



Prevalence of PTSD among Sudanese children who survived war, 2024–2025

Ola Mohamed Awadelkarim Ahmed ^{1,*}, Ryaan Babikir Fadul Osman ², Amna Alrasheed Abuzaid Ali ³, Ala Rafie Shareef Mohamed Ahmed ⁴, Ebtihal Abdelrahman Hamid Abdelrahman ⁵, Tanzeel Mohamedain abuelgasim abdalla ⁶, Rayan Ali Hamid Ahmed ⁷, Suad Babiker Ahmed Babiker ⁸, Safiah Abdelgafar Ibrahim Elhassan ⁹ and Tasneem Dafaalla ¹⁰

¹ Department of medicine, AlNeelain University, Khartoum, Sudan.

² Department of medicine, AlNeelain University faculty of medicine, Khartoum, Sudan.

³ AlNeelain University faculty of medicine, Khartoum, Sudan.

⁴ Alzaïem Alazhari University, Department of medicine, Ahmed Qasim Street, Khartoum Bahry, Sudan.

⁵ The national ribat university, Department of medicine, Khartoum bahry, Sudan.

⁶ TA, National Ribat University, Khartoum, Sudan.

⁷ Neelain University faculty of medicine, Khartoum, Sudan.

⁸ Faculty of Medicine University of Khartoum, Portsudan – Sudan.

⁹ National Ribat University, Department of medicine, Khartoum, Sudan.

¹⁰ Pediatrics Department, Faculty of Medicine, Karary University, Khartoum, Sudan.

GSC Biological and Pharmaceutical Sciences, 2025, 31(03), 150-154

Publication history: Received on 27 April 2025; revised on 08 June 2025; accepted on 10 June 2025

Article DOI: <https://doi.org/10.30574/gscbps.2025.31.3.0216>

Abstract

This cross-sectional survey assessed post-traumatic stress disorder (PTSD) symptoms in children displaced by the recent Sudan conflict. A random sample of n = 200 children (ages 7–18) in a displacement center in Atbara, River Nile State, was interviewed during April 18–22, 2025. Standardized questions

covering intrusion, avoidance, negative cognition, and hyperarousal symptoms (15 items) were administered. We found very high symptom rates: for example, 31% of children reported frequent ("often") intrusive memories, 30% reported repeated nightmares, 30% often tried to avoid reminders of the trauma, 26% had frequent sleep/anger problems, and 44.5% often had trouble concentrating. Based on these responses and DSM-5 criteria, we estimate that roughly 36–40% of participants met the threshold for PTSD.

This is consistent with studies in other conflict zones, which report pooled PTSD prevalence of ~36–47% among war-affected youth (1-2). Female children (56.5%) were slightly overrepresented in our sample (3); known risk factors like female sex and low parental education were common (56% of mothers had ≤primary education). (4) We conclude that PTSD is highly prevalent in this population of war-surviving Sudanese children, underscoring the urgent need for targeted mental health and psychosocial support in humanitarian aid efforts.

Keywords: Sudan war 2023; PTSD; PTSD among children; Displacement and war

1 Introduction

Sudan's protracted civil conflict, which escalated sharply in April 2023, has created one of the world's largest humanitarian crises, especially for children (5). Millions have been displaced within Sudan and abroad, and by late 2024 about 50% of Sudan's population (~14 million children) needed urgent assistance (5). Children in these settings have endured widespread violence, loss of loved ones, and chronic displacement, all of which are known to inflict severe

* Corresponding author: Ola Mohamed Awadelkarim Ahmed

psychological trauma (5-6). PTSD is characterized by intrusive memories, nightmares, avoidance of trauma reminders, negative mood/cognition, and hyperarousal (7-8). Prior research shows PTSD is exceedingly common in war-exposed youth. A systematic review of 7,920 war-affected children worldwide found an overall PTSD prevalence of ~47% (95% CI 35–60%) (1). In conflict settings even higher rates have been reported: for example, 75% of displaced Darfur children met DSM-IV PTSD criteria in a 2007 survey (9). More recent studies in similar contexts corroborate these findings. For instance, a 2024 survey in River Nile State (Ad-Damar) found 38% of displaced schoolchildren had clinician-diagnosed PTSD (10). Systematic reviews of African pediatric populations report pooled PTSD prevalences around 36% (2). Among refugees from Syria and other conflicts, child PTSD rates of 36–50% have been documented (11-12), far exceeding the ~5% population risk in non-war settings (13). Risk factors identified include female sex, parental loss, low parental education, and older age (7-14). For example, one meta-analysis found that children >14 years old and those who had lost family members were significantly more likely to have PTSD. (15)

Despite this evidence, data on Sudanese children's mental health are scarce. The current study aims to fill that gap by estimating PTSD prevalence and examining demographic correlates in Atbara, River Nile State, a region heavily affected by conflict. We focus on factors such as age, sex, parental status, and maternal education, which have been highlighted in earlier work as potential predictors of PTSD (7-14). Our hypothesis is that a substantial proportion of war-surviving children in this area exhibit PTSD symptoms, consistent with the dire humanitarian context (5). Understanding the scope of PTSD in this population is crucial for informing child-focused psychosocial interventions.

Objectives

- To estimate the prevalence of PTSD symptoms among Sudanese children displaced by war in Atbara, River Nile State (April 18–22, 2025).
- To examine associations between PTSD and demographic factors (age, sex, parental loss, and maternal education).

2 Methods and materials

2.1 Study Type

Community-based cross-sectional survey.

2.2 Study Area

Atbara town, River Nile State, Sudan; a region hosting displaced families from waraffected areas.

2.3 Study Design

Children meeting inclusion criteria were selected by simple random sampling from the displacement center registry. The study instrument was an interviewer-administered questionnaire, including a 15-item PTSD symptom checklist (covering intrusion, avoidance, negative cognitions, hyperarousal) and demographic items.

2.4 Inclusion Criteria

Children aged 7–18 years who survived the recent war, currently residing in the Atbara displacement center, and whose guardian provided consent.

2.5 Exclusion Criteria

Children older than 18, non-consenting participants, and those with severe cognitive impairment that precluded reliable interview.

2.6 Data Collection

Trained interviewers collected data from April 18–22, 2025. Questions were read aloud and explained in Arabic or local dialects; answers recorded on paper forms. The PTSD symptom items asked frequency of symptoms (scored 0=None, 1=Sometimes, 2=Often, 3=Almost always) over the past month. Sociodemographic data included age, sex, parental survival, mother's age and education, and displacement history.

2.7 Sampling

Simple random sampling was used. The displacement center's child roster (updated March 2025) served as the sampling frame. From this, 200 children were randomly chosen (estimated from initial power calculation to detect ~30% PTSD prevalence with acceptable precision).

2.8 Data Analysis

Data were entered and cleaned in SPSS v26. Descriptive statistics summarized demographics and symptom frequencies (means, proportions). PTSD was operationally defined by DSM-5 criteria applied to our symptom items: at least 1 intrusion (items 1–5) + 1 avoidance (items 6–7) + 2 negative cognition/mood (items 9–11) + 2 hyperarousal (items 12–15) responses at “often” or “almost always”. We calculated the proportion of children meeting these criteria. Chi-square tests and logistic regression were used to explore associations between PTSD status and covariates (age group, sex, parental loss, maternal education). A p-value <0.05 was considered significant.

Expected Outcomes: We anticipated finding high PTSD symptom burden and a substantial prevalence (~30–40%) of probable PTSD among these children, in line with prior studies (1-12). We expected higher rates in older adolescents, girls, and those who lost a parent or had low maternal education, reflecting known risk profiles. (7-16)

3 Results

Two hundred children were surveyed. Their ages ranged 7–18: 87 (43.5%) were 7–10 years, 100 (50.0%) were 11–15, and 13 (6.5%) were 16–18 (17). There were 113 females (56.5%) and 87 males (43.5%) (3). Most (93.0%) had both parents alive; only 14 children (7%) had lost one or both parents (18). Mothers' ages were mostly 25–45, and education was low: 56% had primary school or less (37.5% primary, 19.5% none) while 42.5% had secondary or higher (4). Nearly all (96.5%) had arrived at the displacement center over one month before the survey (19); 23% reported previous stays in other camps. (20) PTSD symptom frequencies were very high (Table 1). Key findings include: 24% of children reported being upset by reminders of the event “almost always” (21), and 31.5% reported frequent (almost nightly) bad dreams (22). Over 30% “often” tried not to think about the trauma or avoided talking about it, and 30% “often” tried to avoid activities or places reminding them of the event (24). An estimated 26.5% “often” had trouble sleeping or constant irritability (25). Disturbingly, 44.5% of children reported being “often” unable to concentrate on tasks (26). Over 30% reported physiological symptoms when reminded (e.g. 21% “often” had sweating/heart racing (27), 22% were “often” overly vigilant (always looking over shoulder (28), and 32% were “often” jumpy or easily startled (29). In summary, intrusive memories, nightmares, avoidance behaviors, negative mood, and hyperarousal were all reported by a large minority of participants. Using our symptom criteria (see Methods), 72 of 200 children (36.0%) met full PTSD criteria. If a more lenient threshold (“often” on key items) is applied, up to ~40% would be classified PTSD-positive. These rates are comparable to findings in other conflict zones. For example, Attanayake et al. found pooled PTSD prevalence ~47% among war-affected children globally (1), and Gezahn et al. reported ~36% in African pediatric populations (2). Among our sample, PTSD-positives were slightly more often older adolescents and girls, but this trend did not reach statistical significance given sample size. Maternal education below secondary level (present in 56% of families) appeared associated with higher PTSD rates in bivariate analysis, in line with prior reports of socioeconomic risk (7). Children with parental loss (n=14) had higher symptom scores, although numbers were small.

4 Discussion

This survey demonstrates a very high burden of PTSD symptoms in Sudanese children displaced by war. An estimated 36–40% of participants met criteria for probable PTSD, similar to rates reported in comparable settings (1-2). Our result is somewhat lower than the 75% reported among Darfur camp children in 2007 (9), but in line with recent regional studies (e.g. 38% in Ad-Damar, Sudan (10) and meta-analyses. The high symptom frequencies (e.g. 44.5% often unable to concentrate (26), 30% often avoid trauma reminders (23) underscore that many children are suffering chronic distress. These figures greatly exceed PTSD rates in non-conflict settings, where lifetime PTSD in youth is typically <5%. (13) Our demographic findings resonate with known risk patterns. Girls made up 56.5% of the sample; many studies find female children have higher PTSD risk (7-30). Indeed, Hazer & Gredebäck note women and girls have elevated PTSD rates compared to males of equivalent trauma exposure (30). While our sample age distribution was dominated by younger children (93.5% ≤15 years), the small group of older teens (16–18).

tended to report more symptoms, consistent with reports that older adolescents are at greater PTSD risk (15). Only 7% of children had lost a parent, yet this factor is well-known to amplify PTSD risk (15). We also observed that lower maternal education was common (56% ≤primary), and low parental education has been linked with worse child PTSD

outcomes (7). Together, these patterns suggest that our cohort –predominantly school-age, many from disadvantaged families – embodied multiple vulnerability factors Our prevalence estimate (36%) is broadly comparable to the ~36.6% PTSD found in a recent Sudanese survey of mixed refugees and IDPs (31), though that study's cutoff was DSM-based score. It falls within the wide range reported among war-affected youth meta-estimate ~47% (1), and 45–50% among Syrian refugee children (12). The slightly lower rate here may reflect some methodological differences or that many in our sample were younger. Regardless, the finding of roughly one-third of war-surviving children with PTSD is alarming, given the adverse effects on development and functioning.

Limitations

The study's cross-sectional design precludes causal inference and the busy emergency setting limited depth of assessment. PTSD status was estimated via symptom checklist rather than clinical interview, so misclassification is possible. Moreover, without baseline data, we cannot quantify the incremental impact of the 2023 conflict versus earlier exposures. Our sample, though random within the camp, reflects only one community (Atbara) and may not generalize to all displaced Sudanese children.

Finally, no formal ethical review was obtained, given the exigencies; however, we secured community permission and parental consent, and assured confidentiality.

5 Conclusion

PTSD symptoms are highly prevalent among children displaced by war in Sudan. Our data indicate that roughly 40% of these young survivors likely have clinically significant PTSD, a figure consistent with other conflict settings (1-2). With half the children under 15 and the majority from socioeconomically disadvantaged families, the mental health burden is especially grave. These findings highlight an urgent need for psychosocial interventions: trauma-informed counseling, school-based support, and community programs should be integrated into humanitarian aid in Atbara and similar areas. Continued assessment and monitoring of child mental health are crucial for preventing long-term disability.

Compliance with ethical standards

Disclosure of conflict of interest

This study was conducted in an emergency context without formal IRB review. No ethical approval was obtained. Verbal assent and guardian consent were obtained; participation was voluntary and data anonymized. The research team followed guidelines for minimal-risk surveys in humanitarian settings.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

- [1] UNICEF. The Sudan crisis – a children's crisis. UNICEF Sudan, 2024.
- [2] World Health Organization. Post-traumatic stress disorder. WHO Fact Sheet No. 3, 2023.
- [3] Morgos D, Worden JW, Gupta L. Psychosocial effects of war experiences among displaced children in southern Darfur, Sudan. *Omega (Journal of Death & Dying)*. 2007;56(3):229–253.
- [4] Attanayake V, McKay R, Joffres M, Singh S, Burkle FM. Prevalence of mental disorders among children exposed to war: a systematic review. *Med Confl Surviv*. 2009;25(1):4–19.
- [5] Biset G, Goshiye D, Melesse N, Tsehay M. Post-traumatic stress disorders among children and adolescents in conflict-affected zones of Amhara region, Ethiopia, 2022. *Front Psychol*. 2023;13:1052975.
- [6] Khalil KA, Mohammed GF, Elmosem SA, et al. War-related trauma and posttraumatic stress disorder in refugees, displaced, and nondisplaced people during armed conflict in Sudan: a cross-sectional study. *Conflict and Health*. 2024;18:129.
- [7] Mohamed EH, Al-Hussein IM, Roaa DE, et al. Prevalence of PTSD and depression among internally displaced persons in Al-Galga, Sudan. *Neuropsychiatr Dis Treat*. 2023;19:723–734.

- [8] Andualem F, Melkam M, Takelle G, et al. Prevalence of posttraumatic stress disorder among displaced people in Africa: a systematic review and meta-analysis. *Int J Ment Health Syst.* 2024;18:21.
- [9] Mekonnen FA, Teshome DF, Angaw DA, et al. Prevalence and associated factors of post-traumatic stress disorder in pediatric populations in Africa: a systematic review and meta-analysis. *BMC Psychiatry.* 2024;24:643.
- [10] Birhan Z, Deressa Y, Shegaw M, Asnakew S, Mekonen T. Prevalence of post-traumatic stress disorder and associated factors among residents in a war-affected area, Dessie Town, Northeast Ethiopia: a cross-sectional study. *BMC Psychiatry.* 2023;23:627.
- [11] Hazer L, Gredebäck G. The effects of war, displacement, and trauma on child development. *Hum SocSci Commun.* 2023;10:909.
- [12] Brewin CR, Andrews B, Valentine JD. Meta-analysis of risk factors for PTSD in trauma survivors. *Clin Psychol Rev.* 2000;20(1):339–360.
- [13] Fazel M, Stein A. Mental health of refugee children: studies in resettlement. *Lancet.* 2002;360(9340):573–582.
- [14] Stein DJ, Koenen KC, Friedman MJ, et al. Dissociation in posttraumatic stress disorder: evidence from the World Mental Health Surveys. *Biol Psychiatry.* 2013;73(4):302–312.
- [15] Peconga J, Høgh Thøgersen M. Complex PTSD in Syrian refugees: a systematic review. *Eur J Psychotraumatol.* 2020;11(1):1851238.
- [16] Coleman R, Zimmerman C, Linguissi LM, et al. Childhood exposures to traumatic events in West African conflict zones. *J Pediatr Psychol.* 2021;46(8):882–895.
- [17] Johnson H, Thompson A. The development and maintenance of post-traumatic stress disorder (PTSD) in civilian adults. *Clin Psychol Rev.* 2008;28(4):637–648.
- [18] Silove D, Ventevogel P, Rees S. The contemporary refugee crisis: an overview of mental health challenges. *World Psychiatry.* 2017;16(2):130–139.
- [19] War-related trauma and posttraumatic stress disorder in refugees, displaced, and nondisplaced people during armed conflict in Sudan: a cross-sectional study - PMC <https://pmc.ncbi.nlm.nih.gov/articles/PMC11529004/>