

# Post-Traumatic Stress Disorder: The Case of Nekemte Town Correctional Center, West Ethiopia

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## Abstract

**Background:** Post traumatic stress disorder (PTSD) is one of the psychiatric disorders leading to the widest use of health care systems in prisoners. However, in Ethiopia, there is no evidence regarding the magnitude and associated factors among the prisoners. Thus, this study was designed to assess the prevalence of post-traumatic stress disorder and associated factors among prisoners of Nekemte town correctional center, West Ethiopia, 2017.

**Method:** Institutional-based cross-sectional study was conducted from June 1-26, 2017 in Nekemte town correctional center. Three hundred thirty two prisoners were randomly selected by using simple random sampling technique. Socio-demographic and related data was collected by using structured interviewer administered questionnaire. PTSD was assessed by using PTSD Checklist - Civilian Version (PCL-C). Data entry was done by Epi data version 3.1 and analysis was done by SPSS 21.0 statistical software.

**Result:** Finding of this study indicated that the prevalence of PTSD was 31%. Regarding the characteristics of study population, 93.7% of participants were male whose age ranged from 16 to-84 year. In the final multiple logistic regression model, age group 37-50 [AOR=2.82 (95% CI: 1.31, 6.06)], single [AOR=1.86 (95% CI: 1.06, 3.27)], migration history [AOR= 4.5 (95% CI: 2.45, 8.19)] and duration of sentence 19-43months [AOR=0.49 (95% CI: 0.27-0.94)] were statistically significantly associated with PTSD.

**Conclusion:** This study found out, one third of prisoners had PTSD. Age 37-50, single, migration history and duration of Sentence 19-43 months had significant association with PTSD. Concerned bodies need to establish and strengthen care and support for the inmate.

**Keywords:** Post Traumatic stress disorder; Nekemte; Prisoners

## Introduction

The prevalence of poor mental health among prisoners is considerably higher than in the community, and studies worldwide have shown that suicide rates in prisons are up to 10 times higher than those in the general population [1]. More than ten million people live on prisons over the world [2] and study showed people in prisons were found to have higher prevalence of trauma history that would put them at high risk of posttraumatic stress disorder [3]. Post-traumatic stress disorder (PTSD) is a severe, disabling mental disorder which occur when a person experience traumatic events including combat, severe physical or sexual assault, a serious accident, torture, sudden unexpected death of a loved one, natural disasters or other threats [4] according to DSM-V [5]. The Global Burden of Disease 2000 study estimated burden of PTSD has increased to 0.6% of total global YLDs [6]. The most recent findings from world mental health (WMH) surveys on the global burden of mental disorders in 28 countries throughout the world indicated PTSD was among commonly occurring and severely disabling mental disorder and rated as 54.8% & 41.2% disability in developed and developing countries respectively [7].

Persons involved in the criminal justice system and those with mental disorders are significantly at higher risk of trauma exposure and development of PTSD compared with the general population [8]. PTSD increases risk of criminal behavior partly through the use of substances to cope with the psychological and biological sequel of trauma exposure, moreover behavioral problems that are associated with their psychiatric conditions also place them at greater risk of committing rule violations and inappropriately imprisoned for relatively minor offences [9]. Study done in the rural United States, among 213 inmates reported that posttraumatic stress disorder was one of the most common disorders,

with 33% meeting lifetime criteria and 21% of the participants meeting current (6-month) PTSD criteria [10].

A study done on 1055 male European long-term prisoners who were sentenced for at least five years by using posttraumatic diagnostic scale (PDS), found the highest prevalence among the Finland which was 27.8% followed by Croatian (20.6%), England (20.2%) and Germany (18.4%) [11]. Another study done in State of South Paulo, Brazil in 2014, among 1,129 men and 617 women prisoners, reported 16.1% and 9% of 12-month prevalence of PTSD among women and men, respectively [12].

Study done in South Africa on 193 prisoners, to determine the prevalence of serious mental disorders including PTSD in a prison population, indicated 9.8% of prevalence of post-traumatic stress disorder [13]. However, there is very limited study and to the knowledge of the researchers there is no published study done in this regard in Eastern Africa. Therefore, this study was designed to assess the prevalence of PTSD and associated factors among Prisoners of Nekemte town correctional center.

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## Materials and Methods

### Study design, study area and study subject

An institution-based cross-sectional study design was employed. Study was conducted in Nekemte town correctional center from June 1-26, 2017. The town is situated in West of Ethiopia and covers a total area of 4,623 hectares. Administratively the town is divided into 13 Kebeles. Nekemte town correctional institution is established in 1967 E.C and currently the center has 1760 prisoners.

### Data collection instruments

Data was collected by using structured questionnaire consisting demographic characteristics, criminal and substance histories, illness related factors as well as the PTSD Checklist-Civilian Version (PCL-C) and Life Events Checklist (LEC). PCL was developed by Frank Weathers and his colleagues at the National Center for PTSD in 1993 [14]. It is a 17-item self-report PTSD screening instrument that corresponds to the key symptoms of PTSD applied generally for assessment of patients exposed to any forms of traumatic event. PCL is the most commonly used screening mechanisms for PTSD and has been found to be reliable and valid for screening purposes across numerous populations [15]. The PCL scales have 5-point (1–5) Likert scales range from 1 (not at all) to 5 (extremely). Individual item scores were summed and the total score of 44 and above were considered to have PTSD. The PCL showed a sensitivity of .97 and a specificity of 0.87 [16]. Life Events check list traumatic life events questionnaire to obtain a more reliable and valid measure of traumatic events, consistent with PTSD DSM V criterion A1 [17].

### Participants

Source populations were all prisoners in Nekemte town correctional center. Sample size was determined using single population proportion formula by considering the proportion of PTSD among prisoners 50% as there is no previous study, confidence level 95%, 5% margin of error. Thus, the sample size required for the study was 336. Simple random sampling was used by using the list of prisoners as sampling frame.

### Statistical analysis

Data was checked for completeness, edited, coded and entered into Epi data version 3.1 and exported to SPSS version 21.0 statistical software for analysis. Descriptive statistics such as mean, median, frequency and percentage was used and presented using charts and tables. Bi-variable analysis was done and all explanatory variables which had association with the outcome variable with P-value less than 0.25 were included in multivariable analysis. Multi variable logistic regression analysis was employed to determine independent predictors. P-value less than 0.05 were used to declare statistical significance. Model fitness was assessed using Hosmer and Lemeshow test and it was found to be 0.75. Multicollinearity was checked by variance inflation factor (VIF) and tolerance test. The result of VIF was found to be less than 2 while tolerance test was greater than 0.1, which was within the normal limit.

## Results

### Socio-demographic characteristics of respondents

The study was conducted with response rate of 98.8%. Three hundred eleven (93.7%) were male participants whose age ranged from 16 to 84 year; nearly half 160 (48.2%) of participants were unmarried; three fourth of the respondents 219 (66.0%) were Oromo ethnic group and one fifth 68 (20.5%) of respondents had migration history (Table 1).

### Clinical and substance use related characteristics

The study revealed that 36 (10.8%) of respondents had chronic medical illness, 52 (15.7%) had history of family mental illness. Nearly one tenth 31 (9.3%) had history of past mental illness. Similarly, the study revealed that almost half of study participants 168 (50.6%), more

Variable	Category	Frequency	
		Number	Percent (%)
Sex	Male	311	93.7
	Female	21	6.3
Age	16-25 Year	156	47
	26-36 year	117	35.2
	37-50 year	40	12
	>50 year	19	5.7
Marital status	Married	143	43.1
	Single	160	48.2
	Other*	29	8.7
Ethnicity	Oromo	219	66
	Amhara	64	19.3
	Dawro	32	9.6
	Others**	17	5.1
Religion	Muslim	180	54.2
	Orthodox	125	37.7
	Protestant	27	8.1
Residence	Rural	106	31.9
	Urban	226	68.1
Migration status	Yes	68	20.5
	No	264	79.5
	Illiterates	44	13.3
Educational status	Grade 1-8	189	56.9
	Grade 9-12	72	21.7
	College and above	27	8.1
Occupation before	Farmer	84	25.3
Imprisonment	Employed	162	48.8
	Un employed	86	25.9

Others \* widowed, divorced \*\*kaffa, Gurage, Tigre and Yeme

**Table 1:** Socio-demographic and economic characteristics of prisoners of Nekemte town correction center, West Ethiopia, 2017 (n=332).

Variable	Category	Frequency	
		Number	Percent (%)
Chronic medical illness	Yes	36	10.8
	No	296	89.2
Family mental illness	Yes	52	15.7
	No	280	84.3
Past or current mental illness	Yes	31	9.3
	No	301	90.7
Past psychiatric hospitalization	Yes	24	7.2
	No	308	92.8
Current psychiatric treatment	Yes	18	5.4
	No	314	94.6
Alcohol use	Yes	73	22
	No	259	78
Tobacco use	Yes	56	16.9
	No	276	83.1
Khat use	Yes	168	50.6
	No	164	49.4
Cannabis use	yes	20	6
	No	312	94

**Table 2:** Illness related and life time substance use history among prisoners of Nekemte town correction center, West Ethiopia, 2017 (n=332).

Traumatic Event	Number (%)	PTSD	
		Yes	No
Natural disaster	31(9.3%)	25(80.6%)	6(19.4%)
Fire or explosion	38(11.4%)	31(81.6%)	7(18.4%)
Transportation accident	85(25.6%)	63(74.1%)	22(25.9%)
Serious accident at work, home, or during recreational activity	29(8.7%)	27(93.1%)	2(6.9%)
Exposure to toxic substance	12(3.6%)	11(91.7%)	1(8.3%)
Physical assault	48(14.5%)	41(85.4%)	7(14.6%)
Assault with a weapon	45(13.6%)	43(95.6%)	2(4.4%)
Sexual assault	9(2.7%)	8(88.9%)	1(11.1%)
Other unwanted or uncomfortable sexual experience	10(3%)	9(90.0%)	1(10.0%)
Combat or exposure to a war-zone	14(4.2%)	13(92.9%)	1(7.1%)
Captivity	16(4.8%)	14(87.5%)	2(12.5%)
Life-threatening illness or injury	30(9%)	27(90%)	3(10%)
Sever human suffering	32(9.6%)	25(78.1%)	7(21.9%)
A sudden, violent death	34(10.2%)	30(88.2%)	4(11.8%)
Sudden, unexpected death of someone close to you	54(16.3%)	43(79.6%)	11(20.4%)
Serious injury, harm or death you caused to someone else	36(10.8%)	30(83.3%)	6(16.7%)
Any other very stressful event or experience	37(11.1%)	31(83.8%)	6(16.2%)

**Table 3:** Traumatic life events experiences among prisoners of Nekemte town correction center, West Ethiopia, 2017(n=332).

than one fifth 73(22.0%) and more than half 56(16.9%) of respondents had khat, alcohol and tobacco use history at least once in their lifetime before imprisonment respectively (Table 2).

### Lifetime traumatic events and prevalence of PTSD

Two in five 135(41%) of the respondents were experienced at least one lifetime traumatic events and the events includes transportation accident, physical assault, natural disaster and sexual assault (Table 3). This study also revealed, one out of three (31%) of study participants experienced post-traumatic stress disorder.

### Factors associated with PTSD

**Bi-variable Logistic regression analysis:** Age, marital status, migration status, educational status, type of current criminal, duration of sentence, no of previous incarceration, life time drinking alcohols, life time smoking tobacco, life time khat use, life time cannabis use showed significant association. However, educational status, no of previous incarceration, life time cannabis use, alcohol and tobacco use were not significant associated with PTSD during bi-variable analysis.

**Multivariable logistic regression analysis:** In the multivariate logistic regression analysis age category of 37-50, single/unmarried, history of migration and duration of sentence 19-43 months were found to be independently significantly associated with PTSD. Study participants whose age category 37-50 were 2.82 times more likely

Variables	Post-traumatic Stress Disorder		COR (95% CI)	AOR (95% CI)	
	No (n/%)	Yes (n/%)			
Age	16-25	111(71.2)	45(28.8)	1	1
	26-36	79(67.5)	38(32.5)	1.086(0.67-1.76)	1.32(0.73-2.38)
	37-50	22(50.0)	18(45.0)	1.96(1.01-3.84)**	2.82(1.31-6.06)**
	> 51	16(84.2)	3(15.8)	0.394(0.112-1.381)	0.85(0.2-3.597)
Marital status	Married	104(72.7)	39(27.3)	1	1
	Single	108(67.5)	52(32.5)	0.72(0.45-1.15)**	1.86(1.06-3.27)**
	Others*	16(55.2)	13(44.8)	1.11(0.7-1.77)	0.744(0.28-2.02)
Educational status	Illiterate	38(86.4)	6(13.6)	0.31(0.125-0.75)*	0.39(0.15-1.03)
	Grade 1-8	126(66.7)	63(33.3)	1.244(0.78-1.99)*	0.71(0.39-1.26)
	Grade 9-12	45(62.5)	27(37.5)	1.43(0.83-2.463)	1.12(0.37-3.31)
	College & above	19(70.4)	8(29.6)	1	1
Migration	No	197(74.6)	67(25.4)	1	1
	Yes	31(45.6)	37(54.4)	3.51(2.02-6.09)***	4.62(2.49-8.57)***
Type of current criminal	Murder	60(63.2)	35(36.8)	1.42(0.86-2.347)	0.78(0.39-1.51)
	Theft	74(66.1)	38(33.9)	1.198(0.74-1.95)	0.98(0.39-2.5)
	Fight	66(79.5)	17(20.5)	0.48(0.27-0.87)**	0.49 (0.27-0.94)**
	Rape	28(66.7)	14(33.3)	1	1
Duration of sentence(months)	0-18	69(69.0)	31(31.0)	1	1
	19-43	54(80.6)	13(19.4)	0.46(0.24-0.89)**	0.422(0.2-0.88)**
	44-108	60(69.0)	27(31.0)	0.98(0.58-1.67)	1.24(0.61-2.49)
	>109	45(57.7)	33(42.3)	1.89(1.12-3.19)*	1.54(0.84-2.84)
Life time Drinking alcohols	No	186(71.8)	73(28.2)	1	1
	Yes	42(57.5)	31(42.5)	1.88(1.09-3.22)**	1.01(0.494-2.05)
Life time smoking tobacco	No	196(71.0)	80(29.0)	1	1
	Yes	32(57.1)	24(42.9)	1.837(1.02-3.31)**	1.47(0.71-3.04)
Life time Khat use	No	117(65.0)	63(35.0)	1	1
	Yes	111(73.0)	41(27.0)	0.67(0.43-1.09)*	0.619(0.37-1.04)
Life time cannabis use	No	220(70.5)	92(29.5)	1	1
	Yes	8(40.0)	12(60.0)	3.59(1.42-9.07)**	1.64(0.54-5.0)

\* P<0.25, \*\* p<0.05, \*\*\* p<0.001

**Table 4:** Factors associated with PTSD among prisoners of Nekemte town correction center, West Ethiopia, 2017(n=332).

showing PTSD symptoms than age group of 16-25 [AOR=2.82 (95%CI, 1.31-6.06)]. The odds of PTSD on single/unmarried individuals were 1.86 times more likely than married [AOR=1.86 (95%CI,1.06-3.27)] and study participants who sentenced 19-43 months were 58% less likely showed symptoms of PTSD compared with respondents sentenced 0-18 [AOR=0.49 (95% CI, 0.27-0.94)] (Table 4).

## Discussion

The current study revealed one in three 104(31%) prisoners in Nekemte town correction center had PTSD. Age group 37-50, single/unmarried, migration history and duration of Sentence 19-43 months had significant association with PTSD.

The study showed the prevalence of PTSD among prisoners in Nekemte town correction center was 31%. The finding of this study goes in line with the reports of study done in a rural Northeastern united states 33% [10], Finland 27.8% [11], Switzerland 27% [18], Australia 26% [19] and New York 30% [20]. However the finding of the present study also higher than the study results in Chicago 21% [21] South Africa 9.8% [13] Iranian prisoners 17.4% [10]. The probable reason for the difference might be use of differing screening instrument, difference in socio demographic characteristics of study population.

Result of this study revealed that participants age was found to be significantly associated with PTSD; respondents whose age category 37-50 were found to have likelihood of PTSD as compared to those 16-25 age range. There is a need to conduct further study with strong design to identify the relationship of PTSD with age while the possible explanation is young people in the aftermath of trauma can be more adaptable than older people. This may be because core beliefs of younger people are more likely to be challenged and potentially more changeable, whereas order's core beliefs are more resistant to change [22].

Based on the findings of this study, participants who had history of migration were 4.6 times more likely to be affected by PTSD than respondent with no migration history, which is in line with a study done in Sweden [23].The possible reasons might be, immigrants are particularly at risk for PTSD due to a history of multiple traumatic events associated with specific stressors. Moreover, severe post-migration living difficulties such as undermining of cultural identity, obstacles to employment, racial discrimination, poverty, disappointment in not achieving expectations and loneliness, can contribute to the onset/worsening of a PTSD and to long term difficulties [24,25].

Study participants who sentenced 19-43 months were less likely showed symptoms of PTSD compared with respondents sentenced 0-18 months. This might be due to earlier periods of imprisonment may be more difficult for inmates in terms of adjustment, and so increased risk of violence during incarceration that most influences the likelihood of experiencing PTSD among incarcerated individuals [26]. The current study result is not compatible with study done in Iran which indicates prevalence of PTSD in prisoners with longer duration of imprisonment was higher than others. This effect can be explained by prison environment, type of crime, evaluation, and long isolation [27].

Overall, the study is the first of its kind in the country to determine the prevalence and associated Factors of PTSD among prison population. However, self-reported experiences of PTSD symptoms are subjected to recall or social desirability bias.

## Conclusion

The result of the current study showed that one of three prisoners

had PTSD in Nekemte town correctional center. Study participants whose age group 37-50, single/unmarried, those who had history of migration and duration of sentence 19-43 months were found to have statistical association with PTSD in the final model. Accordingly, the prison administration and concerned body should give an emphasis on way to provide mental health service for the prisoners and there is a need to conduct further study with strong design to look for the relationship between age and PTSD.

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## Conflict of Interest

None

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