

Prevalence of Post-Traumatic Stress Disorder, Depression and Associated Factors in Post-Conflict Areas of North Shoa Zone, Ethiopia: A Community-Based Cross-Sectional Study

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ABSTRACT

Background

Conflict-related traumatic events are major public health concerns that contribute to the development of mental disorders, particularly post-traumatic stress disorder (PTSD) and depression. Although these conditions are common among conflict-affected populations, evidence at the community level in Ethiopia remains limited.

Objective

To assess the prevalence of PTSD, depression, and associated factors among adults living in post-conflict areas of North Shoa Zone, Ethiopia.

Methods

A community-based cross-sectional study was conducted from May 24 to June 24, 2022, among 830 adults selected using a multistage random sampling technique. Data were collected through face-to-face interviews using structured questionnaires. PTSD was assessed using the PTSD Checklist for DSM-5 (PCL-5), while depression was measured using the Hopkins Symptom Checklist-25 (HSCL-25). Data were entered into EpiData version 4.6 and analyzed using SPSS version 25. Binary and multivariable logistic regression analyses were performed. Variables with p-value <0.25 in bivariable analysis were entered into multivariable analysis. Statistical significance was declared at p-value <0.05.

Results

A total of 830 participants were included in the study, yielding a response rate of 96%. The prevalence of PTSD was 63.0% (95% CI: 60%–66%), while the prevalence of depression was 66.0% (95% CI: 62%–69%).

Vol No: 11, Issue: 02

Received Date: May 25, 2026

Published Date: July 14, 2026

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Citation: Taye B, et al. (2026). Prevalence of Post-Traumatic Stress Disorder, Depression and Associated Factors in Post-Conflict Areas of North Shoa Zone, Ethiopia: A Community-Based Cross-Sectional Study. Mathews J Psychiatry Ment Health. 11(2):64.

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Factors significantly associated with PTSD were female sex (AOR=4.20, 95% CI: 2.82–6.27), inability to read and write (AOR=3.08, 95% CI: 1.67–5.69), witnessing the murder of loved ones (AOR=3.28, 95% CI: 1.58–6.79), witnessing the murder of strangers (AOR=2.04, 95% CI: 1.33–3.11), verbal threats or insults (AOR=4.09, 95% CI: 2.69–6.21), poor social support (AOR=5.26, 95% CI: 3.35–8.28), and moderate social support (AOR=1.89, 95% CI: 1.15–3.13). Depression was significantly associated with female sex, physical abuse, ill health without medical care, witnessing the murder of loved ones, poor social support, and moderate to high perceived stress.

Conclusion

PTSD and depression were highly prevalent among residents of conflict-affected communities in North Shoa Zone. Community-based mental health interventions, psychosocial support programs, and integration of mental health services into primary healthcare are recommended.

Keywords: PTSD, Depression, Conflict, Mental Health, Ethiopia, North Shoa

INTRODUCTION

Post-traumatic stress disorder (PTSD) is a mental health condition that develops following exposure to traumatic events involving actual or threatened death, serious injury, or violence. Intrusion symptoms, avoidance behaviors, negative changes in cognition and mood, and hyperarousal are among its characteristic manifestations. Depression is another common mental disorder characterized by persistent sadness, loss of interest, hopelessness, and reduced energy.

Conflict situations expose populations to multiple traumatic experiences, including violence, displacement, loss of family members, destruction of property, and lack of access to basic services. Such experiences substantially increase the risk of PTSD and depression. Previous studies conducted in different conflict-affected countries have reported high prevalence rates of PTSD and depression. However, evidence from Ethiopia has mainly focused on internally displaced persons and refugee populations, with limited information available at the community level.

Therefore, this study aimed to assess the prevalence of PTSD, depression, and associated factors among adults residing in post-conflict areas of North Shoa Zone, Ethiopia.

METHODS

Study Design and Setting

A community-based cross-sectional study was conducted in conflict-affected districts of North Shoa Zone, Amhara Region, Ethiopia, from May 24 to June 24, 2022.

Population and Sampling

The study included adults aged 18 years and above who had resided in the conflict-affected areas for at least six months. A multistage random sampling technique was employed. The final sample size was 865; however, 830 participants completed the study, resulting in a response rate of 96%.

Data Collection Tools

PTSD was assessed using the PTSD Checklist for DSM-5 (PCL-5) with a cutoff score of ≥ 33 . Depression was measured using the Hopkins Symptom Checklist-25 (HSCL-25) with a mean score cutoff of ≥ 1.75 . Social support was measured using the Oslo-3 Social Support Scale, while perceived stress was measured using the Perceived Stress Scale (PSS-10).

Data Analysis

Data were entered into EpiData version 4.6 and analyzed using SPSS version 25. Binary and multivariable logistic regression analyses were performed. Adjusted odds ratios (AORs) with 95% confidence intervals were used to identify factors independently associated with PTSD and depression [1-15].

RESULT

Socio-demographic characteristics of participants

A total of 830 participants were included in the study, with a response rate of 96%. The median age of the respondents was 34, with interquartile range of 29 – 44 years. Of the total study participants, 443 (53.4%) were female, and one-fifth of the respondents 171 (20.6%) were unable to read and write (Table 1).

Table 1: Description of Socio-demographic characteristics of the respondents among conflict affected areas of North Shoa, Ethiopia, 2022 (n=830)

Variables	Category	Frequency	Percentage
Age	18-24	103	12.5%
	25-34	319	38.4%
	35-44	221	26.6%
	>44	187	22.5%
Sex	Male	387	46.6%
	Female	443	53.4%
Marital status	Single	192	23.1%
	Married	488	58.8%
	Divorced	84	10.1%
	Widowed	66	8.0%
Educational status	Unable to read and write	171	20.6%
	Able to read and write	278	33.5%
	Primary education	102	12.3%
	Secondary education	102	12.3%
	College and above	177	21.3%
Occupational status	Governmental employee	122	14.7%
	Merchant	207	24.9%
	Farmer	252	30.5%
	Student	54	6.5%
	Daily laborer	41	4.9%
	House wife	75	9.0%
	Others*	79	9.5%

Note: Others *, Retired and private work

Clinical related factors of the study participants

Of 830 respondents, 184 (22.2%) had no access to health

services. More than one-fifth of the study participants, 187 (22.5%), have a family member with a mental illness (Table 2).

Table 2: Description of clinical related factors of the respondents among conflict-affected areas of North Shoa, Ethiopia, 2022 (n=830)

Variable	Category	Frequency	percentage
Previous Diagnosed mental illness	Yes	12	1.4%
	No	818	98.6%
Diagnosed family mental illness	Yes	187	22.5%
	No	643	77.5%
Co- morbid medical illness	Yes	109	13.1%
	No	721	86.9%
Health service access for any illness	Yes	646	77.8%
	No	184	22.2%

Psychosocial related factors of the respondents

With regard to the psychosocial characteristics of the respondents, around half of the participants 425(51.2%)

have poor social support. Of the total study participants, more than two-in-five 375(45.2%) reported high perceived stress (Table 3).

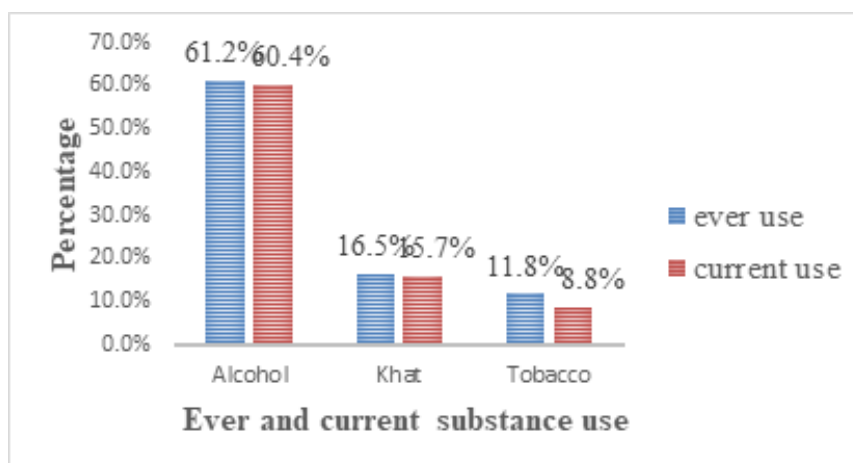
Table 3: Description of psychosocial related factors of the respondents among conflict-affected areas of North Shoa, Ethiopia, 2022 (n=830)

Variable	Category	Frequency	percentage
Social support	Poor	425	51.2%
	Moderate	207	24.9%
	Strong	198	23.9%
Perceived stress	Low	153	18.4%
	Moderate	302	36.4%
	High	375	45.2%
Food & water support	Yes	617	74.3%
	No	213	25.7%
Immediate help when needed	Yes	340	41.0%
	No	490	59.0%
Displacement	Yes	337	40.6%
	No	493	59.4%

Substance use related factors of the study participants

This study result showed that about two-thirds of the

respondents 501 (60.4%) had current alcohol use. Of the 830 study participants, 130 (15.7%) reported current use of khat (Figure 1).

**Figure 1:** Description of substance use related factors of the respondents among conflict-affected areas of North Shoa, Ethiopia, 2022 (n=830).**Traumatic event related factors of the study participants**

Regarding individual trauma types, the most frequent type of trauma experienced by the community was verbally threatened or insulted 611 (73.6%) and witnessed murder of strangers 363 (43.7%), respectively. More than one-third

of the respondents 279 (33.6%) had destruction of personal property. Of the respondents, 146 (17.6%) were physically abused. Among the 830 study participants, 88 (10.6%) had witnessed the murder of loved ones. In addition, more than one-third of the participants 282 (34.0%) reported a lack of food and water in the living area (Table 4).

Table 4: Description of traumatic event related factors of the respondents among conflict-affected areas of North Shoa, Ethiopia, 2022 (n=830).

Types of traumatic events	Frequency	Percentage
Destruction of personal property	279	33.6%
Lack of housing and shelter	253	30.5%
Lack of food and water in the living area	282	34.0%
Witness murder of loved ones	88	10.6%
Witness murder of significant others	294	35.4%
Witness murder of strangers	363	43.7%
Ill health without medical care	156	18.8%
Forcefully isolated from community	282	34.0%
Made to accept ideas against will	148	17.8%
Imprisoned against will	70	8.4%
Being in a war fighting situation	160	19.3%
Being abducted or kidnapped	34	4.1%
Sexually abused or raped	31	3.7%
Physically abused	146	17.6%
Verbally threatened or insulted	611	73.6%
Forcefully separated from family	312	37.6%
Serious injury	241	29.0%
Past childhood physical abuse or neglected	68	8.2%

Factors associated with PTSD

A bi-variable analysis was done for each explanatory variable. Socio-demographic variables including female sex and educational status (being unable to read and write and being able to read and write) fulfilled the minimum requirement. The following traumatic event factors: witnessing the murder of loved ones, lack of housing and shelter, being in a war fighting situation, witnessing the murder of strangers, and destruction of personal property also fulfilled the minimum criterion. Clinical and psychosocial factors like family members with mental illness, poor and moderate social support were variables that satisfied the minimum requirement ($p < 0.25$ significance level) for further multivariable logistic analysis in PTSD. In the multivariable analysis, being female, being unable to read and write, witnessing the murder of loved ones, witnessing the murder of strangers, being verbally threatened, poor and moderate social support were significantly associated with PTSD ($p < 0.05$).

Females were four times higher in odds to develop PTSD

than males (AOR=4.2, 95% CI (2.82-6.27)). From the study participants those who are unable to read and write were three times higher in odds to develop PTSD than those who are college and above (AOR=3.08, 95% CI (1.67-5.69)). The odds of developing PTSD among participants who had witnessed the murder of loved ones and witnessed the murder of strangers were three times and two times higher as compared to those participants who had not witnessed or experienced these traumatic events (AOR = 3.28, 95% CI (1.58-6.79)) and (AOR = 2.04, 95% CI (1.33-3.11)) respectively. With regard to those who were verbally threatened or insulted, the likelihood of developing PTSD was four times higher (AOR=4.09, 95% CI (2.69-6.21)) as compared to those who were not verbally threatened or insulted. Individuals who had poor social support were five times more likely to develop PTSD than those who had strong social support (AOR = 5.26, 95% CI (3.35-8.28)). The odds of developing PTSD symptoms among participants who had moderate social support were nearly two times higher as compared to those who had strong social support (AOR = 1.89, 95% CI (1.15-3.13)) (Table 5).

Table 5: Bi-variable and multivariable binary logistic regression analysis showing an association between factors and PTSD in post- conflict areas, North Shoa -zone, Ethiopia 2022 (n=830)

Explanatory variables	PTSD		COR (95% CI)	AOR (95% CI)
	Yes	No		
Sex				
Female	336	107	3.35 (2.50 – 4.51)	4.2 (2.82 – 6.27)***
Male	187	200	1	1
Educational status				
Unable to read and write	142	29	4.84 (2.94 – 7.95)	3.08 (1.67 – 5.69)***
Able to read and write	177	101	1.73 (1.18 – 2.54)	1.13 (0.69 – 1.85)
Primary education	59	43	1.35 (0.83 – 2.21)	0.88 (0.47 – 1.63)
Secondary education	56	46	1.20 (0.73 – 1.96)	1.14 (0.61 – 2.12)
College and above	89	88	1	1
Witnessed murder of loved ones				
yes	76	12	4.2 (2.23 – 7.82)	3.28 (1.58 – 6.79)**
No	447	295	1	1
Destruction of personal property				
Yes	213	66	2.50 (1.81 – 3.46)	1.15 (0.62 – 2.15)
No	310	241	1	1
Being in a war fighting situation				
Yes	114	46	1.58 (1.08 – 2.30)	1.00 (0.59 – 1.70)
No	409	261	1	1
Witnessed murder of strangers				
Yes	277	86	2.89 (2.13 – 3.91)	2.04 (1.33 – 3.11)**
No	246	221	1	1
Lack of housing or shelter				
Yes	194	59	2.47 (1.77 – 3.46)	1.72 (0.92 – 3.21)
No	329	248	1	1
Verbally threatened or insulted				
Yes	448	163	5.27 (3.78 – 7.35)	4.09 (2.69 – 6.21)***
No	75	144	1	1
Family member with mental illness				
Yes	136	51	1.76 (1.23 – 2.52)	1.23 (0.80 – 1.88)
No	387	256	1	1
Social support				
Poor	350	75	8.72 (5.94 – 12.81)	5.26 (3.35 – 8.28)***
Moderate	104	103	1.88 (1.26 – 2.81)	1.89 (1.15 – 3.13)*
Strong	69	129	1	1

Key: *p<0.05, **p<0.01, ***p<0.001

Abbreviations: COR= crude odds ratio, AOR=adjusted odds ratio, PTSD=Post-traumatic stress disorder, n= sample size.

DISCUSSION

The findings from the current study revealed that the estimated prevalence of PTSD was 63% with a 95% CI (60%–66%). The estimated prevalence of PTSD in the current study was higher as the study compared to Palestinians (west bank 49.28%, Gaza 46.5%, and East Jerusalem 35.8%) [15]. This discrepancy might be due to the analysis and reporting technique, in which the other studies analyzed and reported for the 3 states separately, while in the current study the result was reported as a total of 4 districts. Similarly, the

current study was higher than the studies carried out in Albania (17%) [13], India (19%) [12], Liberia (44%) [19], Afghanistan (42.2%) [14], Korea (15%) [20], and South Sudan (36.2%) [21].

The possible explanation for the observed differences might be due to different instruments and cut-off points to measure PTSD and exposure to multiple traumas. All the studies used the Harvard Trauma Questionnaire (HTQ) and the General Health Questionnaire (GHQ-28), except the study carried out in Korea. The other cause of discrepancies could be due to

the methods they used to collect the data. In Albanian and Korea, they used a self-administered technique (where the difference in individual understanding of the question might affect the magnitude) in which this study used an interview that had a high chance of common understanding. The study conducted in Liberia was conducted after 10 years of conflict, but the current study was conducted less than 1 year after the conflict. Therefore, the increased duration was more likely to reduce magnitude due to recall bias. Variation in the type of sampling technique, exposure to trauma, sample size and socio-cultural difference might also contribute to this discrepancy.

Regarding the socio-demographic characteristics of the respondents, this study showed that the education level of participants (those who are unable to read and write) has a significant association with PTSD. This finding is supported by a study done in the Kashmir valley. (12) This might be due to people who are unable to read and write may have less ability to cope with a stressful situation than those of college and above [22].

Also, being female has a significant association with PTSD. This finding is also supported by other studies carried out in the Kashmir valley, Italy, South Sudan, Afghanistan, and Palestine [12,14,19,23,24]. Biological and psychosocial factors may contribute to women's increased risk of having PTSD. Women appear to have a more sensitized hypothalamus-pituitary-axis than men due to the effect of oxytocin, which results in excessive fear, stress, and needs for social support [25]. Psychological consequences of rape, sexual abuse, violently losing a partner and being widowed (single parent) might also be a risk factor. Another reason could be that females tend to show a more emotional and ruminative response to stress [12,26].

The significant association between witnessing murder of loved ones with PTSD is consistent with report of other study in Italy and Croatia [24,27]. The strongest relationships with the people we love have the capacity to positively or negatively change us and contribute to our sense of identity. As a result, witnessing the murder of loved ones resembles an irreversible negative life-changing effect and altered thinking ability. The anguish, the repeated memory of the event, negative intrusive thoughts (For example thoughts of

revenge), has a significant impact on emotional well-being and could also interfere in everyday living activities [28,29].

The current finding showed that, witnessing the murder of strangers was associated with PTSD. But it was not associated with other studies. The possible reason might be the number of individuals exposed to this traumatic event was high in the current study and this variable was not included in some of the other studies [30,31]. This traumatic event trapped the person in a constant state of strong emotional reactivity (29). The three areas of the brain (amygdala, hippocampus, and prefrontal cortex) all play a role in regulating emotions and responding to fear. When there is strong emotional reactivity, these areas may perform and function differently than before. The amygdala becomes hyperactive; the hippocampus affects the ability to recall some memories; and the prefrontal cortex will have a hard time regulating fear and other emotions. All of this emotional instability, irritation, and stress make the person vulnerable to PTSD [32,33].

Furthermore, participants who experienced verbal threats or insults are more likely to acquire PTSD; this finding was not supported by previous studies. This might be due to, in the current study this traumatic event is the highest frequency that was experienced by the community. Words are instruments for managing human bodies. A person's mental and physical health might be negatively impacted by aggressive words. As kind words make us feel calmer stronger and loved. Verbally threatened or insulted shatters a person's self-esteem and self-respect. This nonphysical act harms another person's overall ability to function, their mental well-being, and makes the person constantly afraid, ashamed, guilty, unwanted, powerless, and hopeless. These cumulative emotions lead to symptoms of trauma, making them susceptible to different mental disorder, including PTSD [34].

Strengths and Limitations

Strengths

The study used standardized and validated instruments for assessing PTSD and depression. It was conducted at the community level and included a large sample size from multiple conflict-affected districts.

Limitations

Due to the cross-sectional design, causal relationships could not be established. Recall bias may have occurred because participants were asked to report past traumatic experiences.

CONCLUSION

The prevalence of PTSD and depression among adults living in conflict-affected areas of North Shoa Zone was remarkably high. Female sex, traumatic experiences, poor social support, and perceived stress were important determinants of mental health outcomes. Strengthening mental health services and community-based psychosocial interventions is essential in post-conflict settings.

Declarations

Ethical Approval and Consent to Participate

Ethical approval was obtained from the Institutional Review Board of Debre Berhan University, Asrat Woldeyes Health Science Campus. Written informed consent was obtained from all participants.

Consent for Publication

Not applicable.

Availability of Data and Materials

Data are available from the corresponding author upon reasonable request.

Competing Interests

The authors declare no competing interests.

Funding

No external funding was received.

Authors' Contributions

All authors contributed to the conception, design, data collection, analysis, interpretation, and manuscript preparation.

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