Prevalence of Posttraumatic Stress Disorder and Depression Among Internally Displaced Persons In Mogadishu

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Abstract

Background

Nearly three decades of conflict and frequent droughts and environmental hardships, have left 2.6 million of Somalis in displacement camps. Even though psychological impact of war and natural disasters are well documented, little is known about the unseen scars of psychological trauma in Internally displaced persons in Somalia. The purpose of the study was to determine the prevalence of post-traumatic stress disorder (PTSD) and depression amongst internally displaced persons (IDPs), and examine association between displacement and these psychiatric conditions.

Methodology

A cross-sectional quantitative study was conducted among 406 IDPs in Mogadishu. Harvard Trauma Questionnaire was used to determine levels of trauma exposure and PTSD, and Hopkins Symptom Checklist-25 was used to estimate prevalence of depression. Multivariate and bivariate analysis was conducted to analyze the association of demographic and displacement variables on the outcomes of PTSD and depression.

Results

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

Conclusion

The study revealed high levels of Depressive disorder and Post-Traumatic Stress Disorder among internally displaced persons in Mogadishu. Furthermore, this study provided evidence to IDPs' susceptibility to trauma exposure and lack of essential services and goods. Study also highlighted the importance of provision of Mental Health and Psychosocial Support (MHPSS) service in IDP camps.

Background

Every year millions are forced to flee from their home around the globe, due to violence, war, and natural disasters, and some remain in displacement within their home country (1). It is reported that at the end of 2018 about 41.3 million people were living in internal displacement because of conflict and environmental hardships (2). 28 million new IDP cases were recorded in 2018 alone, and this surge of displacement was associated with conflict and natural disasters in 148 states (3)

Approximately 2.6 million people are internally displaced in Somalia. The armed conflicts and the environmental disasters affecting most parts of Somalia, led this huge number of people to flee from their homes (4). Somalia has been in Turmoil and political instability for the last three decades, The country experienced fierce fighting between rival groups and frequent terrorist attacks since the collapse of Siyad Bare regime in 1991 (5).

IDPs have numerous vulnerabilities, including 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. (4). Both maternal and child mortality are high in Somalia, and mental illness is quite common in Somalia, World Health Organization reports that one in three persons are affected by mental illness with people suffering from mental illness being subjected to stigma, social isolation and a huge burden of care left to their care givers(6)

A systemic review in Psychiatric disorders in Refugees and IDPs in 30 studies found the prevalence rates of PTSD between 2.2 and 88.3% (7), and depression prevalence which varied between 5.1 to 81% (8). A Study on IDPs in Ukraine found a prevalence of PTSD of 32%, while 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). Roberts (11) found that (54%) of IDPs in northern Uganda, who witnessed 20 years of conflict between a rebel group (LRA) and the government army, had probable diagnose of posttraumatic stress disorder, and over two third (67%) of respondents had diagnostic symptoms of depression (11). Among Somali refugees in Uganda, a study found prevalence rate of posttraumatic stress disorder of 48% (12). Another study revealed that over one third of Somali refugees (38.3 %) in Melkadid camp in Ethiopia met the symptom criteria for depression. There is a general consensus that women are more likely to develop Depression and PTSD compared to men, a study by Roberts(11) showed a strong association between sex and PTSD, 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]) (13). PTSD and trauma in World Mental Health Survey by WHO found that age is significantly associated with conditional risk of PTSD, with highest risk during childhood-adolescence and people who are older than 65 years (14).

Having a lower educational attainment was significantly associated with PTSD and Depression, Higher education levels could be a protective factor for development of PTSD (15). Study on prevalence of PTSD in Syrian refugees in Turkey found that family history of mental disorders is significantly associated with PTSD (16). A relationship were observed between PTSD and frequency of trauma experienced, study on mental health of IDPs in Sri Lanka found that higher number of traumatic events increases likelihood of developing PTSD and depression (17).

This study examined prevalence and associated factors of post-traumatic stress disorder and Depressive disorder among IDPs, and it was a pioneer study which served as a baseline data for future epidemiological studies in mental health of vulnerable population in Somalia.

Methodology

The study was conducted in IDP camps in Mogadishu. Mogadishu is the capital and largest city of Somalia; it has population of 2.5 million residents within an area of 91 km². It has been subdivided into 17 districts. In recent years Mogadishu hosted a huge number of internally displaced persons (600,000), who fled from neighboring regions. A cross-sectional survey was conducted between 1st to 31st January 2021. The minimum calculated sample size was used [N=406]. Internally displaced persons living in Mogadishu who were above 18 years and who consented to participate were included. Those who were severely ill were excluded from the study. Multistage random sampling method was used. In the first stage four districts was randomly selected from 17 administrative districts in Mogadishu (Boondheere, Hodan, Wadajir, and Dharkeynley). There are about 76 IDP camps in the four districts (see the list of IDP camps in appendix XI), these camps were proportionately sampled based on estimated IDPs population from REACH Initiative 2016 joint IDP Profiling report (see table 1). In the next stage due to restricted data and unsystemic layout of the camps, random and systemic sampling method were not feasible. According to (18), when there are limitations preventing using other methods of selecting households, a segmentation method can be used. This method involves obtaining roughly map of the camp from camp leaders or from other online data bases such as REACH. Camps were divided into smaller segment which approximately containing number of households desired to be sampled. A random segment of the camp was selected by numbering 4 pieces of paper (1 to 4) and picking one. Segment (n) was randomly chosen and all households within that segment were included until required number is reached. All eligible individual from selected household were included.

Ethical approval to conduct this study was obtained from Kenyatta National Hospital-University of Nairobi, Ethics and Research Committee (P120/03/2020). Permission was also sought from local Benadir region administration. Camp leaders were consulted and their permission was obtained. Informed written consent was sought from respondents before the beginning of each interview and the process included an explanation on the purpose and nature of the study as well as an opportunity to ask any questions and seek clarification.

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

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

All individuals in that household were included in the study and after the researcher completed the interviews in one house, he moved to the next house until the desired number for that section was reached. The researchers read the questions as written in the questionnaire and responses were recorded. It took approximately 30 minutes to fill each questionnaire.

Upon the arrival of the camp, camp leaders were approached and he/she were explained about the nature of the study. Study respondents were recruited from households in randomly selected section. They were invited and screened for exclusion criteria for the suitability of the study. The participants who met the inclusion criteria and consented to the study

were briefed about the nature of the study, those who are willing to participate in the study were interviewed. All individuals in that household were included in the study and next house was moved until desired number was reached. The researchers read the questions as it were in the questionnaire and responses were recorded, and it took approximately 30 minutes to fill each questionnaire.

Data was collected by using a researcher designed questionnaire to capture socio-demographic characteristics and displacement history of IDPs. Harvard Trauma Questionnaire Revised (HTR-R) (19) was used to detect 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 displaced people and refugees. It has been translated and adapted into many languages and cultures (19).

Hopkin Symptom Checklist (HSCL-25) was used to screen for Depression. This screening tool was developed by Parloff, Kelman, and Frank at Johns Hopkins University, and it dates back to 1950s. The Hopkins Symptoms Checklist (HSCL) consists of 25 items: the first Part of the HSCL-25 has 10 items for anxiety symptoms; and the second Part consists 15 items for depression symptoms and this is the part that we used in our study. HSCL-25 contains four-point severity scale. It consistently correlates with major depression in Diagnostic and Statistical Manual (DSM-IV).

The reliability and validity of the HTQ and HSCL-25 have been tested in many countries among displaced persons (20). Harvard Trauma Questionnaire and Hopkin Symptom Checklist have Cronbach alpha of internal consistency of 0.92 and 0.85 with standard cutoff points of 2.5 and 1.75 respectively (21). In this study both instruments were translated and adapted to Somali language.

Data was analyzed using Statistical Package for Social Sciences (SPSS) version 24. Descriptive statistics were used in summarizing the data while analytical statistics were used to test for significant associations and predictors. Bivariate and multivariate analysis were performed to identify factors associated with the occurrence of Depression and PTSD.

Results

A total of 406 respondents consented and participated in the study of which 401 (Response rate 98.8%) information from 5 was incomplete and hence was not included in the analysis. More than $\frac{3}{4}$ (87.3%) were females. n (37.6%) of the respondents were aged between 26-35 years followed by those aged between 36-60 years n (32.0%). The proportion of those aged between 18-25 years was 23.6% and the least were those aged above 60 years (6.5%). More than

2/3rd n (69.1%) of the respondents were married, Majority of the respondents (64.8%) had no formal education, about 2/3rd (66.3%) was unemployed (Table 1). There was a reported positive family history of mental illness in 101 (25.3%) and 80.5% had been displaced more than once.

Table 1
Socio-demographic Characteristics of the Respondents

Variable	Category	Frequency (N=401)	Percentage (%)
Gender	Male	65	16.3
	Female	334	83.7
	<i>non-response</i>	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
	<i>non-response</i>	2	
Marital Status	Single	22	5.5
	Married	277	69.1
	Separated	8	2.0
	Divorced	50	12.5
	Widowed	44	11.0
Education 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
	<i>non-response</i>	1	
Number of displacements	Once	78	19.5
	Twice	98	24.5
	Three Times	105	26.3
	More than Three times	119	29.8
	<i>non-response</i>	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
	one-3 Years	93	23.3
	>3 Years	267	66.8
	<i>non-response</i>	1	

Prevalence of PTSD and Depression

A total of 129 participants screened positive for PTSD giving a prevalence rate of 32.2%. In terms of depression, a total of 238 participants screened positive for Depression giving a prevalence rate of 59.4%.

Table 2
Prevalence of PTSD and Depression

Measure	Frequency (N=401)	Percentage (%)	(95% CI)	
			Lower	Upper
1. PTSD (Mean>2.5)	129	32.2	27.7	36.7
2. Depression (Mean>=1.75)	238	59.4	54.4	64.1

Frequency of Trauma exposure

All forms of traumatic experiences asked were reported by at least 26 participants. 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 (e.g., shelling and grenade attacks) at 55.5%. while the least prevalent was being forced to betray family member, or friend placing them at risk of death or injury (7.5%), being forced to betray someone who is not family or friend placing them at risk of death or injury (7.0%) and being forced to desecrate or destroy the bodies or graves of deceased persons (6.5%). The frequency of trauma exposure is shown in table 3.

Table 3
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 (e.g. 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, i.e., 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
34. Forced to destroy someone else's property or possessions	36	9.0
35. Rape	35	8.9

Trauma Events	Frequency (N=401)	Percentage (%)
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

Prevalence of Traumatic events recorded

Table 4 and Figure 1 presents the cumulative trauma events recorded. Majority of the participants (32.2%) indicated that they had experienced 5-9 traumatic events, followed by 22.4% who reported that they had experienced 10-14 traumatic events, 16.2% reported 15-19 traumatic events, 15.7% reported 0-4 traumatic events and 12.5% reported 20 and above traumatic experiences.

Table 4
Cumulative trauma events

	Frequency (N=401)	Percentage (%)
0-4	63	15.7
5-9	133	33.2
10-14	90	22.4
15-19	65	16.2
20 and Above	50	12.5

Factors associated with PTSD (Bivariate Analysis)

Table 5 presents the factors that are associated with PTSD at the bivariate level. Participants who were unemployed were at higher risk of PTSD as compared to those who were employed ($p=0.016$). Respondents who had family history of mental illness were significantly at higher risk of PTSD as compared to those without ($p=0.010$). the other factors which are associated with PTSD risk include, those who are displaced more than once ($p<0.001$), Respondents who were displaced when they were aged 19-35 years ($p=0.003$), participants who had been displaced for a duration of more than one year ($p=0.006$) and the number of cumulative traumatic events ($p<0.001$).

Table 5
Factors associated with PTSD

Variable	Category	At Risk of PTSD		χ^2	d.f.	p-value
		No	Yes			
Sex	Male	45(69.2%)	20(30.8%)	0.09	1	0.769
	Female	225(67.4%)	109(32.6%)			
Age	18-25 Years	64(68.1%)	30(31.9%)	4.25	3	0.236
	26-35 Years	94(62.7%)	56(37.3%)			
	36-60 Years	91(70.5%)	38(29.5%)			
	>60 Years	21(80.8%)	5(19.2%)			
Marital Status	Single	15(68.2%)	7(31.8%)	0.67	3	0.880
	Married	191(69.0%)	86(31.0%)			
	Divorced/Separated	37(63.8%)	21(36.2%)			
	Widowed	29(65.9%)	15(34.1%)			
Level of Education	None	175(67.3%)	85(32.7%)	0.44	3	0.933
	Qur'anic	68(70.1%)	29(29.9%)			
	Primary	22(64.7%)	12(35.3%)			
	Secondary and Above	7(70.0%)	3(30.0%)			
Employment status	Employed	98(76.0%)	31(24.0%)	5.77	1	0.016
	Unemployed	174(64.0%)	98(36.0%)			
Family History of psychiatric illness	Yes	58(57.4%)	43(42.6%)	6.59	1	0.010
	No	213(71.2%)	86(28.8%)			
Number of displacements	Once	69(88.5%)	9(11.5%)	19.20	3	<0.001
	Twice	60(61.2%)	38(38.8%)			
	Three Times	66(62.9%)	39(37.1%)			
	More than Three times	76(63.9%)	43(36.1%)			
Age of first displacement	<18 Years	109(72.7%)	41(27.3%)	11.60	2	0.003
	19-35 Years	100(58.8%)	70(41.2%)			
	>35 Years	63(77.8%)	18(22.2%)			
Duration of displacement	<1 Year	36(90.0%)	4(10.0%)	10.08	2	0.006
	1-3 Years	61(65.6%)	32(34.4%)			
	>3 Years	174(65.2%)	93(34.8%)			
Cumulative Traumatic Event	0-4	44(69.8%)	19(30.2%)	46.91	4	<0.001
	5-9	110(82.7%)	23(17.3%)			
	10-14	66(73.3%)	24(26.7%)			
	15-19	35(53.8%)	30(46.2%)			
	20 and Above	17(34.0%)	33(66.0%)			

Factors associated with Depression (Bivariate)

Table 6 presents the factors that are associated with depression at the bivariate level. Respondents who were aged more than 26 years and above were significantly more likely to be depressed compared to those who were aged between 18-25 years ($p=0.029$). A family history of psychiatric illness was significantly associated with depression ($p=0.020$). Other factors which are associated include; participants who are displaced more than once ($p=0.012$), Respondents who were displaced when they were older than 18 years ($p=0.042$), The more traumatic events exposed to the higher the chances of being at risk of depression ($p=0.001$)

Table 6
Factors associated with Depression

Variable	Category	At Risk of Depression		χ^2	d.f.	p-value
		No	Yes			
Sex	Male	29(44.6%)	36(55.4%)	0.59	1	0.444
	Female	132(39.5%)	202(60.5%)			
Age	18-25 Years	47(50.0%)	47(50.0%)	9.02	3	0.029
	26-35 Years	62(41.3%)	88(58.7%)			
	36-60 Years	48(37.2%)	81(62.8%)			
	>60 Years	5(19.2%)	21(80.8%)			
Marital Status	Single	14(63.6%)	8(36.4%)	7.19	3	0.066
	Married	115(41.5%)	162(58.5%)			
	Divorced/Separated	19(32.8%)	39(67.2%)			
	Widowed	15(34.1%)	29(65.9%)			
Level of Education	None	97(37.3%)	163(62.7%)	5.90	3	0.117
	Qur'anic	43(44.3%)	54(55.7%)			
	Primary	16(47.1%)	18(52.9%)			
	Secondary and Above	7(70.0%)	3(30.0%)			
Employment status	Employed	61(47.3%)	68(52.7%)	3.47	1	0.062
	Unemployed	102(37.5%)	170(62.5%)			
Family History of psychiatric illness	Yes	31(30.7%)	70(69.3%)	5.39	1	0.020
	No	131(43.8%)	168(56.2%)			
Number of displacements	Once	34(43.6%)	44(56.4%)	10.89	3	0.012
	Twice	51(52.0%)	47(48.0%)			
	Three Times	42(40.0%)	63(60.0%)			
	More than Three times	36(30.3%)	83(69.7%)			
Age of first displacement	<18 Years	70(46.7%)	80(53.3%)	6.33	2	0.042
	19-35 Years	69(40.6%)	101(59.4%)			
	>35 Years	24(29.6%)	57(70.4%)			
Duration of displacement	<1 Year	18(45.0%)	22(55.0%)	1.76	2	0.415
	1-3 Years	42(45.2%)	51(54.8%)			
	>3 Years	102(38.2%)	165(61.8%)			
Cumulative Traumatic Event	0-4	34(54.0%)	29(46.0%)	18.54	4	0.001
	5-9	63(47.4%)	70(52.6%)			
	10-14	37(41.1%)	53(58.9%)			
	15-19	17(26.2%)	48(73.8%)			
	20 and Above	12(24.0%)	38(76.0%)			

Table 7 presents the independent predictors of PTSD. Participants who were unemployed were about 2 times more likely to be at risk of PTSD as compared to those who were employed (aOR 1.79; 95% C.I. 1.06-3.04; p=0.030). Respondents who had been displaced more than once were more likely to be at risk of PTSD as compared to those who had been displaced once. (aOR 3.21; 95% C.I. 1.35-7.63; p=0.008); (aOR 2.83; 95% C.I. 1.20-6.67; p=0.017); (aOR 3.15; 95% C.I. 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 as compared to those who were displaced when they were aged more than 35 years (aOR 2.56; 95% C.I. 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% C.I. 1.05-1.13; p<0.001).

Table 7
Independent Predictors of PTSD

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

Independent Predictors of Depression

Table 8 presents the independent predictors of depression. Participants who were unemployed were about 2 times more likely to be at risk of depression as compared to those who were employed (aOR 1.72; 95% C.I. 1.07-2.77; p=0.026). The risk of being depressed was 3.53 times (aOR 3.53; 95% C.I. 1.60-7.79; p=0.002) and 3.29 (aOR 3.29; 95% C.I. 1.36-7.97; p=0.008) times more among those who had experienced 15-19 and 20 and above traumatic respectively as compared to those who had experienced 0-4 traumatic events.

Table 8
Independent Predictors of Depression

Variable	Category	At Risk of Depression		a.O.R(95% C.I)	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- and Above	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 Event	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 and Above	12 (24.0%)	38 (76.0%)	3.29 (1.36-7.97)	0.008

Discussion

Sociodemographic characteristics of respondents

Nearly 60% of respondents were between 18 to 35 years, and this is in line with that finding of UN Population estimate survey in Somalia, which found that 75% of Somali population are less than 30 years of age (22). Majority of study participants were women (84%). Women and children are usually represented in high proportions in IDP camps at any given time, and this is linked to socioeconomic factors like men working far from home as breadwinners, or due to local conflict

dynamics (23). More than two third of participants were married (69%), and also two third (65%) of participants (67%) were unemployed. Similarly, a study by Feyera et al (24) showed that three quarter (74.6 %) of respondents were in the age between 18–40 years with median age of 33, More than half (55.6 %) of the respondents were married. Nearly half of respondents never attended school, and two third of respondents (72%) were unemployed.

Prevalence of PTSD and Depression

This study revealed high levels of psychiatric disorders among the IDP population in Mogadishu. 32% of respondents met the symptom criteria for PTSD and 59% of respondents met the symptom criteria of depression. This finding is lower than level of psychiatric morbidities (PTSD & Depression) among IDPs in Uganda, where 54% had probable PTSD and 67% had depression (11). The rate of depression and posttraumatic stress disorder in this study, can be compared to the findings of a study in South Sudan with rates of PTSD and Depression, 36%, 50% respectively (13). On the other hand, the finding of this study is higher than that found in studies done in Georgia and Sri Lanka with prevalence of PTSD 23%, 2.4% and depression rates of 14%, 5% respectively (22,23). The discrepancy rates of war-related mental health conditions, might be explained due to differences in study tools, in Georgia Trauma screening questionnaire and PHQ9 were used and CIDI was used in Sri Lanka, while in Uganda HTQ was used. The characteristic of individual communities and their culture can also have impact on the occurrence of psychiatric morbidity, what is considered trauma in one culture might not be perceived the same in another culture (24). The type and nature of exposed psycho-trauma could be another factor. Interpersonal violence trauma, and intimate sexual violence carry the highest PTSD risk (14).

Associations of Sociodemographic factors with PTSD and Depression

In this study we didn't find statistically significant association between gender and psychiatric morbidity, a finding which is inconsistent with that of general consensus, with most of studies showing that females have more posttraumatic disorder rates than male (11,16,25). However, our finding is in line with studies in Nigeria and Iraq, which couldn't find significant difference in association between gender and stress related disorders (26,27).

Depressive disorder was found to be significantly associated with the age. those who were aged more than 26 years were at significantly higher risk of depression as compared to those who were aged between 18-25 years ($p=0.029$). This finding is consistent with study in Sri Lanka, where older subjects had more depressive symptoms than young respondents (17). Other study found that subjects who are older than (36.6 years) had more psychiatric diagnoses (Depressive disorder) when compared with younger participants ($p = .024$) (28). This could be explained that older subject usually experiences longer exposure period of war related trauma (17).

This study couldn't find significant correlation between marital status and psychiatric disorders. This finding is consistent with study finding of Syrian refugees in Turkey (29). However, Housen (15) found that being divorced or widowed were associated with risk of developing depressive disorder and PTSD.

Having family history of psychiatric disorder were significantly at higher risk of depression and PTSD as compared to those without ($p=0.020$) ($p=0.010$) in bivariate analysis, This finding replicates finding in study done in turkey where they found presence of mental disorders among family members significantly correlates with development of PTSD ($p=0.021$) (16).

In this study unemployment was found to be significantly associated with depression and PTSD (aOR 1.79; 95% C.I. 1.06-3.04; $p=0.030$). Unemployment has been found to be associated with poor mental health outcome in IDP setting due to scarcity of resources (23).

Respondents who had been displaced more than once were more likely to be at risk of PTSD as compared to those who had been displaced once. (aOR 3.21; 95% C.I. 1.35-7.63; $p=0.008$). This finding was similar to those of Acarturk (29), who found significant association between PTSD and number of displacements. In this study participants who had been displaced when they were aged 19-35 years were 2.56 times more likely to be at risk of PTSD as compared to those who were displaced when they were aged more than 35 years (aOR 2.56; 95% C.I. 1.31-5.01; $p=0.006$). In regards of depression, respondents who were displaced when they were less than 18 years were at lower risk as compared to those who were older ($p=0.042$). This study finding has not been replicated in other studies. However, Essizoglu & Keser (30), found higher PTSD rates among IDP who were at 1-6 years of age during the internal displacement, when compared those who were age group of 7-14 years.

Participants who had been displaced for more than 1 year were at significantly higher risk of PTSD as compared to those who had been displaced for less than one year ($p=0.006$), same significant association was not found in depression ($p=0.415$). This finding conforms with that of Acarturk (29), as their study showed the risk of psychiatric morbidity increase with the time spent in camps or settlements. This could be explained presence of post-migration risk factors, including stressful experiences within the camp and also bad living conditions in the camp (29).

Dose response relationship between trauma exposure and psychiatric morbidity is observed in this study, the more traumatic events exposed to the higher the chances of being at risk of psychiatric disorders. Number of traumatic exposures is found to be predictive to both mental health disorders (aOR 1.09; 95% C.I. 1.05-1.13; $p<0.001$), (aOR 3.53; 95% C.I. 1.60-7.79; $p=0.002$). This finding is consistent with other studies which found significant correlation between poor mental health outcome and cumulative trauma exposure (11,30–33)

Conclusion

This study revealed high levels of Depressive disorder and post-traumatic stress disorder among internally displaced persons in Mogadishu. Furthermore, this study provides evidence of to show IDPs' susceptibility to trauma exposure and very important the lack of essential services and goods. The most prevalent traumatic events reported 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 (e.g., shelling and grenade attacks) at 55.5%. Important predictive factors in development of psychiatric morbidity were unemployment, cumulative traumatic exposure, frequency and duration of displacement.

Study Limitations

1. Recall bias due to nature of the study, which is cross-sectional design
2. Women overrepresentation in study may lead gender bias.

Recommendations

1. Provision of screening and necessary intervention to IDPs suffering from PTSD and depression, as well as establishing a referral system for psychiatric disorders.
2. Governmental and nongovernmental agencies, who works on IDPs welfare, should provide an inclusive social support and protection agenda, to alleviate psychosocial distress and prevent further exposure of postmigration trauma within the camp.
3. Mental health and psychosocial support services is nonexistent in most of camps. Incorporating MHPSS service into preexisting health service in the camps may improve displaced people's functioning and psychological well-being.
4. Long-term solutions to the IDP situation, including substantial resolution to the conflict in Somalia, and prompt responses to environmental hardships would accelerate a return of IDPs to their homes to rebuild their lives.

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Declarations

Competing interests: The authors declare no competing interests.

Figures

Figure 1

Cumulative trauma events recorded