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Prevalence of Posttraumatic Stress Disorder and Depression Among Internally Displaced Persons in Mogadishu-Somalia

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Background: Nearly 2.6 million people have been forced into displacement camps in Somalia as a result of frequent conflicts exacerbated by climate change disasters. Although the psychological impact of war and natural disasters is well documented elsewhere, little is known about the unseen scars of psychological trauma among internally displaced persons (IDPs) in Somalia. This study was carried out between January and February 2021 and sought to determine the prevalence of post-traumatic stress disorder (PTSD) and depression among IDPs and examine the association between displacement and these psychiatric conditions.

Methodology: A cross-sectional quantitative study was conducted among 401 IDPs in Mogadishu. The Harvard Trauma Questionnaire was used to determine the levels of trauma exposure and PTSD, and Hopkins Symptom Checklist-25 was used to estimate the prevalence of depression. Multivariate and bivariate analyses were performed to analyze the association between demographic and displacement variables and the outcomes of PTSD and depression.

Results: More than half (59%) of participants met the symptom criteria of depression, and nearly a third (32%) of respondents met the symptom criteria for PTSD. The most prevalent traumatic event was a lack of food or water (80.2%). Important predictive factors for the development of psychiatric morbidity were unemployment, cumulative traumatic exposure, and frequency and duration of displacement.

Conclusion: The study revealed high levels of depressive disorder and PTSD among IDPs in Mogadishu. Furthermore, this study provided evidence of IDPs' susceptibility to trauma exposure and lack of essential services and goods. The study highlighted the importance of the provision of Mental Health and Psychosocial Support (MHPSS) services in IDP camps.

Keywords: trauma, depression, PTSD, Somalia, IDPs

Background

Every year, millions of individuals are forced to flee their homes around the globe, due to violence, war, and natural disasters, and others remain in displacement within their home countries.¹ By the end of 2020, approximately 55 million individuals were reported to be living in internal displacement because of conflict and environmental hardships, and approximately 40.5 million new displacements were recorded in 2020 only. This surge in displacement was associated with conflict and natural disasters in 149 states.²

Approximately 2.6 million individuals are internally displaced in Somalia. Armed conflicts and environmental disasters affecting most parts of Somalia have caused several individuals to flee their homes.³ Most of the displacements recorded were into or within Mogadishu, which makes Mogadishu the second highest densely populated city in the world. It hosts more than 600,000 IDPs.⁴ Most of the displaced people came from neighboring regions: Middle and Lower Shabelle, Bay, and Bakool regions. These regions were the most affected areas of the 2011 famine, and they also experienced military offensives and clan-based conflicts.⁵

Internally displaced persons (IDPs) have numerous social vulnerabilities and are susceptible to mental disorders. These social vulnerabilities include poor shelter and overcrowding, lack of protection, reduced water access, food

insecurity, limited access to health service, a lack of personal documentation, and the growing number of forced evictions.⁶

Somalia has been in turmoil and political instability for the last three decades. The country has experienced fierce conflicts between rival groups and frequent terrorist attacks since the collapse of Siad Barre's regime in 1991.⁷ The World Health Organization reports that one-in-three people are affected by mental disorders, with individuals suffering from mental illnesses being subjected to stigma and social isolation. For such individuals, the burden of care is largely left to their caregivers.⁸

The prevalence of post-traumatic stress disorder (PTSD) and depressive disorder is frequently investigated in conflict settings, as psychological trauma is expected to be widely common among this population. A study on IDPs in Ukraine found the prevalence of PTSD to be 32%, whereas the prevalence of depression was 22%.⁹ In Colombia, a study found high levels of PTSD and depression in IDPs, 88% and 41%, respectively.¹⁰ Roberts¹¹ found that (54%) of IDPs in northern Uganda, who witnessed 20 years of conflict between a rebel group (LRA) and the government's army, had probable diagnoses of PTSD, and over two-thirds (67%) of respondents had diagnostic symptoms of depression. Among Somali refugees in Uganda, a study found the prevalence rate of PTSD to be 48%.¹² Another study revealed that over one-third of Somali refugees (38.3%) in Melkadida camp in Ethiopia met the symptom criteria for depression.¹³ Generally, women are considered to be more likely to develop depression and PTSD than men. Moreover, Roberts¹¹ showed a strong association between sex and PTSD. In that study, women were twice more likely than men to show symptoms of PTSD (OR = 2.01 [95% CI]) and depressive disorder (OR = 2.37 [95% CI]).¹⁴ Roberts et al¹⁴ indicated that this likelihood is due to the higher possibility of women being exposed to traumatic events, such as violent loss of partner and children, rape, and single parenthood or widowhood.

Lower educational level was significantly associated with PTSD and depression, whereas a higher educational level could be a protective factor for the development of PTSD.¹⁵ A study on the prevalence of PTSD among Syrian refugees in Turkey found that a family history of mental disorders is significantly associated with PTSD.¹⁶ A relationship was observed between PTSD and the frequency of trauma experienced. Another study on the mental health of IDPs in Sri Lanka found that a higher number of traumatic events increases the likelihood of developing PTSD and depression.¹⁷

There is a paucity of data on the burden of mental disorders among IDPs in Somalia. This study sought to determine the prevalence and associated factors of PTSD and depressive disorder among IDPs, and it is also meant to provide baseline data for future epidemiological studies on the mental health of vulnerable populations, including IDPs.

Methodology

Study Design and Participants

The study was conducted in Mogadishu, the capital and largest city of Somalia, which has a population of 2.5 million residents. A cross-sectional survey was conducted between January 1 to February 28, 2021. To determine the sample size, Kish formula¹⁸ was used. The minimum required sample size is 384. However, allowing for 10% attrition for non-response, the sample size was adjusted upwards to 422. Overall, 422 IDPs were approached and 401 consented to participate in the study. A multistage random sampling method was used. In the first stage, four districts were randomly selected from 17 administrative districts in Mogadishu (Boondheere, Hodan, Wadajir, and Dharkeynley). Approximately, 76 IDP camps were present in the four districts. These camps were proportionately sampled based on the estimated IDP population from the joint IDP Profiling report.¹⁹ In the next stage, due to restricted data and unsystematic layout of the camps, random and systematic sampling methods were not feasible. According to Collins,²⁰ when limitations preventing the use of other methods for selecting households are present, a segmentation method can be used. A segment of the camp was randomly selected and all households within that segment were included until the required number was reached. All eligible individuals from selected households were included.

Ethical approval to conduct this study was obtained from Kenyatta National Hospital-University of Nairobi, Ethics and Research Committee (P120/03/2020). This study also complies with the declaration of Helsinki. Permission was sought from the local Benadir regional administration. Camp leaders were consulted, and their permission was obtained.

Informed written consent was sought from respondents before each interview, and the process included an explanation of the purpose and nature of the study as well as an opportunity to ask any questions and seek clarification.

Upon arrival at the camp, camp leaders were approached and the nature of the study was explained.

Study respondents were recruited from households within a randomly selected section. Participants from each household were invited to participate, if they met the inclusion criteria. They provided consent after being briefed about the nature of the study.

Measures

The socio-demographic characteristics and displacement history of IDPs were collected using a researcher-designed questionnaire. Harvard Trauma Questionnaire (HTQ)²¹ was used to screen PTSD and identify exposure to trauma. HTQ was developed by the Harvard Program in Refugee Trauma, it is a cross-cultural screening tool that documents trauma exposure and trauma-related symptoms in IDPs and refugees. It contains four parts: I) Traumas that displaced people encounter frequently. II) Subjective description of most severe traumatic experience. III) Head injury. IV) Trauma symptoms in DSM V. Its latest edition HTQ-5 was modified to be consistent with current DSM-5 diagnostic criteria. It has been translated and adapted into several languages and cultures.²²

Hopkins Symptom Checklist (HSCL-25) was used to screen for depression. This screening tool was developed by Parloff, Kelman, and Frank²³ at Johns Hopkins University. HSCL-25 consists of 25 items. The first part of HSCL-25 includes 10 items assessing for anxiety symptoms, whereas the second part, which was used in this study, consists of 15 items assessing for depression symptoms. HSCL-25 contains a 4-point severity scale. It consistently correlates with major depression in the Diagnostic and Statistical Manual (DSM-IV).

The reliability and validity of the HTQ and HSCL-25 have been tested in several countries.²⁴ HTQ and HSCL have Cronbach's alpha of internal consistency of 0.92 and 0.85 with standard cut-off points of 2.5 and 1.75, respectively.²¹ In this study, both instruments were translated and adapted to the Somali language.

Statistical Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 24. Descriptive statistics were used to summarize the data, whereas analytical statistics were used to test for significant associations and predictors. Bivariate and multivariate analyses were performed to identify factors associated with the occurrence of depression and PTSD. In bivariate analysis, the chi-square test was used to determine statistically significant associations. Statistically significant variables ($p < 0.05$) and those at the margin of statistical significance ($p < 0.07$) were included in the logistic regression model. Adjusted odds ratios (AORs) were calculated with 95% confidence interval (CI).

Results

A total of 401 respondents, including 334 (83.3%) women, consented and participated in this study. Persons with ages of 26–35, 36–60, 18–25, and >60 years formed 37.6%, 32.0%, 23.6%, and 6.5% of the respondents, respectively. The majority of the respondents were married (69.1%), had no formal education (64.8%), and about (66.3%) were unemployed (Table 1). A total of 101 (25.3%) respondents reported a positive family history of mental illness, and 80.5% of respondents had been displaced more than once.

Prevalence of PTSD and Depression

A total of 129 (32.2%) participants screened positive for PTSD. In terms of depression, 238 (59.4%) participants screened positive for depression.

Frequency of Trauma Exposure

At least 26 participants reported all forms of traumatic experiences assessed. The most prevalent traumatic event was lack of food or water (80.2%), followed by ill health without access to medical care (79.9%), lack of shelter (77.9%), and combat situation (eg, shelling and grenade attacks) (55.5%). The frequency of trauma exposure is shown in Table 2.

Table 1 Socio-Demographic Characteristics of the Respondents

Variable	Category	Frequency (N=401)	Percentage (%)
Sex	Man	65	16.3
	Woman	334	83.3
	No response	2	
Age	18–25 Years	94	23.6
	26–35 Years	150	37.6
	36–60 Years	129	32.3
	>60 Years	26	6.5
	No response	2	
Marital status	Single	22	5.5
	Married	277	69.1
	Separated	8	2.0
	Divorced	50	12.5
	Widowed	44	11.0
Educational level	None	260	64.8
	Qur'anic	97	24.2
	Primary	34	8.5
	Secondary	8	2.0
	Tertiary	2	0.5
Employment status	Employed	129	32.2
	Unemployed	268	66.8
	Student	4	1.0
Presence of family history of psychiatric illness	Yes	101	25.3
	No	299	74.8
	No response	1	
Number of displacements	Once	78	19.5
	Twice	98	24.5
	Three times	105	26.3
	More than three times	119	29.8
	No response	1	
Age of first displacement	<18 years	150	37.4
	19–35 years	170	42.4
	>35 years	81	20.2
Duration of displacement	<1 year	40	10.0
	1–3 years	93	23.3
	>3 years	267	66.8
	No response	1	

Prevalence of Traumatic Events Recorded

A third of participants (33.2%) indicated that they had experienced 5–9 traumatic events, followed by 22.4%, 16.2%, 15.7%, and 12.5% of participants who reported experiencing 10–14, 15–19, 0–4, and ≥ 20 traumatic experiences, respectively.

Multivariable Analysis: Association Between Demographic Variables, Displacement Variables, and Number of Trauma Events and PTSD

Table 3 presents the adjusted odds ratio results of logistic regression analysis on the association between PTSD outcome and displacement, demographics, and trauma events (cut off ≥ 2.5). Participants who were unemployed were about twice more likely

Table 2 Nature of Exposure to Traumatic Events

Trauma Events	Frequency (N = 401)	Percentage (%)
1. Lack of food or water	320	80.2
2. Ill health without access to medical care	318	79.9
3. Lack of shelter	311	77.9
4. Combat situation (eg, shelling and grenade attacks)	221	55.5
5. Serious physical injury of family member or friend due to combat situation or landmine	199	50.4
6. Witness beatings to head or body	191	49.0
7. Forced evacuation under dangerous conditions	182	46.0
8. Witness torture	179	45.4
9. Extortion or robbery	165	41.6
10. Disappearance or kidnapping of other family member or friend	140	35.3
11. Murder, or death due to violence, of other family member or friend	137	34.3
12. Confiscation or destruction of personal property	121	31.1
13. Beating to the body	114	28.6
14. Witness killing/murder	106	27.0
15. Serious physical injury from combat situation or landmine	107	26.8
16. Other forced separation from family members	107	26.8
17. Knifing or axing	102	25.6
18. Forced to hide	98	24.6
19. Imprisonment	93	23.4
20. Brainwashing	91	22.9
21. Another situation that was very frightening or in which you felt your life was in danger.	85	21.6
22. Forced to physically harm family member, or friend	84	21.2
23. Kidnapped	81	20.5
24. Forced labor (like animal or slave)	77	19.5
25. Witness rape or sexual abuse	70	17.9
26. Forced to physically harm someone who is not family or friend	71	17.8
27. Torture, ie, while in captivity you received deliberate and systematic infliction of physical or mental suffering	61	15.3
28. Murder, or death due to violence, of child	59	14.8
29. Enforced isolation from others	58	14.6
30. Murder, or death due to violence, of spouse	49	12.3
31. Someone was forced to betray you and place you at risk of death or injury	46	11.5
32. Disappearance or kidnapping of child	44	11.1
33. Disappearance or kidnapping of spouse	41	10.3

(Continued)

Table 2 (Continued).

Trauma Events	Frequency (N = 401)	Percentage (%)
34. Forced to destroy someone else's property or possessions	36	9.0
35. Rape	35	8.9
36. Prevented from burying someone	35	8.8
37. Forced to find and bury bodies	32	8.1
38. Other types of sexual abuse or sexual humiliation	30	7.7
39. Forced to betray family member, or friend placing them at risk of death or injury	30	7.5
40. Forced to betray someone who is not family or friend placing them at risk of death or injury	28	7.0
41. Forced to desecrate or destroy the bodies or graves of deceased persons	26	6.5

Table 3 Multivariate Analysis of Demographic Variables, Number of Trauma Events, and Displacement Variables Associated with PTSD

Variable	Category	At Risk of PTSD		aOR (95% C.I.)	p-value
		No	Yes		
Employment status	Employed Unemployed	98 (76.0%) 174 (64.0%)	31 (24.0%) 98 (36.0%)	Ref. 1.79 (1.06–3.04)	0.030
Family history of psychiatric illness	Yes No	58 (57.4%) 213 (71.2%)	43 (42.6%) 86 (28.8%)	1.13 (0.66–1.94) Ref.	0.653
Number of displacements	Once Twice Three times More than three times	69 (88.5%) 60 (61.2%) 66 (62.9%) 76 (63.9%)	9 (11.5%) 38 (38.8%) 39 (37.1%) 43 (36.1%)	Ref. 3.21 (1.35–7.63) 2.83 (1.20–6.67) 3.15 (1.35–7.33)	0.008 0.017 0.008
Age of first displacement	<18 years 19–35 years >35 years	109 (72.7%) 100 (58.8%) 63 (77.8%)	41 (27.3%) 70 (41.2%) 18 (22.2%)	1.29 (0.64–2.61) 2.56 (1.31–5.01) Ref.	0.483 0.006
Duration of displacement	<1 year 1–3 years >3 years	36 (90.0%) 61 (65.6%) 174 (65.2%)	4 (10.0%) 32 (34.4%) 93 (34.8%)	Ref. 2.25 (0.67–7.54) 2.10 (0.66–6.72)	0.187 0.210
Number of traumatic events	Mean (SD)	9.6 (5.8)	14 (8.0)	1.09 (1.05–1.13)	<0.001

Abbreviations: aOR, adjusted odd ratio; CI, confidence interval.

to be at risk of PTSD than those who were employed (aOR = 1.79; 95% CI = 1.06–3.04; $p = 0.030$). Respondents who had been displaced more than once were more likely to be at risk of PTSD than those who had been displaced once (aOR = 3.21; 95% CI = 1.35–7.63; $p = 0.008$); (aOR = 2.83; 95% CI = 1.20–6.67; $p = 0.017$); (aOR = 3.15; 95% CI = 1.35–7.33; $p = 0.008$) for those who had been displaced twice, three times, and more than three times, respectively. Participants who had been displaced when they were aged 19–35 years were 2.56 times more likely to be at risk of PTSD than those who were displaced when they were aged >35 years (aOR = 2.56; 95% CI = 1.31–5.01; $p = 0.006$). The number of traumatic events was significantly associated with the risk of PTSD. For every unit increase in traumatic event, the risk of being at risk of PTSD increased 1.1 times more (aOR = 1.09; 95% CI = 1.05–1.13; $p < 0.001$).

Multivariable Analysis: Association Between Depression and Demographic Variables, Displacement Variables, and Cumulative of Trauma Events

Table 4 presents the adjusted odds ratio results of the multivariate logistic regression analysis on the association between depression outcomes and cumulative trauma exposure, demographics, and displacement variables (cut off ≥ 1.75). Participants who were unemployed were about twice more likely to be at risk of depression than those who were employed (aOR = 1.72; 95% CI = 1.07–2.77; $p = 0.026$). The risk of being depressed was 3.53 times (aOR = 3.53; 95% CI = 1.60–7.79; $p = 0.002$) and 3.29 times (aOR = 3.29; 95% CI = 1.36–7.97; $p = 0.008$) more among those who had experienced 15–19 and ≥ 20 traumatic events, respectively, than those who had experienced 0–4 traumatic events.

Discussion

This study revealed high levels of psychiatric disorders among the IDP population in Mogadishu. Approximately 32% of respondents met the symptom criteria for PTSD, and 59% of respondents met the symptom criteria of depression. Majority of the study participants were women (83.3%). Women and children usually represent a high proportion of residents in IDP camps at any given time. This finding is due to certain socioeconomic factors, including the far distances from home of men's work and local conflict dynamics.²⁵ The number of psychiatric disorders in this study was lower than that among IDPs in Uganda, where 54% and 67% of them had probable PTSD and depression, respectively.¹¹ The rates of depression and PTSD in this study can be compared to those of a South Sudan study, which had rates of 36% and

Table 4 Multivariate Analysis of Demographic Variables, Cumulative Trauma, and Displacement Variables Associated with Depression

Variable	Category	At Risk of Depression		aOR (95% CI)	p-value
		No	Yes		
Age	18–25 years	47 (50.0%)	47 (50.0%)	Ref.	
	26–35 years	62 (41.3%)	88 (58.7%)	1.13 (0.60–2.13)	0.699
	≥ 36 years	53 (34.2%)	102 (65.8%)	1.25 (0.61–2.59)	0.541
Marital status	Single	14 (63.6%)	8 (36.4%)	Ref.	
	Married	115 (41.5%)	162 (58.5%)	1.61 (0.59–4.40)	0.357
	Divorced/Separated	19 (32.8%)	39 (67.2%)	2.23 (0.71–6.97)	0.168
	Widowed	15 (34.1%)	29 (65.9%)	1.48 (0.44–4.97)	0.529
Employment status	Employed	61 (47.3%)	68 (52.7%)	Ref.	
	Unemployed	102 (37.5%)	170 (62.5%)	1.72 (1.07–2.77)	0.026
Family history of psychiatric illness	Yes	31 (30.7%)	70 (69.3%)	1.34 (0.79–2.27)	0.283
	No	131 (43.8%)	168 (56.2%)	Ref.	
Number of displacements	Once	34 (43.6%)	44 (56.4%)	Ref.	
	Twice	51 (52.0%)	47 (48.0%)	0.61 (0.32–1.17)	0.138
	Three times	42 (40.0%)	63 (60.0%)	0.94 (0.50–1.78)	0.860
	More than three times	36 (30.3%)	83 (69.7%)	1.52 (0.80–2.87)	0.200
Age of first displacement	<18 years	70 (46.7%)	80 (53.3%)	Ref.	
	19–35 years	69 (40.6%)	101 (59.4%)	1.17 (0.68–2.01)	0.573
	>35 years	24 (29.6%)	57 (70.4%)	1.68 (0.77–3.64)	0.190
Cumulative traumatic events	0–4	34 (54.0%)	29 (46.0%)	Ref.	
	5–9	63 (47.4%)	70 (52.6%)	1.52 (0.79–2.91)	0.213
	10–14	37 (41.1%)	53 (58.9%)	1.76 (0.88–3.54)	0.111
	15–19	17 (26.2%)	48 (73.8%)	3.53 (1.60–7.79)	0.002
	≥ 20	12 (24.0%)	38 (76.0%)	3.29 (1.36–7.97)	0.008

Abbreviations: aOR, adjusted odd ratio; CI, confidence interval.

50% for PTSD and depression, respectively.¹⁴ Additionally, the prevalence in this study was higher than those found in studies conducted in Georgia and Sri Lanka, which had prevalence rates of 23% and 14% for PTSD and 2.4% and 5% for depression, respectively.^{26,27} The discrepancy rates of war-related mental health conditions might be due to differences in study tools. In Georgia, the trauma screening questionnaire and the PHQ9 were used, whereas, in Sri Lanka and Uganda, the Composite International Diagnostic Interview (CIDI) and HTQ, respectively, were used. Furthermore, structured interviews, such as CIDI, yield lower levels of psychopathology than screening tools. Differences in sampling techniques are another factor that can lead to variability in psychiatric morbidities.²⁸ The characteristics of individual communities and their culture can affect the occurrence of psychiatric morbidity, as what is considered trauma in one culture might not be perceived the same in another culture.²⁹ The type and nature of exposed psycho-trauma could be another factor. Interpersonal violence trauma and intimate sexual violence carry the highest PTSD risk.³⁰

In this study, unemployment was associated with depression and PTSD (aOR = 1.79; 95% CI = 1.06–3.04; $p = 0.030$). Unemployment has been found to be associated with poor mental health outcome in IDP settings due to scarcity of resources.²⁷

Similar to findings from the study by Acarturk,³¹ respondents who had been displaced more than once were more likely to be at risk of PTSD than those who had been displaced once (aOR = 3.21; 95% CI = 1.35–7.63; $p = 0.008$). This finding may be related to the fact that respondents with multiple displacements were more likely to be exposed to trauma and violence than respondents who had been displaced once, probably increasing their risk to develop war-related psychiatric disorders.²⁸ In this study, participants who had been displaced at the age of 19–35 years were 2.56 times more likely to be at risk of PTSD than those who were displaced at the age of >35 years (aOR = 2.56; 95% CI = 1.31–5.01; $p = 0.006$).

A dose–response relationship was observed between trauma exposure and psychiatric morbidity in this study, as the more one was exposed to traumatic events, the higher one was at risk of psychiatric disorders. The number of traumatic exposures was predictive for both mental health disorders (aOR = 1.09; 95% CI = 1.05–1.13; $p < 0.001$), (aOR = 3.53; 95% CI = 1.60–7.79; $p = 0.002$). This finding is consistent with those of other studies, which found significant correlations between poor mental health outcomes and cumulative trauma exposure.^{11,13,28,32,33}

This study has a few limitations. First, due to the cross-sectional design used, recall bias was likely, and this also meant that its findings cannot be generalized across Somalia. In addition to that, this also prevented us from concluding the causal relationships of the associations we found. Secondly, precision might be lowered by the selected sampling method (multistage cluster sampling method). Thirdly, Women's overrepresentation in the study may lead to gender bias. Finally, the study tools were not validated in the local context, although the tools were cross-cultural and specially developed for displaced people, with excellent internal consistency.

Conclusion

This study revealed a high prevalence of depressive disorders and PTSD among IDPs in Mogadishu. Furthermore, this study provided evidence of IDPs' susceptibility to trauma exposure and, importantly, the lack of essential services and goods. The most prevalent traumatic events reported were lack of food or water, ill health without access to medical care, lack of shelter, and combat situation (eg, shelling and grenade attacks). Important predictive factors for the development of psychiatric morbidity were unemployment, cumulative traumatic exposure, and frequency and duration of displacement.

Recommendations

We recommend that, first, screening and necessary interventions should be provided for IDPs suffering from PTSD and depression. Additionally, a referral system for psychiatric disorders should be established. Second, governmental and nongovernmental agencies working on the welfare of IDPs should provide an inclusive social support and protection agenda to alleviate psychosocial distress and prevent further exposure to postmigration trauma within the camp.

Disclosure

The authors report no conflicts of interest in this work.

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