Original Article

Prevalence of Depression and Anxiety among Gezira State Internally Displaced Persons Residing in Kassala City, Sudan, 2024

Fakhr Eldin A. Y. Mohammd[1], Abubakr K. Yousif[2], Saifeldin O. AbuAlsoud[3,4], Mogahed A. H. Mohamed[3,5], Fisal J. F. Mohamed[3,5], Mohamed A. Abbas[6], Abass T. A. Saeed[3,6], AbobakrAlsedeg M. Ali[3], Abuobieda M. A. Suliman[3,6], Mohamed H. E. Alameen[5], Abrar A. O. Elgaali [3,5]

Abstract

Background: Sudan's last war recorded the highest wave of Internally Displaced Persons (IDPs) in the world. Gezira State had a large share of IDPs in Kassala city, Eastern Sudan. Studying IDP's health condition, especially mental status, is not less important than food and shelters. Therefore, this study aimed to estimate the prevalence of anxiety and depression among IDPs and their association with socio-demographic variables.

Methods: A cross-sectional study was conducted between June and July 2024 among Gezira State IDPs residing in Kassala, who were selected from 191 shelters using a cluster-simple random sampling technique. The prevalence of anxiety and depression was measured using the Hopkins Symptom Checklist (HSCL-25), a validated questionnaire (translated to Arabic) at a cut-off of mean ≥1.75 to consider significant elevation. The association between demographic variables (chi-square test of independence) and the questionnaire items was identified. Variables with a *P*-value less than 0.05 were considered statistically significant at a 95% confidence interval.

Results: A total of 386 participants (101% response rate) were interviewed with trained, graduated medical students. The estimated prevalence of anxiety and depression was 239 (61.9%) and 271 (70.2%), respectively. The association between demographic variables and anxiety was found to be significant in gender, level of education, marital status, employment status, and current financial status. While depression was found significantly associated only with gender.

Conclusion: This study found a high prevalence rate of anxiety and depression among IDPs in Kassala, Eastern Sudan. The socio-demographic variables found in association with high prevalence of anxiety were gender (higher in females), level of education (higher in universities level), marital status (higher in married), work status (higher in students), financial (higher in low income); while depression was found significantly associated only with female gender. Implementing any health interventions should include mental health services as priorities in IDP shelters.

Keywords: Prevalence, Anxiety, Depression, Internally Displaced Persons, HSCL-25, Sudan.

DOI: https://doi.org/10.69993/2025.3.2.en2

1 Family and Community medicine Department, Faculty of Medicine, University of Gezira, Wad Madani, Gezira State, Sudan.

2 National Medical Supplies Fund, Wad Madani, Gezira State, Sudan.

3 Medicine Program, Igraa College for Science and Technology, Fadasi Elhalemab, Wad Madani Locality, Gezira State, Sudan

4 Department of Anesthesia, University of Health Sciences, FMOH, Wad Madani, Gezira State, Sudan

5 Al-Walidayn Specialized Hospital, Wad Al Naeem, Wad Madani Localaty, Gezira State, Sudan

6 Almanagil Teaching Hospital, Almanagil Locality, Gezira State, Sudan

***Corresponding Author: FakhrEldin A. Y. Mohammed ,** Family and community medicine Department,

Introduction:

Internally displaced persons (IDPs) are people who have been compelled to leave their homes because of armed conflict, violence, human rights abuses, or natural catastrophes but are still inside their nation's boundaries. [1] The number of IDPs has increased dramatically, especially after World War II. [2] The United Nations (UN) has subsequently established and highlighted the human rights of IDPs.[3] The UN, in 1998, published the Guiding Principles on Internal Displacement, providing a framework for the protection and assistance of IDPs, recognizing their rights and the responsibilities of governments and humanitarian actors. [3]

The burden of IDPs affects not only the displaced individuals but also the host communities and national governments. [4] IDPs often face severe challenges, including loss of livelihoods, inadequate access to healthcare, education, and basic services, as well as increased vulnerability to violence and exploitation. [5]

Research indicates that IDPs experience higher rates of mental health issues, such as depression and post-traumatic stress disorder (PTSD), compared to non-displaced populations. [6] The socio-economic impact of IDPs can worsen the trauma and mental health conditions, leading to tensions between IDPs and host communities. [7]

The Sudan civil war, which started in Khartoum on 15 April 2023, has spread to many other States, including Gezira State. People from Gezira were displaced to other safer States, especially the Eastern States. This study aimed to estimate the prevalence of mental health disorders (anxiety and depression symptoms) among IDPs and to compare this prevalence with the IDPs' socio-demographic factors. Studying the mental health of those IDPs is a crucial step to address the real status of wellbeing and provide an early alert to address the appropriate types of interventions.

Materials and Methods:

Study Design and Area:

A cross-sectional, community-based study was conducted between June and July 2024 among Gezira State IDPs residing in Kassala city, the capital of Kassala State. Kassala is a commercial city with a diverse population, comprising a variety of ethnic groups. It accommodates a large number of IDPs from

different States, especially Gezira. The local government's capacity to support IDPs is often strained, leading to calls for greater international assistance and intervention to address the needs of displaced populations effectively. The study targeted all adult IDPs, 18 years and older, recently displaced from Gezira State to Kassala city. The study excluded IDPs with chronic illnesses (Diabetes, Hypertension and a history of mental disorders).

Study Sample:

The sample size was 380, calculated using the 'open-epi-info' calculator and a confidence interval (CI) of 95%. [8] The total population of IDPs was 29624 as per the Red Crescent organization records. The sampling technique used a cluster simple random selection from 191 shelters in both West (89 shelters) and East (106 shelters) of Algash area in Kassala city. Most of the IDPs lived in accommodation provided by civil societies, but many rented houses or lived with their relatives.

Data Collection:

Data was collected through direct face-to-face interviews with the IDPs, conducted by trained data collectors. The study utilized the Arabic-translated Hopkins Symptom Checklist (HSCL-25), one of the most widely used screening questionnaires. [9.10] The HSCL-25 is a symptom assessment tool used to quantify depression and anxiety symptoms, with 25 items (10 for anxiety, and 15 for depression). Each question has four response categories on the scale:1= Not at all, 2= A little, 3= Quite a bit, and 4 = Extremely. The average of anxiety and depression items were calculated at a cut-off of ≥1.75 as described by Nabbe, P., et al.[11] Sixteen graduate students from the Faculty of Medicine at Igra College, Sudan, were trained and supervised by two consultants of Family Medicine and Public Health to screen the questionnaire form and to interview the IDPs exactly as described by HSCL-25 founders. [12]

Data Analysis:

The HSCL-25 items questionnaire Google Form was converted to an Excel spreadsheet and then exported to IBM-SPSS version 25 for the statistical analysis. Descriptive and analytical methods were used (chi-squared test used to test the association between demographic variables and questionnaire items, and a p-value ≤ 0.05 was considered significant at a CI level of 95%.

Ethical consideration:

The Dean's Faculty of Medicine, University of Kassala, issued an institutional ethical approval based on an official request from the College of Igraa. Acceptance from security and the locality's affairs at Kassala State was obtained. Informed consent from the respondents was obtained before the start of the interview

Results:

Participants' General Characteristics:

The response rate was 101% (386 responses). Gender representation is displayed in a notable balance, with females 51% (n=196). Tables 1-A and 1-B show the general demographic characteristics of the study population. The age range spanned from 18 to ≥ 65 years in five categories. The category from 18 to 30 constituted the majority, at 45% (n = 173). The IDPs represent the eight localities of Gezira State, with Great Wadmedani dominating at 33.7% (n = 130).

Table 1-A: Participants General Characteristics (n=386)

Characteristic		Frequency	Perc.
Gender	Male	190	49
	Female	196	51
Age	18-30	173	45
	31-40	67	17
	41-50	75	20
	51-65	47	12
	Above 65	24	6
Status of Accommodation	House rent	156	40.4
	shelters	138	35.8
	Relatives/Colleges	92	23.8
Locality in Gezira State	Great Wadmedani	130	33.7
	South Gezira	63	16.3
	Hasahesa	75	19.4
	Managel	29	7.5
	24 Algurashi	11	2.8
	East Gezira	37	9.6
	Umalgura	18	4.7
	Alkamleen	23	6
Area in Gezira State	Urban	195	50.5
	Rural	191	49.5

Marital status data indicate that 45% of the respondents were categorized as single (n =173). Analyzing education levels shows a diverse distribution, with the university bachelor's degree being the most common at 55.7% (n=215) (Table 1- B)

Table 1-B: Participants General Characteristics (n=386)

Characteristic		Frequency	Per Cent
Level of Education	Post Graduates	49	12.7
	University	215	55.7
	Higher Secondary school	53	13.7
	Intermediate School	22	5.7
	Primary School	23	6
	Illiterate	24	6.2
Social Status	Married	160	41.5
	Single	173	45
	Divorced	31	8.0
	Widow	22	5.7
Work status before displacement	Governmental Sector	49	12.7
	Private Sector	54	14.0
	Daily Labor	32	8.3
	Unemployed	71	18.4
	Household	68	17.6
	Student	112	29
Current financial status	No Income currently	228	59.1
	Not enough for basic needs	100	25.9
	Enough for basic needs	58	15
duration of being ID	1-2 Month	87	22.5
	3-4 Month	114	29.5
	5-6 Month	79	20.5
	More than 6 months	106	27.5

Anxiety Prevalence:

The prevalence of the HSCL-25 anxiety items, which measure how frequently individuals experience anxiety-related symptoms, across all demographics at a cut-off mean ≥1.75, was 61.9% (n=239). Each item is rated on a scale from 1 (not at all) to 4 (extremely), and the mean ± standard deviation (SD) gives an average intensity across respondents (Table 2).

Table-2: Descriptive of Responses to the Anxiety items of the HSCL-25 (n=386)

Item Responses	1= (not at all)		2= (A little bit)		3= (Quite a bit)		4= (Extremely)		Mean ±SD
Anxiety items:	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	
1.Suddenly scared for no reason	130	33.7	140	36.3	63	16.3	53	13.7	2.1±1
2.Feeling fearful	91	23.6	157	40.7	80	20.7	58	15	2.3±1
3.Faintness, dizziness/weakness	214	55.4	108	28	39	10.1	25	6.5	1.7±0.9
4.Nervousness	119	30.8	151	39.1	59	15.3	57	14.8	2.1±1
5.Heart pounding or racing	110	28.5	152	39.4	60	15.5	64	16.6	2.2±1
6.Trembling	176	45.6	115	29.8	61	15.8	34	8.8	1.9±1
7.Feeling tense or keyed up	90	23.3	153	39.6	74	19.2	69	17.9	2.3±1
8.Headaches	74	19.2	157	40.7	57	14.8	98	25.4	2.5±1.1
9.Spells of terror or panic	173	44.8	119	30.8	50	13	44	11.4	1.9±1
10.Feeling restless, can't sit still	142	36.8	131	33.9	65	16.8	48	12.4	2±1
Mean of all Anxiety Items									**2.1±1**

Table 2 shows that the average anxiety score across all items was 2.1 ± 1, indicating mild to moderate anxiety symptoms in the population surveyed. The prominent physical symptom of anxiety was 'Headaches', which had the highest average score (2.5) and a notable percentage (25.4%) rated it as "extremely". The Faintness/dizziness and spells of terror had the lowest average scores. Although the prevalence of anxiety was 61.9% (n=239), most symptoms were rated as "a little bit" by the largest proportion of respondents, showing that anxiety was not severe in most cases.

Association of demographic characteristics and prevalence of anxiety:

Table 3 shows a significant association between gender and anxiety ($p < .0001$). More females (38.1%) showed a high level of anxiety compared to males (23.8%). There was also a significant association between level of education and anxiety ($p = 0.027$), where respondents at the university level reported a higher rate of anxiety (33.4%) compared to other levels. Similarly, there was a significant association between marital status and anxiety ($p = 0.029$), with married respondents having higher levels of anxiety compared to other social groups. Other areas that showed significant statistical association were types of work status before displacement ($p < .040$) and the current financial status ($p < .015$).

Depression Prevalence:

Table 4 shows that the **prevalence of depression among** the respondents was rated as mild to moderate in severity as indicated by the average score of 2.2 ± 1. The most prevalent symptom was **Hopelessness (2.5)**. Thoughts of ending life had the **lowest average score (1.5)**, however, **6.7% reported experiencing them "extremely"**.

Table-3: The Association between Demographic Variables and Prevalence of Anxiety

Demographic		No anxiety	Anxiety	Total	P value
Gender	Male	98	92	190	**0.001**
	Female	49	147	196	
Age	18-30	77	96	173	0.068
	31-40	27	40	67	
	41-50	22	53	75	
	51-65	12	35	47	
	Above 65	9	15	24	
Status of Accommodation	House rent	61	95	156	0.419
	shelters	47	91	138	
	Relatives/Colleges	39	53	92	
Locality in Gezira State	Great Wadmedani	52	78	130	0.597
	South Gezira	28	35	63	
	Hasahesa	25	50	75	
Area in Gezira State	Urban	76	119	195	0.716
	Rural	71	120	191	
Level of Education	Post Graduates	27	22	49	**0.027**
	University	86	129	215	
	Higher School	17	36	53	
	Primary School	5	18	23	
Social Status	Married	51	109	160	**0.029**
	Single	80	93	173	
	Divorced	10	21	31	
	Widow	6	16	22	
Work status before displacement	Government Sector	22	27	49	**0.040**
	Private Sector	21	33	54	
	Unemployed	28	43	71	
Current financial status	No Income currently	80	148	228	**0.015**
	Not enough for basic needs	35	65	100	
	Enough for basic needs	32	26	58	
Duration of ID/month	1-2 Month	41	46	87	0.155
	3-4 Month	41	73	114	
	5-6 Month	24	55	79	
	More than 6 months	41	65	106	
Total		**147 (38.1%)**	**239 61.9%)**	**386 (100%)**	

Table-4: Descriptive of Responses to the depression items of the HSCL-25 (n=386)

Item Responses	1= (not at all)		2= (A little bit)		3= (Quite a bit)		4=(Extremely)		Mean± SD
Depression items:	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	
11.Feeling low energy	106	27.5	149	38.6	66	17.1	65	16.8	2.2±1
12.Blaming yourself for things	107	27.7	164	42.5	55	14.2	60	15.5	2.2±1
13.Crying easily	142	36.8	108	28	50	13	86	22.3	2.2±1.2
14.Loss of sexual interest/pleasure	174	45.1	105	27.2	49	12.7	58	15	2±1.1
15.Poor appetite	89	23.1	167	43.3	74	19.2	56	14.5	2.3±1
16.Difficult falling, staying asleep	88	22.8	146	37.8	68	17.6	84	21.8	2.4±1.1
17.Feeling hopeless on future	90	23.3	112	29	68	17.6	116	30.1	2.5±1.1
18.Feeling blue	93	24.1	132	34.2	65	16.8	96	24.9	2.4±1.1
19.Feeling lonely	108	28	121	31.3	69	17.9	88	22.8	2.4±1.1
20.Thoughts of ending your life	261	67.6	70	18.1	29	7.5	26	6.7	1.5±0.9
21.Feeling of being trapped	146	37.8	124	32.1	48	12.4	68	17.6	2.1±1.1
22.Worrying too much	96	24.9	133	34.5	66	17.1	91	23.6	2.4±1.1
23.Feeling no interest in things	101	26.2	146	37.8	63	16.3	76	19.7	2.3±1.1
24.Feeling everything is an effort	97	25.1	140	36.3	77	19.9	72	18.7	2.3±1
25.Feeling of worthlessness	189	49	101	26.2	46	11.9	50	13	1.9±1.1
Mean of all Depression Items									**2.2±1**

Table 5 shows that the overall prevalence of depression across all demographic variables at a cut-off mean ≥1.75 was 271 (70.2%). As in the analysis for anxiety, there was a significant association between gender and depression ($p < .0001$); more females (40.2%) showed a high level of depression compared to males (30%). No other significant association was noted between the level of depression and other demographic variables.

Table-5: The Association between Demographic and Prevalence of Depression

Sociodemographic		Not-Depressed	Depressed	Total	P value
Gender	Male	74	116	190	**0.001**
	Female	41	155	196	
Age	18-30	56	117	173	0.229
	51-65	10	37	47	
	Above 65	5	19	24	
Status of Accommodation	House rent	42	114	156	0.596
	shelters	44	94	138	
	Relatives/Colleges	29	63	92	
Locality in Gezira State	Great Wadmedani	34	96	130	0.233
	South Gezira	26	37	63	
	Hasahesa	23	52	75	
Area in Gezira State	Urban	60	135	195	0.672
	Rural	55	136	191	
Level of Education	Post Graduates	21	28	49	0.074
	University	68	147	215	
	Higher school	14	39	53	
	Primary School	3	20	23	
Social Status	Married	41	119	160	0.451
	Single	58	115	173	
	Divorced	10	21	31	
	Widow	6	16	22	
Work status before displacement	Government Sector	16	33	49	0.451
	Private Sector	20	34	54	
	Unemployed	19	52	71	
	Student	37	75	112	
Current financial status	No Income currently	65	163	228	0.101
	Not enough for basic needs	26	74	100	
	Enough for basic needs	24	34	58	
duration of ID/month	1-2 Month	32	55	87	0.291
	3-4 Month	31	83	114	
	More than 6 months	33	73	106	
Total n / %		**115 (29.8%)**	**271 (70.2%)**	**386 (100%)**	

Discussion:

The problem of internally displaced persons (IDPs) is highly prevalent in Africa. A systematic review of 14 studies with a total of 7,590 participants found 51% of the global prevalence of post-traumatic stress disorder (PTSD) was reported among IDPs in Africa, mainly associated with female gender, marital status, number of traumatic events, ill health without medical care, depression, and frequency of displacement. [1] A study in Syrian refugees in Turkey found a high prevalence of PTSD (55.5%), depression (33.5%), and anxiety (4.5%) among participants. [2] While another study on Syrian refugees in Lebanon, highlighting mental health differences by Gender, being higher in females. [13] Africa has one of the highest numbers of IDPs globally, due to prolonged conflicts, political instability, ethnic tensions, and environmental challenges. [14] A study in Somalian IDPs found a 41.1% prevalence of PTSD symptoms, associated with being female, lack of food and water, destruction of personal property, and experiencing torture or beatings. [6] Mental health results of IDPs in Mozambique revealed high prevalence with 74.3% PTSD, 63.8% depression, and 40.0% anxiety. [15] PTSD and associated factors among IDPs in South Ethiopia were also found to be high. [16] The prevalence of depression and anxiety in female refugees from East Africa and the Middle East displaced to Germany were 65.2% and 60.9% respectively. [17]

In Sudan, a study reported a high prevalence of PTSD (54%) and general distress (70%) among Darfur IDPs with significant elevation in females and married participants. [18] Another epidemiological study of adults in two IDP settlements in central Sudan revealed an overall prevalence of mental health disorders at 52.9%. The most common disorders were major depressive disorder (24.3%), generalized anxiety disorder (23.6%), social phobia (14.2%) and post-traumatic stress disorder (12.3%). [19]

Prevalence of PTSD and depression among IDPs in Al-Galgala, Sudan, was 62%. [20] While in another study in Abo-Hamad, North Sudan, the prevalence was 70.3%. [21] The depression and anxiety levels were found to be higher than normal in Sudanese IDPs in Mayo area, Khartoum and Mobi area, Gezira State. [22] A study at White Nile State in IDPs found depression, PTSD, and anxiety were prevalent among adults at rates of 18%, 20%, and 14% respectively. [23] An online survey studied the mental health consequences among Sudanese due to the armed conflicts, found the prevalence of depression and anxiety to be 62.0%, 52.9%, respectively. [24]

In our study, the prevalence of anxiety was 61.9% (n=239), which is high compared to similar studies from Africa and Arabian regions, [2,13] and complies with Sudanese studies. [18,20] The gender analysis suggests a substantial relationship between gender and anxiety. The prevalence of anxiety in IDPs was consistently found to be higher among females in this study and other published studies. [13,21] Therefore, it appears important to consider gender consideration in such interventions. Other demographic factors such as age, types of accommodation, types of locality area, types of residencies and duration of displacement indicated no relationship with anxiety. On the other hand, the level of education, marital status, work status and financial status were significantly related to anxiety levels. Such social factors should be considered when planning for interventions in IDPs,

The prevalence of depression across all demographic variables at a cut-off mean of ≥1.75 was 70.2% in this study. This prevalence of depression was higher than reports from Eritrean refugees (37.8%) and in IDPs in Somalia, who had a depression prevalence 59% in 2023. [25,26] Like in anxiety, there was a significant relationship between female gender and depression in this study. Similar findings were reported by others. [13,21] On the other hand, other demographic factors such as age, types of accommodation, locality area, and residency had no significant association with the prevalence of depression. In contrast to anxiety, the association between level of education, marital status, work status and current financial status variables and depression indicated no significant association.

Conclusion:

This cross-sectional, epidemiological study studied the prevalence of anxiety and depression among Sudanese IDPs using the HSCL-25 questionnaire. The study revealed a high prevalence of anxiety and depression when compared to similar studies in the region and globally. The socio-demographic variables that had a significant association with anxiety were gender (higher in females), level of education (higher in university-level), Marital status (higher in married), work status (higher in students), financial status (higher in low-income). The prevalence of depression was significantly related to female gender, but other factors did not seem to play a significant role. This study highlights the importance of mental health interventions for IDPs, besides other health and humanitarian aid and support. Further comprehensive and holistic support for all IDP shelters in Sudan is appreciated.

Study Limitations:

The study faced challenges such as the high mobility of IDPs, which affected the stability of the study population. There were also delays in data collection due to limited access to some camps. In addition, the sample size was

relatively small, and future studies would benefit from including a larger number of participants.

Conflict of interests:

The Authors declare that no conflict of interest exists regarding this research.

Funding:

No Funds received.

Acknowledgements:

The authors wish to express their sincere appreciation to the following colleagues for their invaluable contributions to the completion of this work: Redwan E. Mohammed, Sufyan A. Dafallah, Ruba E. S. Ali, Gawaher A. E. Mohammed, Salma A. M. Ahmed, Mathani A. F. Mohamed, and Roaa M. B. Kheirallah.

The authors also gratefully acknowledge the support of Medicine, University of Kassala and the Security Directorate at Kassala locality for facilitating the ethical approval; Red Crescent for helping in IDPs estimation; and finally, all Participants from Gezira State IDPs for their valuable contribution and participation.

References:

1. Tesfaye AH, et al. Post-traumatic stress disorder and associated factors among internally displaced persons in Africa: a systematic review and meta-analysis. PLoS One. 2024;19(4):e0300894.
2. Yilmaz E, Tamam L, Cengisiz CJ. Post-traumatic stress disorder among long-term resettled Syrian refugees in Turkey: a comprehensive analysis of pre- and post-migratory factors. Front Psychol. 2024;15:1352288.
3. Usman J, Bartholomew OJ. Influence of social support on the mental health of internally displaced persons in Bama, Borno State. Afr J Forensic Psychiatry Sci. 2024;27(2):[pages not available].
4. Perelli-Harris B, et al. Internal displacement and subjective well-being: the case of Ukraine in 2018. Popul Res Policy Rev. 2024;102(3):1157-1179.
5. Olufadewa II, et al. Mental health literacy, prevalence of depression and PTSD among internally displaced persons in Northern Nigeria. J Migr Health. 2024;7(1):18-32.
6. Muhummed AM, et al. Prevalence and correlates of post-traumatic stress disorder among internal displaced people in Qoloji Camps, Somali regional State, eastern Ethiopia. Ethiop J Health Sci. 2024;34(6):e00912174241232001.
7. Olayemi AO. The impact of socioeconomic factors on the mental health and integration of refugee and asylum seekers in Kenya. In: Migration and Forced Displacement—Vulnerability and Resilience. 2024;1:[pages not available].

8. Open Source Epidemiologic Statistics for Public Health. Version 3.01 [software]. 2024. Available from: https://www.openepi.com/.
9. Parloff MB, Kelman HC, Frank JD. Comfort, effectiveness, and self-awareness as criteria for improvement in psychotherapy. Am J Psychiatry. 1954;110(5):343-351.
10. Fares S, Dirani J, Darwish H. Arabic validation of the Hopkins Symptom Checklist-25 (HSCL) in a Lebanese sample of adults and older adults. Curr Psychol. 2021;40:2980–2987. doi:10.1007/s12144-019-00263-8.
11. Nabbe P, et al. The French version of the HSCL-25 has now been validated for use in primary care. PLoS One. 2019;14(4):e0214804.
12. American Psychiatric Association, Committee on Nomenclature and Statistics. Diagnostic and statistical manual of mental disorders. 4th ed. Washington DC: American Psychiatric Association; 1994.
13. Lange S, Glatz T, Eiset AH. Association of pre-migration socioeconomic status and post-migration mental health in Syrian refugees in Lebanon: a descriptive sex-stratified cross-sectional analysis. Glob Health Res Policy. 2024;9:9.
14. Owoaje ETU, Ajayi TO, Cadmus EO. A review of the health problems of the internally displaced persons in Africa. Niger Postgrad Med J. 2016;23(4):161-171.
15. Manafe N, et al. Prevalence and associated factors of common mental disorders among internally displaced people by armed conflict in Cabo Delgado, Mozambique: a cross-sectional community-based study. Int J Environ Res Public Health. 2024;12:1371598.
16. Madoro D, Kerebih H, Habtamu Y, G/tsadik M, Mokona H, Molla A, Yohannes K. Post-traumatic stress disorder and associated factors among internally displaced people in South Ethiopia: a cross-sectional study. Neuropsychiatr Dis Treat. 2020;16:2317-2326.
17. Bohland HK, et al. Depression and anxiety in female refugees from East Africa and the Middle East displaced to Germany: cross-sectional results of the female refugee study, taking sociodemographic and migration-related factors into account. Front Psychiatry. 2024;14:[page not available].
18. Hamid AARM, Musa SA. Mental health problems among internally displaced persons in Darfur. Int J Psychol. 2010;45(4):278-285.
19. Salah TTM, Abdalla A, Lien L, Eide AH, Martinez P, Hauff E. The mental health of internally displaced persons: an epidemiological study of adults in two settlements in Central Sudan. Int J Soc Psychiatry. 2013;59(8):782-788.

20. Mohamed EH, Kheir DAJ. Prevalence of post-traumatic stress disorder and depression and associated factors among internally displaced persons in Al-Galgala, Sudan. Neuropsychiatr Dis Treat. 2024;20:1155-1168.
21. Halaly S, Mohammed MA, Mouhammed AA, Albasheer RA, Abd Alrahman WA, Osman AH. Assessing the prevalence of post-traumatic stress disorder and its risk factors among adult internally displaced persons in Sudan. J Adv Med Med Res. 2024;36(7):337-347.
22. Sanhori Z, Eide AH, et al. Changes in prevalence of mental disorders among internally displaced persons in Central Sudan: a 1-year follow-up study. Glob Ment Health (Camb). 2020;7:e41.
23. Ali AMA, Salem SEM, Hamad SHI, Ahmed NEM, Ali HMA, Abass AAM, Abass HAM, Izz-Eldein Albasher A, Yousif MEE, Abdalla FEA, Abd-Alaziz OAO, Ahmed SBM, Elobeid SAA, Osman AH. Prevalence of physical and mental health problems among internally displaced persons in White Nile State, Sudan: a cross-sectional study. BMC Public Health. 2024;24:3448.
24. Mohammed Bilal M, Elmahdi ZZ, Mustafa Mudawi Ahmed E. Mental health consequences among Sudanese due to the armed conflicts and civil unrest of 2023: a cross-sectional study. Int J Soc Psychiatry. 2024;70(3):563-573.
25. Berhe SM, Azale T, Fanta T, Demeke W, Minyihun A. Prevalence and predictors of depression among Eritrean refugees in Ethiopia: a cross-sectional survey. Psychol Res Behav Manag. 2021;14:1971-1980.
26. Mustafa Ali TM, John Maina Mburu, Muthoni Mathai. Prevalence of posttraumatic stress disorder and depression among internally displaced persons in Mogadishu-Somalia. Neuropsychiatr Dis Treat. 2023;19:[pages not available].