessions is essential for the proper planning of MHPSS interventions. Our findings may be due to the specifics of the studied population and setting but could probably be generalised to similar contexts. The anticipated number of sessions needed is an important consideration for opening MHPSS projects, especially in security-challenged contexts. Currently, MSF continues to work on the replicability of study findings from the MHPSS programme in other contexts, to better

guide the recommendation on the minimum threshold of consultations according to severity. Additionally, the present study also wants to highlight the importance of improving MHPSS monitoring and evaluation tools to conduct evidence-based operational research and ensure quality of care through routine follow-up.[16]

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 it did so in a unique conflict-affected setting. Notwithstanding training and regular supervision of the lay counsellors, this study used routinely collected MHPSS programme data under field conditions and is thus subject to human and data entry errors that could affect quality. In addition, some results may be confounded by external and environmental factors that occurred outside of counselling sessions. Moreover, results may not be applicable to patients with symptom categories different from those included in this study, given that we restricted our sample to those with anxiety, depression, and post-traumatic symptoms. Additionally, we could not analyse patients with multimorbidity because our programme data collection is based on one predominant syndrome according to severity. 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, the population analysed belongs to a very specific region of Nigeria, so caution should be taken when extrapolating our findings to other humanitarian settings. Given the high number of patients who did not have a subsequent evaluation after the first consultation, a large part of our sample is missing a final session and outcome assessment, and characteristics and trends among the large number of patients lost to follow up may differ from those reported in our results. As expected in a conflict setting, many patients did not strictly adhere to the 7-day session periodicity, so we analysed data using time instead of number of consultations. 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 also excluded from the logistic regression and survival analysis.

We found that, among patients with anxiety, depression, or post-traumatic symptoms in this MHPSS programme, baseline severity predicted the probability of improvement and the number of sessions needed to achieve it, whereas classification by symptoms did not. On average, patients with higher baseline symptom severity required at least six sessions to improve, while patients with lower severity of symptoms typically required at least three. Therefore, our results suggest the importance of prioritising classification of baseline severity. There is a need for additional evidence on the

length of treatment for brief psychological interventions. Further research should focus on better defining the minimum number of sessions for improvement in MHPSS programmes in a variety of settings, as this will greatly help support service planning and provision.

Appendix A. Supplementary data
Supplementary data related to this article can be found at https://doi.org/10.1016/j.eclinm.2023.102362.

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