College of Heath Sciences

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Department of Emergency Medicine and Critical Care Nursing

Assessement of Acute Stress Disorder and Associated Factors among Adult Trauma Patients in AaBET Hospital, Addis Ababa, Ethiopia, 2024

A Thesis Submitted to the Department of Emergency Medicine and Critical Care, School of Nursing and Midwifery, in Partial Fulfillment of the Requirements for the Degree of Master of Science in Emergency Medicine and Critical Care Nursing

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June, 2024

Addis Ababa, Ethiopia

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This thesis by Degsew Yirsaw is accepted in its present form by the board of examiners as satisfying the thesis requirement for a degree of master of Emergency Medicine and Critical Care Nursing.

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ACKNOWLEDGEMENTS

First and foremost, my heartfelt gratitude and great thanks goes to my advisors **Mrs. Heyria Hussein (MSc, PhD fellow), and Dr.Selamawit Alemayehu (MD, Psychiatrist)** for their valuable comments and constructive feedback during the development of this thesis. I would like to extend my sincere gratitude to Addis Ababa University for providing me the opportunity to attend this program. My gratitude extends to saint Paul's hospital millennium medical college for giving me this scholarship. Furthermore, I would like to express my deep gratitude to those who have been positive for me all the time in my thesis writing.

ABBREVIATION AND ACRONYM

AOR	Adjusted odds ratio
ASD	Acute stress disorder
ASR	Acute stress response
ASDS	Acute stress disorder scale
AaBET	Addis Ababa burn, emergency, and trauma
ASSIST	Alcohol, Smoking, and Substance Involvement Screening Test
CKD	Chronic kidney diseases
COPD	Chronic obstructive pulmonary diseases
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders four
DSM-V	Diagnostic and Statistical Manual of Mental Disorders five
DSM-5-TR	Diagnostic and Statistical Manual of Mental Disorders five-text revision
GAD-7	Generalized anxiety disorder item seven
G.C	Gregorian calendar
ICU	Intensive care unit
IQ	Intelligence quotient
NRS	Numerical rating scale
SBQ-R	Suicidal behaviours questionnaire- revised
PSS	Perceived Stress Scale
PTSD	post-traumatic stress disorder
SPHMMC	saint Paul's hospital millennium medical college
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

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ABSTRACT

Introduction: Trauma is a term that describes physical suffering or injury as a result of an external force or events, such as falls, sexual assault, natural disasters, or road traffic accidents. As a result, trauma leads to a psychological and emotional reactions that arises from experiencing or witnessing traumatic events. Acute stress disorder is a mental disorder that happens after someone experiences a traumatic event within less than a month. Despite the high burden of this problem, very little is known about the prevalence and risk factors for acute stress disorder in adults with traumatic injuries in AaBET hospital.

Objective: To assess the prevalence of acute stress disorder and its associated factors among adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, 2024.

Methods: An institutional-based cross-sectional study design was employed among 286 adult trauma patients from March 14, 2024, to April 14, 2024. Systematic random sampling technique was applied to recruit study participants and data were collected through structured and semi-structured questionnaires using DSM-V, acute stress disorder measurement tools. Data was exported from excel to SPSS version 27 for analysis. Descriptive statistics was computed to describe the frequency, percentages, and distributions of the sample and the result was presented using tables, and charts. Bivariate and multivariable binary logistic regression model was carried out and variables with a p-value less than 0.05 were significantly associated with ASD.

Result: The prevalence of acute stress disorder among adult trauma patients in AaBET hospital was found to be 45.8% (95% CI: 39.9%, 51.8%). In multivariate logistic analysis ICU admission (AOR= 4.39; 95% CI:2.18-8.85), amputation (AOR=2.93; 95% CI:1.03-8.29), pain (AOR=5.94; 95% CI:2.35-14.98), length of stay (AOR=1.82; 95% CI:1.01-3.29), having low social support (AOR=2.55; 95% CI:1.08-6.00), high perceived stress (AOR=6.02; 95% CI:1.62-22.43) and moderate perceived stress (AOR=2.48; 95% CI:1.13-5.44) were factors significantly associated with acute stress disorder.

Conclusion and Recommendation: Findings of this study indicated that the prevalence of acute stress disorder among adult trauma patients was considerably high. The study findings indicated the need for early identification and interventions or the importance of ASD care services from health workers.

Key words: Acute stress disorder, trauma, AaBET, Ethiopia

1. INTRODUCTION

1.1 Background

Trauma is a term that describes physical suffering or injury as a result of an external forces or events, such as falls, sexual assault, natural disasters, or road traffic accidents(1). As a result, trauma leads to psychological and emotional reaction that results from experiencing or witnessing a traumatic event (2). Based on their psychological makeup, coping mechanisms, and the nature of the traumatic experience, people's responses to trauma can vary widely. Consequently, people may develop stress-related disorders like acute stress disorder,posttraumatic stress disorder and dissociation, or they may be able to overcome adversity, cope with stress, and adapt positively in the face of trauma through a variety of mechanisms like strong social support and effective coping strategies (3,4). It also results in psychological negative consequences such as sleep disturbances, difficulty concentrating and remembering things, low self-esteem, emotional numbness, and trouble trusting other people. However, not everyone who experiences trauma will experience these psychological side effects, and people may react differently depending on things like coping mechanisms and the availability of support (5).

Acute stress disorder (ASD) is a mental illness that typically develops after a person experiences trauma, either directly through direct exposure to the traumatic event, as a witness, or by being faced with situations that involve actual or potential bodily harm, death, or other threats to one's own or others' bodily integrity. Intense helplessness and anxiety, horror reactions, flashbacks, and nightmares associated with the traumatic incident within a short period of time (6,7).

The formal diagnosis of ASD was established in 1994 when it was included in the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV in 1994) (8). According to the guidelines, ASD is classified as anxiety disorder which is distinguished by the symptomatic groupings of dissociation, intrusion, avoidance, and arousal symptoms. The incorporation of ASD into the DSM-IV was predicated upon two primary objectives. The first objective was to identify acute stress reactions (ASR) that manifest within the first month following exposure to a traumatic event. The secondary objective was to differentiate between acute stress disorders (ASD) and Post-Traumatic Stress Disorder (PTSD) by considering dissociative responses to the traumatic event and the duration of associated symptoms (8,9).

The diagnostic criteria underwent several alterations with the implementation of the DSM-5 in 2013 (10). Specifically, acute stress disorder (ASD) has been reclassified as part of Trauma- and Stressor-Related Disorders. Based on the criteria set by DSM-V, ASD is characterized by five groups of symptoms known as intrusion, negative mood, dissociation, avoidance, and arousal symptoms. These symptoms happen within the first month following a potentially traumatic event (9,11,12).

In the DSM-V, acute stress disorder diagnosis is when individuals experience exposure to trauma and the existence of at least nine symptoms from any of the five categories (avoidance, arousal, dissociative, numbness, distress) and symptoms must be maintained for at least 3 days to 1 month after the patient experiences a traumatic event. Furthermore, the disruption cannot be attributed to a medical condition (mild traumatic brain damage) or the physiological effects of alcohol or medicines (7,13,14). The DSM-5-TR is a revised version of the DSM-5, which was published in 2013. The DSM-5-TR includes updated diagnostic criteria, new references, and revised text. It also includes a new disorder, prolonged grief disorder, and codes for suicidal behavior (15).

Hospitals, especially trauma centers are crucial components of the healthcare system, which plays a critical role in the immediate care and management of trauma patients. Their primary objective is to provide timely and specialized medical attention to those who have sustained severe injuries, often resulting from accidents, violence, or other traumatic events and they provide emergency care, stabilization and resuscitation, surgical intervention, critical care, and monitoring (16,17). Trauma care in hospital settings, addressing both physical and psychological aspects, is essential for promoting optimal recovery, preventing long-term mental health issues, and fostering the overall well-being of individuals who have experienced trauma through enhanced coping mechanisms, patient and family fupport are very crucial (2,17).

1.2 Statement of problem

Acute stress disorder affects 6–33% of trauma survivors globally on average. The prevalence of ASD varies depending on the type of trauma that the survivor experienced, such as mass shootings (33%), traumatic brain injuries (14%), assault victims (16%), burn victims (10%), industrial accidents (6%), and automobile accidents (13%) (18).

According to a comprehensive study conducted on traumatized adult patients, the prevalence of ASD was found to be 24.0–24.6% and 11.7–40.6% globally in the first week and two weeks following injury, respectively (12). However, there is a gap in identifying effective predictors of the transition from ASD to chronic post-traumatic stress disorder (PTSD).

Furthermore, Over 70.4% of people globally and up to 89.7% of the United States population report having experienced a traumatic event at some point in their lifetimes (19).

These days, adults are more susceptible to a variety of traumatic events. As such, early screening, prompt intervention, and ongoing monitoring for ASD are necessary to lower the incidence of PSTD and suicide. A Danmark's longitudinal cohort study revealed that patients with ASD had a two-fold increased risk of all-cause mortality and a twenty-four-fold increased risk of suicide death when compared to the general population (20). On the other hand, patients with ASD present for hospitalization, which might result in a variety of symptoms, such as pain, suffering, low mood, irritability, sleeplessness, and avoidance behaviors (21).

People who suffer from trauma may be subjected to physical harm as well as social, economic, occupational, and psychological effects, such as extended hospital stays, longer recovery times, higher care costs, and lower productivity after serious injuries and untimely deaths for survivors. (22, 23). In addition to this ASD following traumatic events can have a variety of effects on trauma patients, including long-term mental and physical health issues such as psychiatric illnesses, depression, anxiety, Impaired Functioning, and increased conflicts with family members(21).

Based on the report by, WHO from 2000-2020 road traffic-related deaths increased by 80% in low and middle-income countries, with 32% of them located in sub-Saharan Africa in 2015 (24) and from East Africa, especially from Tanzania in 2005 and Sudan in 2014, revealed that the burden of traumatic events has been significantly increasing (6, 20). As well as in our country Ethiopia, the Ethiopian National Road Safety Coordination’s office sites showed that road crash fatality rate of 114 deaths per 10,000 vehicles per year (25). However, to the researcher's knowledge, there are insufficient studies available on the prevalence of ASD and associated factors in adult age groups in Africa including Ethiopia. Because of inadequate evidence of ASD, it is challenging to diagnose or treat ASD among adults accurately, compared to other mental illnesses (depression or PTSD) (26).

A study done in Ethiopia showed that patients who had experienced multiple traumatic events had a 45% prevalence of acute stress disorder. This disorder has been shown significantly associated with anxiety, a history of trauma and past mental illness, poor and moderate social support, and moderate perceived stress (27). Research on ASD has made significant strides, but there are still notable gaps in the literature that warrant further investigation on risk factors such as the presence of chronic medical illness, developing of complications, different types of injuries, and amputated patients.

Even though the prevalence of trauma in the world (28), in Africa including Ethiopia(29), is very high, ASD was not given attention too much rather than PTSD. In addition to this, it was not done in specific physical trauma patients, or in trauma centers and most studies do not specify the risk factors of ASD.

Therefore, the purpose of this study is to ascertain the prevalence of ASD and related factors among adults who have suffered from trauma. This is crucial in order to identify ASD symptoms and initiate early management of ASD, which can serve the patient's best interests and improve their quality of life and health.

1.3 Justification of the study

Research on acute stress disorder is limited throughout Africa, including Ethiopia and it was not done in specific trauma patients in a specific representative population. This study has generated some significant findings regarding the prevalence and associated factors of acute stress disorder, particularly in Ethiopia. These findings will be helpful in the development of a comprehensive approach to address the problem, which will involve early identification of ASD, early and timely intervention, prevention of long-term mental health problems like PTSD, and early consultation with psychiatry professionals. This study provides scientific evidence to help policy makers, screening and assessment tools for ASD to better identify individuals who are at risk, create a link between trauma patients especially (physical trauma) with psychiatry professionals, and further explore more factors that affect ASD like trauma with chronic medical illness, Traumatic injury type and amputation of body parts. Furthermore, the research promotes mental health and social welling by improving public health policies, Improving Trauma-Informed Care.

2. LITERATURE REVIEW

2.1 Prevalence of acute stress disorder

The pooled prevalence of acute stress disorder among trauma survivors was 15.81%, as reported by a study done on the prevalence of mental health problems globally in 2018(12). A similar analysis of 13 studies among survivors of traffic accidents conducted in the USA, the Netherlands, and China showed that the prevalence of acute stress disorder reported among studies varied based on the trauma they suffered, ranging from 3.0 to 41.1%(12,30,31). The other cross-sectional study done in the United States of America among burn injuries showed the prevalence of acute stress disorder was 24%(30).

At 2 to 3 weeks follow-up, a study done in Canada among trauma patients admitted to the emergency department showed that the prevalence of acute stress disorder was 22.9%(32). Another Systematic Review and Meta-Analysis study conducted in Canada on acute stress disorder Following Different Types of Traumatic Events showed that the overall prevalence of acute stress disorder was 20.4%(19).

The study conducted in china among those exposed to earthquake disasters showed the prevalence of acute stress disorder was 15%(33). A similar research done In china among elderly patients with osteoporotic fractures showed the prevalence of acute stress disorder was 6.1%(34). Another retrospective research done in china among accidental traumatic fractures showed the prevalence of acute stress disorder was 28.20%(35). In another meta-analysis conducted in China, the pooled Prevalence of acute stress disorder among road traffic accident survivors in (country) was 15.81%(12).

According to prospective research done in Brazil with a four-year follow-up, 40.8% of people had acute stress disorder (36). another study conducted among 146 patients in Brazil and in 267 Netherlands patients indicates that 10 (6.85%) and 21.7% were diagnosed positive for acute stress disorder respectively (37,38). based on the study conducted by the American Journal of Psychiatry, in Barcelona (Spain), among a total of 156 women exposed to a recent sexual assault, the prevalence of acute stress disorder was 66.6%(39).

The study conducted in Australian among trauma patients admitted to hospitals who had the prevalence of acute stress disorder was 10%(40). The other study conducted in Ankara, turkey among industry workers After an Industrial Explosion showed that the prevalence of acute stress disorder was 37.1%(41). Similarly, a study conducted in India on patients

hospitalized in an emergency department following a train accident showed that the prevalence of acute stress disorder was 47.37 %(42). Another nested case-control study conducted in the Colombia burn referral unit showed that the prevalence of acute stress disorder was 23.4%(43).

The empirical literature on acute stress disorder yields widely varying rates, even within the same categories of traumatic events. For example, some studies conducted in south Africa report significantly elevated rates of acute stress disorder following motor vehicle accidents (41%–46%)(44). Another study systematic review conducted in South Africa The prevalence rates of acute stress disorder were reported less than one-week post-injury at 24.0 to 24.6% and 1 to 2 weeks post-injury at 11.7% to 40.6%(31).

A systematic review conducted in South Africa showed that the prevalence of acute stress disorder following violence-related injury was 40.9 %(31). another cross-sectional study conducted in the eastern Democratic Republic of the Congo among injured victims of violence showed that the prevalence of acute stress disorder was 55%(45).

A recent multicentre research done In Ethiopia, among traumatized patients at Felege- hiwot and the University of Gondar comprehensive specialized hospitals revealed that the prevalence of acute stress disorder was 45% (27).

2.2 Factors associated with the development of acute stress disorder

Socio-demographic factors

retrospective study conducted in china among accidental traumatic fractures, A Logistic regression analysis showed that age ≤50 years (OR2.918, 95% CI1.994 ~ 3.421), female (OR2.074, 95% CI1.489 ~ 3.375**)** had associated with acute stress disorder (35)**.** The study conducted In china among elderly patients with osteoporotic fractures showed gender, living alone, and low monthly family income were significantly associated with acute stress disorder (34).

Research done in Brazil showed that among sociodemographic factors being female is a risk factor for the development of acute stress disorder (36). In a meta-analysis conducted in 8 countries among road traffic accident survivors acute stress disorder was highly significantly associated with age and gender (12).

Clinical related factors

Several studies across different regions have investigated the factors associated with the development of acute stress disorder in various populations. In the United States, a cross-sectional study focusing on burn unit admissions found a significant association between intensive care unit admission and prolonged stay, highlighting the complex nature of trauma recovery(30).

a prospective cohort study in Barcelona, Spain, involving 156 women exposed to recent sexual assault, identified a psychiatric history and per-traumatic dissociation as key risk factors for acute stress disorder development(39). Another study conducted in Ankara, Turkey among individuals working in an industrial setting showed that there is a strong association between previous history of psychiatry illness(like major depressive disorder) with the development of acute stress disorder which is (p=0.001)(41).

An institutional-based cross-sectional study conducted at Felege-Hiwot and the University of Gondar comprehensive specialized hospitals showed that past psychiatry illness (AOR = 3.02, 95% CI: 1.15–7.92), was identified as factors significantly associated with the likelihood of developing acute stress disorder(27). In these institutional settings. These findings collectively contribute to a broader understanding of the diverse risk factors associated with ASD across different populations and settings.

Trauma-related factors

Several studies from diverse geographical locations have explored factors associated with acute stress disorder among specific populations. In the united states a cross-sectional study conducted among admitted patients to burn unit found a significant association with upper extremity involvement) (30).

Systematic Review and Meta-Analysis study conducted in Canada showed significantly associated with different Types of Traumatic Events like(interpersonal trauma (OR=0.56,95%CI=0.35-0.91), Accident-related trauma(OR=0.19,95%CI=0.13-0.28), disaster-related trauma(OR=0.28,95%CI=0.11-0.71, WAR-related trauma(OR=0.16 95%CI=0.07-0.36)(19).

The study conducted in china among elderly patients with osteoporotic fractures showed previous traumatic history and pain especially intense type (OR=0.227, 95%CI=100–0.516)

had significant associated with ASD acute stress disorder (34). Similarly, The study conducted in Ankara, turkey among individuals working in industrial settings showed a significant association between experiencing the loss of friends among dead or injured people and the development of acute stress disorder (41).

A nested case-control study in Colombia burn referral unit further emphasized the link between pain specifically classified as strong on the visual Ana log scale (5-10)(OR=6.29, CI=2.81-14.08, P<0.001), and the presence of acute stress disorder (43).

A cross-sectional study was conducted in the eastern Democratic Republic of the Congo among injured victims of violence significantly associated with acute stress disorder having fractures ([OR = 1.97,95%CI=1.14-4.29,p=0.03)(45).

An institutional-based cross-sectional study conducted at Felege-Hiwot and the University of Gondar comprehensive specialized hospitals showed that exposure to a history of trauma(AOR = 3.46, 95%, CI: 1.01–11.80 and sever perceived threat to life (AOR = 2.75, 95% CI: 1.64, 4.60) had significantly associated with acute stress disorder(27).

Psychosocial factors

Many studies conducted in different countries provided insight into the variables related to the development of acute stress disorder (ASD) in different groups. The study conducted in china among elderly patients with osteoporotic fractures with low social support was significantly associated with acute stress disorder(OR=2.316, 95%CI=009–5.318 P < 0.05)(34).

An institutional-based cross-sectional study conducted at Felege-Hiwot and the University of Gondar comprehensive specialized hospitals showed that anxiety (AOR = 2.38, 95% CI: 1.30–4.38) and poor social support(AOR = 4.07, 95% CI: 2.20–7.52) were significantly associated with probable acute stress disorder(27).

CONCEPTUAL FRAMEWORK

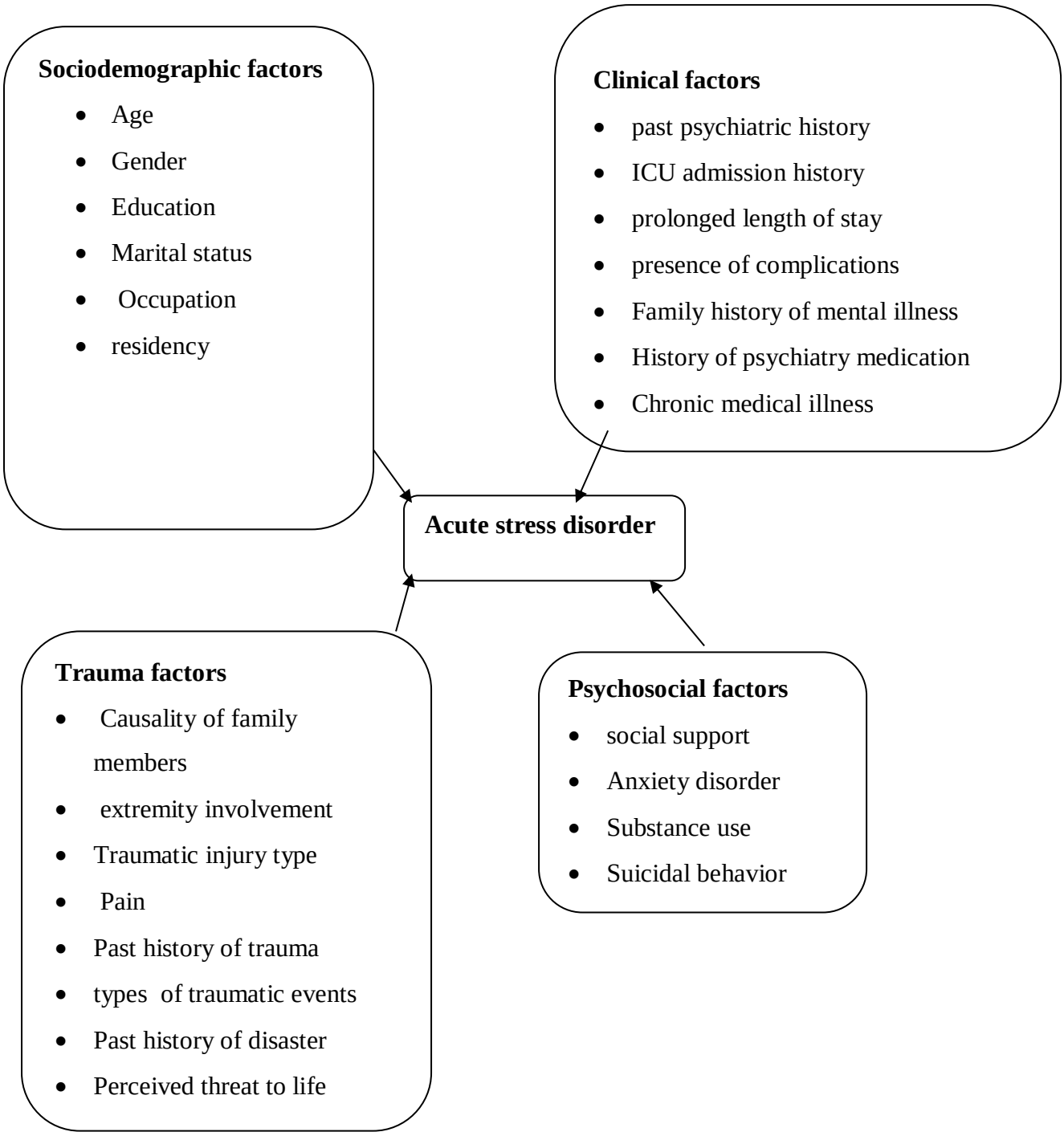

Figure 1: A conceptual framework for factor association with acute stress disorder among Adult trauma patients developed from a review of different literatures (5,15,19–21,30).

3. OBJECTIVE

3.1 General objective

To assess the prevalence of acute stress disorder and its associated factors among adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, 2024.

3.2 Specific objective

To determine the prevalence of acute stress disorder among adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia.

To identify factors associated with acute stress disorder among adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia.

4. METHODS AND MATERIALS

4.1 Study design and study period

An institutional-based cross-sectional study was conducted to assess the prevalence of acute stress disorder and associated factors among adult trauma patients from March 14, 2024, to April 14, 2024.

4.2 Study area

The study was conducted at Addis Ababa Burn, Emergency and Trauma /AaBET/ hospital Arada sub city, Addis Ababa, Ethiopia. AaBET hospital is part of Saint Paul's Hospital Millennium Medical College which was established in 2015 . It is one of the first health sectors with an entire trauma and burn unit, which represents a continuum of care that incorporates EMS responses, multi-specialty surgical expertise, including trauma, neurosurgery, Emergency Medicine and Critical Care, Plastic Reconstructive and Hand Surgery, Orthopedics, and Neurosurgery, rehabilitation, and diagnostic and imaging. It provides immediate treatment for severe and life-threatening conditions who are suffering from traumatic injuries such as falls, motor vehicle collisions, or gunshot wounds. The hospital contains a well-structured Emergency department with 55 beds, which are organized as red, orange, yellow & green areas, an cntensive care unit (ICU) equipped with 11 beds including 3 semi–ICU beds, and 130 beds at inpatient departments of Orthopaedics, Neurosurgery, General surgery, and burn unit. The annual number of trauma patients visiting AaBET hospital as taken from the registration book from the previous year ranges from 11,000 to 15, 000. Therefore, averagely 13,000 trauma patients visit the hospital per year; among those patients 75% were adults.

4.3 Source population and study population

4.3.1 Source of population

All Adult trauma patients who were admitted to Addis Ababa Burn, Emergency, and Trauma hospital.

4.3.2 Study population

All adult trauma patients admitted to Addis Ababa Burn, Emergency, and Trauma hospital who stayed from three days to less than one month and were available during data collection period were considered as a study population.

4.4. Eligibility Criteria

4.4.1 Inclusion criteria

All Adult trauma patients admitted to Addis Ababa Burn, Emergency, and Trauma Hospital for at least three days to less than less than one month were included in the study.

4.4.2 Exclusion criteria

Individuals who have been comatose patient.

Individuals who have been diagnosed with ASD/PTSD before trauma.

Individuals who have acute mental illness with difficulty communicate.

4.5. Sample size determination and sampling procedure

4.5.1 Sample size determination

Using the single population proportion formula to calculate the sample size was appropriate for estimating the prevalence of acute stress disorder (ASD) in the study population. Therefore, the sample size for the study was determined by assuming similar studies which was conducted in Ethiopia showing that 45% prevalence (27). The sample size was calculated as:

$$Ni = \frac{(Z_{\alpha/2})^2 \times p(1-p)}{d^2}$$

Where Ni = minimum sample size

P= Proportion of prevalence= 45%

d = margin of error = 5% =0.05

Zα/2 = critical value for normal distribution at 95% confidence interval= 1.96 (α = 0.05).

$$n = \frac{(1.96)^2\, 0.45(1-0.45)}{(0.05)^2} = 380$$

Since the source population averagely in a year is 9750, which was <10,000, the population correction formula was used to determine the adjusted minimum sample size.

$$nf = \frac{n}{1+n/N}$$

Where n= Initial sample size (380)

N=total number of patients admitted during the study period (813)

nf= minimum final sample size

Thus nf= ____n__ = 380 = 260

1+n/N 1+380/813

By adding a 10% none respondent rate, the final sample size was = 286

4.6 Sampling Techniques and procedure

The respondents were selected by systematic random sampling technique by calculating the "k" value, where K=N/n, where, k- sampling interval, n-sample size, N-the number of trauma patients admitted to AaBET hospital during the study period from March 14 to April 14 in 2024. The average annual flow of trauma patients in hospitals taken from the previous year from registration book reports was 13,000 among those 75% were adults which was 9750 and the average monthly visit to the hospital was 813. Then the first patients were chosen randomly between 1-k and the data was collected until the needed sample was obtained. Then the k value was calculated as 813/286=2.84, k=3.

4.7. Operational definition

Trauma (physical injury): can be explained as a trauma that causes a body wound produced by sudden physical injury from a Road traffic accident, Bullet/blast and Blow/assault, and Fall &Crush by a heavy object (1).

Acute stress disorder: it is measured by using the acute stress disorder scale (ASDS) and it has 19 items that comprise the ASDS including five dissociative, four avoidance, four re-experiencing, and six arousal symptoms. Its score for each question varies from 1 to 5 (1 = not at all, 2 = mildly, 3 = medium, 4 = quite, 5 = very much), with a result range of 19 to 95, it was a version from acute stress disorder interview based on DSM-IV 1994.The ASDS scores are totaled across all items, and according to a previous study's normal cut-off in South Africa, individuals who scored more than 56 on the ASDS-19 questionnaire were likely to have acute stress disorder. This applies to people who were exposed to sudden physical trauma such as a car accident, gunshot, burn from falling from an upstairs or tree, or physical fighting between three days and one month after the trauma.The cut-off point was higher than the Likert scale's adopted medium and matched the study's mean value (48).It has demonstrated an excellent internal consultancy Cronbach's alpha of 0.96 in Texas, United

States of America(48). Moreover, ASDS has good sensitivity (90%) and specificity (83%) for determining acute stress disorder against the ASD interview on 99 civilian trauma survivors(49).

Social support: Was measured using the Oslo-3 social support scale, which has a score range of 3 to 14. Respondents with a score between 3 and 8 were classified as having poor social support, those with a score between 9 and 11 as having moderate social support, and those with a score between 12 and 14 as having strong social support (50)**.**

Substance use: was assessed using WHO's Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST), which was developed by WHO(51) and its Cronbach's alpha with 0.80, sensitivity- 80% and specificity-71%(52)**.**

Pain: was assessed by the 0-to-10 Numerical Rating Scale (NRS) with the values on the pain scale corresponding to pain levels as 1–3 = mild pain, 4–6 = moderate pain, and 7–10 = severe pain(53).

Anxiety disorder: Based on the generalized anxiety disorder seven-item tool (GAD-7), those who score ≥10 will be considered as having a generalized anxiety disorder and each item is scored from 0 (not at all) to 4 (nearly every day) (54). The items were designed to quantify symptoms of anxiety according to the Diagnostic and Statistical Manual of Mental Disorders-IV-TR(55). The GAD-7 has adequate psychometric validity, i.e., convergent validity, diagnostic validity, factorial validity, internal consistency, and test-re-test reliability in various populations (56).

Prolonged length of stay: A traumatized patient spends at least 21 days in the hospital (57).

Perceived threat to life: was assessed using the Perceived Stress Scale (PSS), which has scores ranging from 0 to 40. Higher scores indicate a higher level of perceived stress; low scores fall between 0 and 13 on the PSS, moderate scores between 14 and 26 on the PSS, and high scores fall between 27 and 40 on the PSS-10 items (58). Hence this tool was validated and its Cronbach's alpha value of internal consistency was 0.80(n = 387) in this study the alpha value was found to be 0.89 (59).

Causality of family members; The participants were asked to use 5-point rating scales to assess their own level of injury and loss from the accident. First, there were five options: One indicates none of the above; two indicate moderate family member injuries; three indicate

significant family member injuries; four indicate family member disappearances; and five indicate family member deaths (60).

Suicidal Behaviors: it was measured by the Suicidal Behaviors Questionnaire-Revised (SBQ-R). It is a validated questionnaire to identify patients at risk of attempted suicide and it is (80%) Sensitivity and (91%) specificity. it consisted of four items that evaluated a different dimension of suicidality(61). Item-1 asses the lifetime suicide ideation (or suicide attempts), item-2 assesses the frequency of suicidal ideation over the past month, item-3 asses the threat of suicide attempt, and, finally, item-4 evaluates the self-reported likelihood of suicidal behavior in the future. The total score ranges from 3 to 18. Scores greater than 11 higher risk,7-10 Moderate risk, and less than or equal to 6 lower risk of suicidality(61).

Disaster: disaster is a sudden, catastrophic event that causes significant disruption, destruction, and distress to a community or society, often resulting in widespread human, material, economic, or environmental losses. Disasters can be natural, such as hurricanes, earthquakes, floods, wildfires, tsunamis, or volcanic eruptions or they can be human-made, including industrial accidents, terrorist attacks, wars, or technological failures(62).

Amputation: refers to the surgical removal of a limb or a part of a limb, such as an arm, leg, hand, or foot which leads to Physical Challenges, Functional Limitations, Psychological and Emotional Impact, Social and Relationship Changes, and decreased Quality of Life(63).

4.8. Study variables

4.8.1 Dependent variable

Acute stress disorder (ASDS)

4.8.2 Independent variable

Socio-demographic Factors

- age
- Gender
- Marital status
- Educational level
- Occupation
- Substance uses
- Residence

Clinical related factors

- Past psychiatric history
- ICU admission history
- prolonged length of stay
- presence of complications
- Family history of mental illness
- History of psychiatry medication
- Chronic medical illness

Trauma-related factors

- Causality of family members
- extremity involvement
- injury type
- Pain
- types of traumatic events
- Past history of disaster
- Types of trauma
- Perceived threat to life

Psychosocial factors

- social support
- Anxiety disorder
- Substance use
- Suicide behavior

4.9. Data collection methods and data quality assurance

4.9.1 Data collection tool and procedure

Data was collected using a structured and semi-structured questionnaire. The questionnaires were adopted from other research (27,30,31,39) and modified according to our objective and literature. The questionnaire was collected by three trained BSc psychiatry nurses and two supervisors by using the kobo toolbox app. The questionnaires which were originally developed in English were translated into the local language (Amharic) by experts and translated back to English to check the consistency. The patients' background variables like socio-demographic characteristics, clinical-related factors; trauma-related factors, and social support-related factors are incorporated in the questionnaire.

4.9.2 Data Quality assurance

Before going to collect the data, training was given to data collectors to ensure the validity and reliability of the data collection tool. During data collection, the supervisor checked the data for its completeness and missing information at each point. To ensure the accuracy and validity of the questionnaire pre-test of 5% was taken in an ALERT hospital. Based on the result, questionnaires were modified as necessary and re-orient for data collectors. Furthermore, data was checked during entry into the computer before analysis and the incomplete data was excluded.

4.10. Data processing and analysis

Data was checked for completeness and consistency. Data was downloaded by XLMS from the kobo toolbox and exported to SPSS version 27 for analysis. The frequency, percentages, and distributions of the data were described using descriptive statistics, and the results were displayed using tables and charts. The association between dependent and independent variables was assessed using a binary logistic regression analysis, to estimate the strength of association using Odds Ratios (OR). After adjusting for confounders, multivariable logistic regression was used to identify independent predictors of ASD. Multivariable logistic regression analyses were used to further examine all ASD-related variables with p-values less than 0.25 in the bivariate logistic regression after control of any confounding variables. Variables with a p-value less than 0.05 were declared as factors associated with ASD.Correlation between independent variables was checked for multi-collinearity by using variance inflation factors (VIF) and Model goodness fit was checked by using Hosmer-Lemeshow’s test.

4.11 Ethical considerations

The ethical approval letter was obtained from the Departmental ethical review committee of Addis Ababa University, the School of Nursing and Midwifery, the Department of Emergency Medicine, and Critical Care nursing. A letter of permission was obtained from the Medical Directors of AaBET hospital before the actual data collection period. Permission letter was provided to the respective responsible body and information was given to study participants about the purpose and procedure of the study, Rather than giving their identities, codes were used to maintain confidentiality. At the beginning of the interview procedure, they were made aware of their right to withdraw from the study. After the interview, the patient's positive findings for signs of ASD were connected to the psychiatry clinic.

4.12. Dissemination of the findings

The result of this study will be disseminated to Addis Ababa University, the School of nursing and midwifery department of Emergency Medicine, and Critical Care nursing. A copy of these results will be submitted to AaBET hospital. Furthermore, the manuscript was submitted to national and international peer-reviewed Journals for possible publication.

5. RESULTs

5.1 Socio-demographic characterstics of study participants

A total of (n=286) patients with physical trauma participated in the study with a response rate of 100%. The median age of the study participants was 35 years with ages ranging from 19 to 78 years and the majority of the respondents 86 (30.1%) were between 30-39 age group. Out of the study participants, 180 (62.9%) were males, and 141 (49.3%) were married. Most of the participants 112 (39.4%) belongs to the Orthodox religion and about 184 (64.3%) and 49(17.1%) of the participants were urban and government employed, respectively. From the study participants, around 29.4% of participants completed preparatory schools (Table 1).

Table 1: Socio-demographic characterstics of adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

Variable	Category	Frequency	Percent
Sex	Male	180	62.9
	Female	106	37.1
Age	18-20 years	13	4.5
	21-29 years	76	26.6
	30-39 years	86	30.1
	40-49 years	49	17.1
	50-59 years	32	11.2
	>59 years	30	10.5
Marital status	Single	95	33.2
	Married	141	49.3
	Divorced	27	9.4
	Widowed	23	8
Educational status	Unable to write & read	38	13.3
	Elementary school	82	28.7
	Preparatory school	84	29.4
	College and above	82	28.7
Religion	Christanity (Orthodox sect)	112	39.4
	Islam	79	27.6
	Christanity (Protestant sect)	74	25.9
	Christanity (Catholic sect)	21	7.3

	Other	0	0
Occupation	Farmer	41	14.3
	House wife	38	13.3
	Merchant	46	16.1
	Government employee	49	17.1
	Private employee	39	13.6
	Unemployed	42	14.7
	Other	31	10.8
Residency area	Urban	184	64.3
	Rural	102	35.7

N.B: other ocupations includes daily worker, ginbegna, none, driver, solider, student

5.2. Prevalence of acute stress disorder among adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, 2024

Among the 286 study participants, the prevalence of ASD was found to be 45.80% (95% CI: 39.9%, 51.8%).

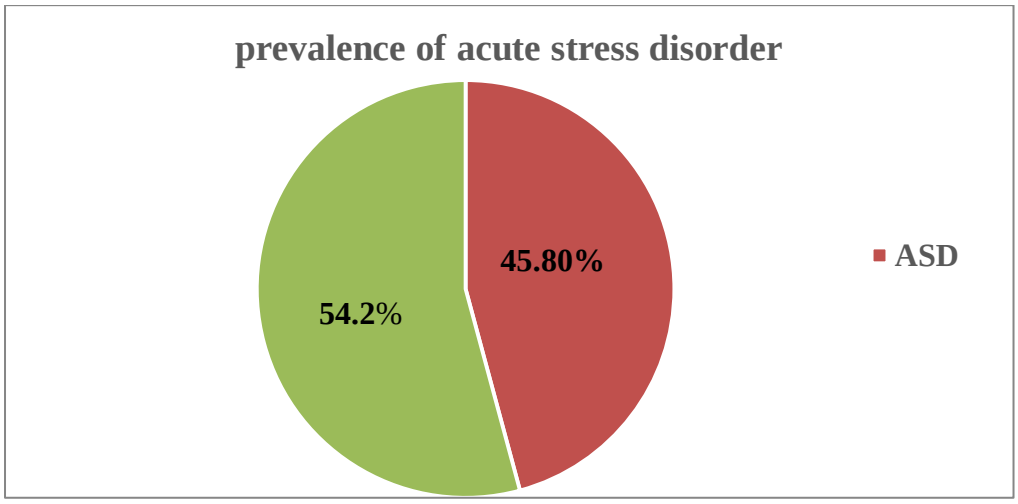

Figure 2: Prevalence of acute stress disorder among adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, 2024

5.3. Clinical-related factors of adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

Of the participants in the study, approximately 95 (33.2%) had a past psychiatric history, of which 50 (32.7%) had schizophrenia. Of those with a past psychiatric history, 46 (48.1%) had taken medication, and 61 (21.3%) of the respondents had a history of mental illness in their family. Of the individuals, 28 (26.9%) have hypertension, and 74 (25.9%) have chronic

illnesses. Thirty-six (30.1%) of the sample had a history of ICU admission, and 37 (44.0%) of those had admissions lasting no more than a week. (Table 2).

Table 2: Clinical factors of adult trauma patients in AaBET hospital, Ethiopia, March 14, 2024, to April 14, 2024.

Variable	Category	Frequency	Percent
Do you have past psychiatry history	Yes	95	33.2
	No	191	66.8
Past psychiatric problem	Depression	37	32.7
	Schizophrenia	50	44.2
	Dementia	20	17.7
	Other	6	5.3
Do you have to take medication	Yes	46	48.4
	No	49	51.6
Do you have chronic diseases?	Yes	74	25.9
	No	212	74.1
Type of chronic diseases	Hypertension	28	26.9
	Diabettes	26	25.0
	HIV/AIDS	16	15.4
	Chronic heart failure	18	17.3
	Asthma	13	12.5
	Others	3	2.9
Family psychiatric history	Yes	61	21.3
	No	225	78.7
Family psychiatric problem	Depression	24	28.9
	Mania	11	13.3
	Schizophrenia	22	26.5
	Dementia	6	7.2
	Epilepsy	18	21.7
	Other	2	2.4
ICU admission history	Yes	86	30.1
	No	200	69.9
Duration in ICU	A week	37	43.0
	2-3 weeks	31	36.0
	>3 weeks	18	20.9

N.B: others past psychiatry history and chronic diseases ; Epilepsy, COPD, CKD

5.4. Trauma-related factors in adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

A history of disaster exposure was reported by roughly 67 (23.4%) of the participants, while exposure to conflict was reported by 32 (42.7%). Among the responders, 84 (29.4%) suffered

fractures, accounting for 173 (45.5%) on their lower limbs, and 110 (38.5%) had been involved in traffic accidents, which was the primary source of trauma. One hundred and forty-four (43.4%) of the patients experienced protracted hospital stays, and 67 (72.0%) of the people who experienced problems had infections. Twenty-one (67.7%) of the individuals had had amputations on lower limbs. Of the participants, approximately 112 (49.6%) experienced minor pain (Table 3).

Table 3: Trauma-related factors of adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

Variable	Category	Frequency	Percent
Do you have a past disaster exposure history	Yes	67	23.4
	No	219	76.6
Disaster exposure	Food	23	30.7
	Drought	20	26.7
	War	32	42.7
Is there a causality of family members?	None	141	49.3
	Moderate injury of family members	80	28.0
	serious injury of family members	37	12.9
	the disappearance of family members	28	9.8
Causes of injuries	Road traffic accident	110	38.5
	Fall	59	20.6
	Blow/assault	20	7.0
	Machine	22	7.7
	Crush by heavy objects	30	10.5
	Bullet /blast	38	13.3
	Others	7	2.4
Body parts affected by trauma	Upper extremity	142	37.4
	Lower extremity	173	45.5
	Face	39	10.3
	Others	26	6.8
Physical injury experience	Fractures	84	29.4
	Dislocations	48	16.5
	Fracture and dislocations	50	17.5
	Dislocations and sprain	44	15.4
	Ligament injuries	37	12.9
	Others	23	8.0
Do you have any Complication	Yes	84	29.4
	No	202	70.6

	Infection	67	72.0
	Gangrene	25	26.9
	Other	1	1.1
Length of stay	Prolonged stay	124	43.4
	Not prolonged stay	162	56.6
Did you Amputate	Yes	31	10.8
	No	255	89.2
Amputated body part	Upper extremity	10	32.3
	Lower extremity	21	67.7
Do you have pain	Yes	226	79.0
	No	60	21.0
Level of pain	None	29	12.8
	Mild	112	49.6
	Moderate	75	32.2
	Severe	10	4.4

N.B: other injuries are genital, Head, bullet, Abdominal, Laceration, Flame, Electrical

5.5. Perceived threat to life in adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

Out of 286 respondents, more than half of 202(70.6%) had a moderate level of perceived stress.

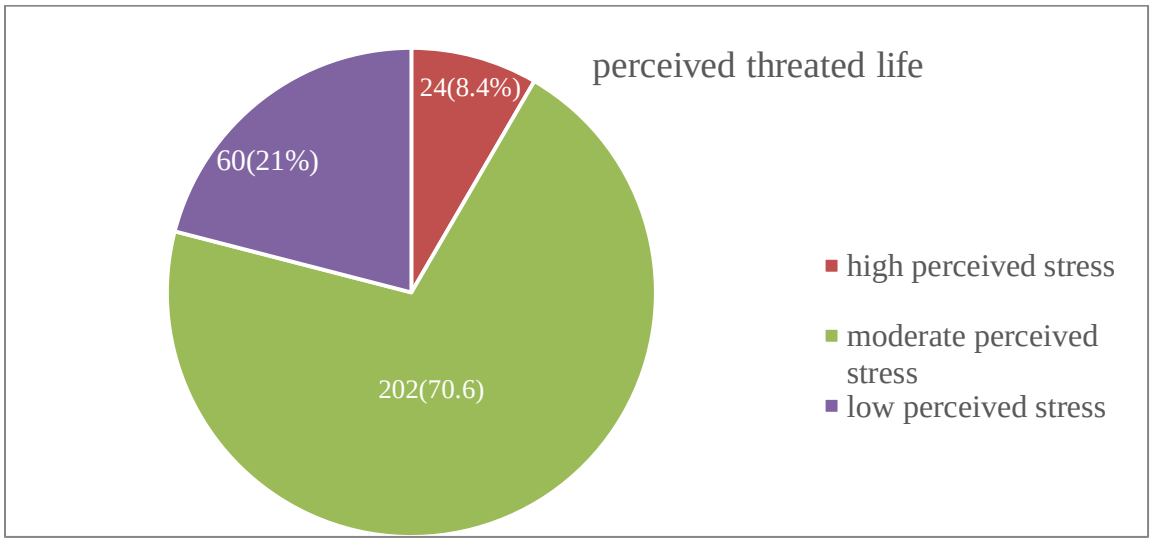

Figure 3: Perceived threat to life of adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

5.6. Social support of adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

Out of 286 respondents, more than half 155(54.2%) of them had low social support.

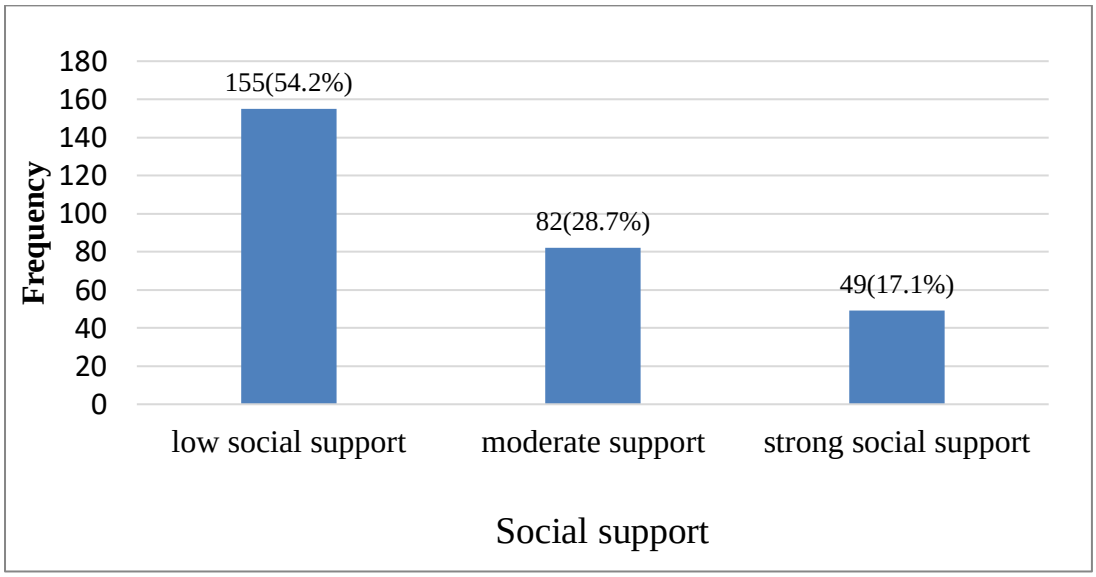

Figure 4: Social support of adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

5.7. Substance use-related factors of adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

Out of the respondents, 80 (28.0%) had used the substance without medical reason, from those 53(38.1%) were khat chewing and the majority of them 39 (48.8%) had used them daily in the past month (Table 4).

Table 4: Substance use-related factors of adult trauma patients in AaBET hospital, Ethiopia, March 14, 2024, to April 14, 2024.

Variable	Category	Frequency	Percent
Current substance use	Yes	80	28.0
	No	206	72.0
If you yes to the above question, which one	Alcohol	50	36.0
	Khat	53	38.1
	Cigars	21	15.1
	Tobacco	4	2.9

	Sleeping pill	11	7.9
In the past month, how often have you used it?	Daily	39	48.8
	2-4 times daily	12	15.0
	weekly	15	18.8
	2-4 times weekly	14	17.5

5.8. Suicidal Behaviors of adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

Out of 286 respondents, more than half 146 (51.0%) of them had moderate suicidal risk.

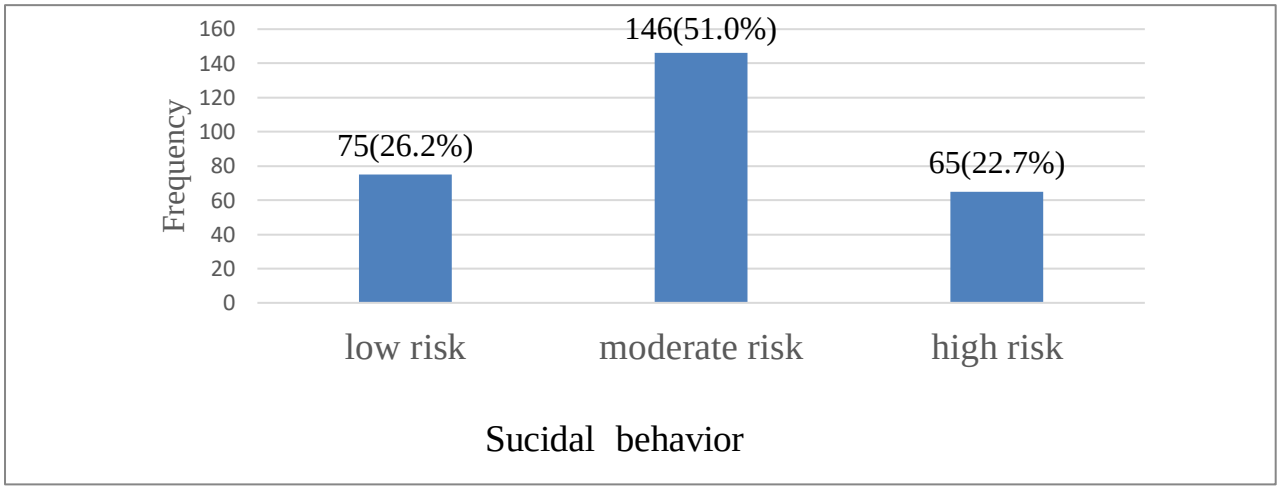

Figure 5: Suicidal Behaviors of adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

5.9. Generalized anxiety disorder of adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

Out of 286 respondents, more than half 184(64.3%) of them had general anxiety.

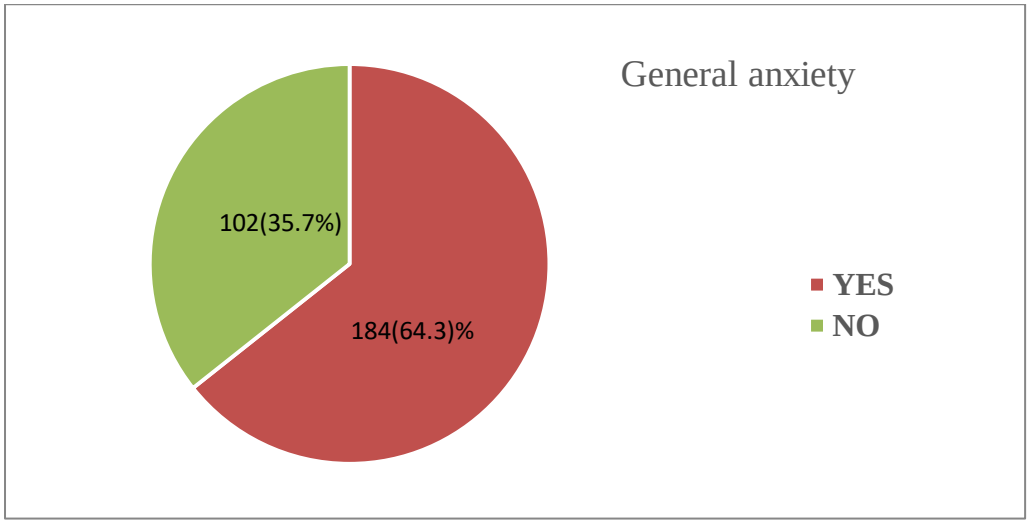

Figure 6: Generalized anxiety disorder of adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

5.10. Factors associated with acute stress disorder among adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

Table 5: Bivariate logistic regression of factors associated with acute stress disorder among adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

Variables	Category	ASD		COR(95% CI)	P value
		Yes	No		
Age	18-20 years	7	6	2.33(0.618-8.81)	0.211
	21-29 years	42	34	2.471(1.02-5.98)	0.201
	30-39 years	42	44	1.91(0.80-4.56)	0.045
	40-49 years	19	30	1.267 (0.49-3.28)	0.145
	50-59 years	11	21	1.05 (0.37-3.00)	0.627
	>59 years	10	20	1.0	
Marital status	Single	50	45	3.15(1.14-8.679)	0.027
	Married	64	77	2.36(0.878-6.33)	0.079
	Divorced	11	16	1.95(0.58-6.51)	0.028
	Widowed	6	17	1.0	
Did you have any history of ICU admission	Yes	58	28	3.60(2.11-6.15)	0.001
	No	73	127	1.0	

Do you have disaster exposure history	Yes	40	27	2.08(1.19-3.64)	0.010
	No	91	128	1.0	
Do you have any Complication	Yes	51	33	2.36(1.40-3.97)	0.001
	No	80	122	1.0	
Did amputation made for you	Yes	23	8	3.91(1.69-9.08)	0.001
	No	111	113	1.0	
Do you have pain	Yes	123	103	7.76(3.53-17.09)	0.001
	No	8	52	1.0	
Social Support	Poor	78	77	2.53(1.26-5.08)	0.009
	Moderate	39	43	2.27(1.06-4.83)	0.034
	Good	14	35	1.0	
Drugs used other than those required for medical reasons	Yes	48	32	2.22(1.31-3.77)	0.003
	No	83	123	1.0	
Length of stay	Prolonged	67	57	1.80(1.12-2.89)	0.015
	Not prolonged	64	98	1.0	
Perceived threated to life	High	17	7	15.58(4.02-60.36)	0.001
	Moderate	98	104	2.50(1.32-4.71)	0.003
	Low	16	44	1.0	
Suicidal behavior	High	37	28	2.10(1.07-4.12)	0.032
	Moderate	65	81	1.27(0.72-2.25)	0.405
	Low	29	46	1.0	

In the bivariate analysis factors including age, marital status, ICU admission, past disaster exposure, complication, amputation, pain, social support, length of stay, substance use, perceived threat to life, and suicidal behavior were factors associated with ASD which satisfy preliminary assumptions (P<0.25 in bivariate logistic regression) to be analyzed further in multivariable analysis to control potential confounding factors.

history of past ICU admission, amputation, pain, social support, perceived threat to life, and length of stay were factors significantly associated with ASD at p-value <0.05. ASD was significantly higher in patients admitted to ICU than non- ICU patients (AOR= 4.39 95% CI: 2.18-8.85). Likewise, the odds of presenting ASD among participants who had amputation were 2.93 times more likely higher as compared to participants who didn't have amputation made (AOR=2.93 95% CI:1.03-8.29). Moreover, the likelihood of developing ASD was 5.94 times more likely higher among participants with pain as compared to those without pain (AOR=5.94 95% CI:2.35-14.98). The likelihood of developing ASD was 1.82 times more

likely higher among participants with prolonged hospital stay as compared to their counter-part (AOR=1.82 95% CI:1.01-3.29).

On the other way, participants who had poor social support were 2.55 times more likely to develop ASD when compared to participants having good social support(AOR=2.55 95% CI:1.08-6.00). In addition to this participants who had high and moderate perceived stress were 6.02 and 2.48 times more likely higher to risk of ASD as compared to low perceived stress(AOR=6.02 95% CI:1.62-22.43) and (AOR= 2.48 95% CI:1.13-5.44) respectively. hosmer-lemshow goodness of fit(p=o.81) was checked for fitting of the model and multi-collinearity (VIF=<5) was checked for Correlation between independent variables.

Table 6: Multivariable logistic regression of factors associated with acute stress disorder among adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, March 14, 2024, to April 14, 2024.

Variables	Category	ASD		COR(95% CI)	AOR (95% CI)	P value
		Yes	No			
Age	18-20 years	7	6	2.33(0.618-8.81)	3.12(0.54-18.18)	0.206
	21-29 years	42	34	2.471(1.02-5.98)	2.16(0.66-7.02)	0.201
	30-39 years	42	44	1.91(0.80-4.56)	1.57(0.52-4.68)	0.423
	40-49 years	19	30	1.267 0.49-3.28)	1.02(0.312-3.29)	0.971
	50-59 years	11	21	1.05(0.37-3.00)	1.28(0.34-4.81)	0.712
	>59 years	10	20	1.0	1.0	
Marital status	Single	50	45	3.15(1.14-8.679)	3.51(0.92-13.43)	0.066
	Married	64	77	2.36(0.878-6.33)	2.83(0.87-9.17)	0.083
	Divorced	11	16	1.95(0.58-6.51)	3.07(0.72-13.16)	0.132
	Widowed	6	17	1.0	1.0	
Did you have any history of ICU admission	Yes	58	28	3.60 (2.11-6.15)	4.39 (2.18-8.85)	**0.000***
	No	73	127	1.0	1.0	
Do you have a disaster exposure history	Yes	40	27	2.08(1.19-3.64)	1.11(0.54-2.27)	0.786
	No	91	128	1.0	1.0	
Do you have any Complication	Yes	51	33	2.36(1.40-3.97)	1.08(0.55-2.12)	0.831
	No	80	122	1.0	1.0	
Did amputation made for you	Yes	23	8	3.91(1.69-9.08)	2.93(1.03-8.29)	**0.043***
	No	111	113	1.0	1.0	
Do you have pain	Yes	123	103	7.76(3.53-17.09)	5.94(2.35-14.98)	**0.000***
	No	8	52	1.0	1.0	
Social Support	Poor	78	77	2.53(1.26-5.08)	2.55(1.08-6.00)	**0.032***
	Moderate	39	43	2.27(1.06-4.83)	1.99(0.80-4.94)	0.138

	Good	14	35	1.0	1.0	
Drugs used other than those required for medical reasons	Yes	48	32	2.22(1.31-3.77)	1.49(0.72-3.06)	0.284
	No	83	123	1.0	1.0	
Length of stay	Prolonged	67	57	1.80(1.12-2.89)	1.82(1.01-3.29)	**0.046***
	Not prolonged	64	98	1.0	1.0	
Perceived threat to life	High	17	7	15.58(4.02-60.36)	6.02(1.62-22.43)	**0.007***
	Moderate	98	104	2.50(1.32-4.71)	2.48(1.13-5.44)	**0.024***
	Low	16	44	1.0	1.0	
Suicidal behavior	High	37	28	2.10(1.07-4.12)	1.40(0.58-3.39)	0.459
	Moderate	65	81	1.27(0.72-2.25)	1.26(0.63-2.52)	0.512
	Low	29	46	1.0	1.0	

NB: COR: crude odd ratio, AOR: adjacent odd ratio CI: confidence interval,*P: ≤ .05 variables significantly associated with ASD

6. DISCUSSION

The finding of this study revealed that the prevalence of acute stress disorder among adult patients with physical trauma was found to be 45.8%. , The magnitude of this study is in line with other studies conducted in Brazil with (40.8%) (36), South Africa, motor vehicle-related accidents with (41%–46%) (44), violence-related injury (40.9 %(31) and in Ethiopia with (45%)(27). This could be due to similarities in the research population, environment, and related measuring instruments (DSM-5 criteria). Furthermore, there could be a relationship between the nature of trauma, social circumstances, healthcare accessibility, cultural elements, and tools.

However, it is far lower than research done in Barcelona (Spain) with (66.6%) (39), India with (47.37 %)(42), and in Democratic Republic of Congo with (55 % (45). This variation may be due to a larger percentage of severe trauma cases in Barcelona or to particular trauma types (such as injuries related to terrorism) that increase the incidence of ASD (64). India and the Democratic Republic of Congo may be due to experience more violent or severe trauma incidents (armed conflict), resulting in higher stress levels (65,66). In addition to that, it could also be because of variations in social support systems and coping strategies, tools, study population, data source, study time, environment, cultural, methodological, healthcare, reporting, and socioeconomic aspects.

Conversely, this study is far higher than studies conducted in the USA, the Netherlands, and China with (3.0 to 41.1%) (12,30,31). Similarly higher than a study done in the United States of America, Canada (follow-up study), and Canada (meta-analysis study) with 24 %(30), 22.9 %(32), and 20.4 %(19), respectively. And also higher than conducted in China (earthquake disaster), China (osteoporotic fractures elderly patients), China(accidental traumatic fractures),china(road traffic accident) with 15%(33), 6.1%(34), 28.20%(35), 15.81%(12) respectively. it is also significantly higher than the research done in brazil, Netherlands, Australian, Ankara turkey, and Colombia with 6.85%, 21.7%(37,38), 10%(40), 37.1%(41), and 23.4%(43) respectively. This variation could be due to health care systems in wealthy nations being relatively well established, which facilitates recognition, prevention, and early treatment (67), or low socioeconomic status in our country, lack of access to awareness and education related to mental health and lack of availability and quality of mental health services. Additionally, this might be the result of variations in the data collection procedures and methods used, the study setting, the different study designs, the application of

measurement tools that weren't appropriately adapted to suit the cultural background of some studies, variations in the population types, and the prevalent socio-cultural and economic differences between Ethiopia and the other countries.

According to this study ICU admission, history of amputation, presence of pain, length of stay, social support, and perceived threat to life are significantly associated with ASD. History of ICU admission, may be due to repeated admission and boredom of hospital stay and this is in line with the research done in United States of America(30). Amputation is the removal of body parts especially extremity parts which leads to psychological disorder. Therefore this is significantly associated with ASD. This is inline with the research done in china and Colombia(34,43). This may be due to social stigma, perceived him as having difficulty to do daily activity and difficulty to do work to earn income. Pain is also significantly associated with ASD. This may be due to the severity of pain, discomfort, and unpleasant sensations which lead to an emotional experience(68).

Participants with prolonged hospital length of stay are more prone to develop ASD compared to the counter-part. This is consistent with the study conducted in the United States of America (30). This is due to the economic crisis for the patients and to their families and the participant also perceives that their discharge was delayed because of the worsening of their case which increases the risk of ASD development.

Likewise, participants with high perceived stress and moderate perceived stress are significantly associated with ASD. This is inline with the research done in Ethiopia at Felege-hiwot hospital (27). This could be the result of such findings, which are supported by the fact that supporters of rational emotive behavior therapy have repeatedly stated that distorted intact beliefs and irrational thinking about the consequences of a negative event can endanger a person's life and possibly cause the onset of ASD (69).

Furthermore, ASD was more common in persons with low social support than in those with high social support. This was consistent with Research conducted in China and Ethiopia (27,34). Social support comprises multiple dimensions, including the quantity and quality of support and perceived social support, and may be derived from multiple sources, including family, friends, colleagues, and the community (70). Individuals who do not receive emotional support, compensation for physical inability, or reassurance from others may find it more difficult to manage the stress caused by trauma, which is a factor in the development of ASD (71).

Strengths and limitations of the study

This study is conducted in a major trauma center in Ethiopia which decreases the result of overestimation and increases representativeness. Since there are inadequate studies in Africa including Ethiopia, this study has come up with some vital findings regarding the magnitude and associated factors of acute stress disorder particularly in a country with insufficient research and it will help to design a comprehensive strategy to address the problem through early screening for ASD and treating other related psychological problems in adult physical trauma patients. As a limitation, most of the research findings were inconsistent as a result of the shifting diagnostic criteria for ASD which makes it difficult to generalize the prevalence of ASD and cross-sectional study unable to identify a cause-effect relationship. In addition to this, the rates of ASD among different types of trauma are different. Therefore, it is difficult to generalize the prevalence of ASD.

7. CONCLUSION

Findings of this study indicated that the prevalence of acute stress disorder among adult trauma patients was considerably high. History of ICU admission, pain, amputation, prolonged stay at the hospital, low social support, and high perceived stress were significantly associated with ASD.The study findings indicated the need for early identification and interventions or the importance of ASD care services from health workers. Researchers should conduct a further study on acute stress disorder and including other study variables and designs, such as prospective cohort and case control in this study area as well as different parts of the country.

8. RECOMMENDATION

For AaBET hospital:

- integration of psychiatric services to physical trauma patients management is higly recommended to reduce mental disorders that arises following trauma.

For health care providers

- Assessment of trauma patients for ASD and appropriate management is recommended.
- Early identification of ASD and interventions or provision ASD care services or linking to psychiatry professionals is recommended

For researchers

- Further studies are recommended in adult trauma centers plus other hospitals which give services to trauma patients to document the prevalence, and associated factors of ASD using prospective follow-up study design in adult patients with physical trauma in Ethiopia.
- And studying the prevalence and associated factors of ASD among different types of trauma that commonly occur in our country (like RTA).

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8. APPENDIX

Information consent sheet form

Title of study: Acute stress disorder and associated factors among adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, 2023.

Sponsor institution: Saint Paul's Hospital Millennium Medical College

Introduction: Greetings, participants In this research, I'm trying to find out how common ASD is and what risk factors are involved in adult trauma patients at AaBET Hospital. Therefore, it is necessary to use a questionnaire to collect data from adult trauma patients at this hospital. This survey is solely being used for study**.** This condition is one of the commonest problems in trauma patients which has a significant impact on patients in terms of morbidity, mortality, and increased length of hospital stay. After you have agreed to participate in the study, data collectors will provide you a questionnaire. The questionnaire was taken 25 to 30 minutes to complete. The results of the study might help to raise the standard of patient care.

Risk of the study: There is no identified risk associated with you being a participant in this study.

Cost of being a participant: Your participation in this study will not cost you anything financially.

Confidentiality Information related to you will be treated in strict confidence to the extent provided by law. Your identity will be coded and will not be associated with any published results.

Rights as a participant: Your participation in this study is voluntary and you may withdraw from the study at any time if you wish so. Declining to participate in this study shall not affect the treatment given by the hospital in any way and shall not affect your relationship with anybody working in the hospital.

Annex Voluntary consent I wish to declare that all the above have been explained to my understanding and all my questions answered. I hope that you will participate in this study since your responses are quite important. If you are willing to take part in the study, you are kindly requested to respond to all questions honestly!

Now, do you agree to participate in the study? Yes _____ No _____.

If you agree yes, sign_____

If you have questions or concerns, please contact the principal investigator:

Investigator: Degsew Yirsaw

Department: Emergency medicine and critical care nursing

Tell phone: +251930570891

E-mail: degish@21gmail.com

Thank you very much for your co-operation!

Annex one: English version questionnaires

Instruction: The questionnaire has five parts. It will take about 25 minutes to complete the interview. Please try to respond to all questions. Thank you very much for your patience.

SECTION I: Questionnaire Socio-demographic data (SDQ)

Q.No	Questionnaires	Alternative response
SDQ.101	Sex	1. Male 2. Female
SDQ.102	How old are you?	Age in years----------
SDQ.103	What is your marital status?	1. Single 2. Married 3. Divorced 4. Widowed
SDQ.104	What is your educational level?	1. Can't write and read 2. Elementary school 3. Secondary school 4. Preparatory school 5. Collage and above
SDQ.105	What is your Religion?	1. (Orthodox sect) 2. Islam 3.Christanity (Protestant sect) 4. Christanity (Catholic sect) 5. If other, please specify----?
SDQ.106	What is your occupation?	1. Farmer 2.Housewife 3. Merchant 4. Government employee 5. Private employee 5. Unemployed 6. If other occupations, please specify--?
SDQ.107	Where do you come from originally?	1. Urban 2. Rural

SECTION II Questionnaire related to assessing clinical factors (CRQ)

Q.No	Questionnaires	Alternative response
CRQ 201	Do you have a past psychiatry history?	1. Yes 2. No
CRQ 202	If yes for question number 201, which one (more than one answer is possible)?	1. Depression 2. Schizophrenia 3. Manic 4. Dementia 5. If other past psychiatry histories, please specify----?
CRQ 203	From question NO.202. Do you have to take medication?	1. Yes 2.No
CRQ 204	Do you have other chronic diseases?	1. Yes 2.No
CRQ 205	If yes to the above question which one (more than one answer is possible)?	1. Hypertension 2. Diabetes mellitus 3. TB 4. HIV/AIDS 5. CHF 6. Asthma 7. If other chronic diseases, please specify---------?
CRQ 206	Do you have the mental illness of your family member?	1. Yes 2. No
CRQ 207	if you yes to question NO.205, which one (more than one answer is possible)?	1. Depression 2.Manic 3. Schizophrenia 4. Dementia 5. Epilepsy 6. If other mental illness of the family, please Specify----?
CRQ 208	Did you have any history of ICU admission?	1. Yes 2. No
CRQ 209	If yes for question number 203, for how Long?	1. A week 2. 2-3 week 3. >3 week

SECTION III Questionnaires to assess trauma-related factors (TRQ)

Q.No	Questions	Responses
TRQ.301	Do you have a disaster exposure history?	1. Yes 2.No

TRQ.302	If yes to the above question which one (more than one answer is possible)?	1. Floods 2. Drought 3. War 4. If Other disaster exposure history, please specify……?
TRQ.303	Is there a Causality of family members?	1).none 2). moderate injury of family members 3) serious injury of family members 4). disappearance of family members
TRQ.304	What was the cause of physical injury?	1. Road traffic accident 2.Fall 3. Blow/assault 4. Machine 5. Crush by a heavy object 6. Bullet /blast 7. If other physical injuries, please specify……?
TRQ.305	Which body Part(s) is affected by trauma? (More than one answer is possible?	1. Upper extremity 2. Lower extremity 3. Face 5. If other parts of the body are affected by trauma, please specify----?
TRQ.306	What types of physical injuries have you experienced?	1. Fractures 2.Dislocations 3. Fractures and dislocations 4. Dislocations and sprain 5. Ligament injury 6. If Other types of physical injuries please specify----?
TRQ.307	Do you have any Complication	1. Yes 2 No
TRQ.308	If your answer to question number 304 is yes, which one?	1. Infections 2. Gangrene 3. If other complications please specify-----?
TRQ.309	How long has it been since you were admitted (in days/weeks)?	_____
TRQ.310	Was amputation made for you?	1. Yes 2. NO

TRQ.311	If your answer to question number 307 is yes, which parts of your body are amputated?	1. upper extremity 2. lower extremity 3. If other amputations were made for you, please specify--?
TRQ.312	Do you have pain?	1. Yes 2. No
TRQ.313	If your answer is yes for question number 6 Please indicate the intensity of your current pain level over the past 24 hours.	0 1 2 3 4 5 6 7 8 9 10 None mild moderate severe

Questionnaire related to Perceived threat to life

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way and answer accordingly stated as blew.

0. Never 1. Almost never 2. Sometimes 3. Fairly often 4. Very often

Q. No		
PSS1	. In the last month, how often have you been upset because of something that happened unexpectedly?	
PSS2	In the last month, how often have you felt that you were unable to control the important things in your life?	
PSS3	In the last month, how often have you felt nervous and "stressed"?	
PSS4	In the last month, how often have you dealt successfully with irritating life hassles?	
PSS5	. In the last month, how often have you felt that you were effectively coping with important changes occurring in your life?	
PSS6	In the last month, how often have you felt confident about your ability to handle your personal problems?	
PSS7	In the last month, how often have you felt that things were going your way?	
PSS8	In the last month, how often have you found that you could not cope with all the things that you had to do?	

PSS9	In the last month, how often have you been able to control irritations in your life?	
PSS10	In the last month, how often have you felt that you were on top of things?	

SECTION IV: Questionnaires to assess psychosocial-related factors

The Oslo 3 items Social Support scale		
Instruction: this part of the questionnaire contains 3 questions regarding your experience of social support and related issues. Therefore choose the answer as you feel**.**		
	Questions	Reponses
OSL1	How many people are so close to you that you can count on them if you have a serious problem (Choose one option)?	1. None 2. 1 or 2 3. 3-5 4. More than 5
OSL2	How much concern do people show in what you are doing (choose one option)?	1. No concern or interest 2. Little concern and interest 3. Uncertain 4. Some concerns and interest 5. A lot of concern and interest
OSL3	How easy is it to get practical help from neighbors if you should need it? (Choose one option)	1. Very difficult 2. Difficult 3. Possible 4. Easy 5. Very easy
Questionnaire related to Substance use (ASSIST)		
(ASSIST)1	Have you ever used drugs other than those required for medical reasons?	1. Yes 2. No
(ASSIST)2	If you yes to the above question, which one (more than one answer is possible)?	1. Alcohol 2.Khat 3. Cigarettes 4. Tobacco 5. Sleeping pills 6. If other drugs are used, please specify---?

(ASSIST)3	In the past month, how often have you used it?	A).daily B). 2-4 times daily C).weekly D). 2-4 times weekly

Suicidal Behaviors Questionnaire-Revised (SBQ-R)

The following questions are multiple choices for assessment of suicidality and make a circle for your response.

(SBQR)1	Have you ever thought about or attempted to kill yourself?	1. Never 2. It was just a brief passing thought 3. I have had a plan at least once to kill myself but did not try to do it 4. I have had a plan at least once to kill myself and really wanted to die 5. I have attempted to kill myself but did not want to die 6. I have attempted to kill myself and really hoped to die
(SBQR)2	How often have you thought about killing yourself in the past month?	0) Never 1) Rarely (1 time) 2) Sometimes (2 times) 3) Often (3-4 times 4) Very Often (5 or more times)
(SBQR)3	Have you ever told someone that you were going to commit suicide, or that you might do it?	(1) No (2) Yes, at one time, but did not really want to die (3) Yes, at one time, and really wanted to do it (4) Yes, more than once, but did not want to do it (5) Yes, more than once, and really wanted to do it

(SBQR)4	How likely is it that you will attempt suicide someday?	(0) Never (1) No chance at all (2) Rather Unlikely (3) Unlikely (4) Likely (5) Rather Likely (6) Very Likely

Generalized anxiety disorder-related questionnaire

Over the last month, how often have you been bothered by the following problems?

Answer the question based on the Likert scale

1. not at all 2. Several days 3. more than half of the day 4. Nearly every day

Q. No	Questions	Response
(GAD-7)1	Feeling nervous, anxious, or on edge?	
(GAD-7)2	Not being able to stop or control worrying?	
(GAD-7)3	Worrying too much about different things?	
(GAD-7)4	Trouble relaxing?	
(GAD-7)5	Being so restless that it is hard to sit still?	
(GAD-7)6	Becoming easily annoyed or irritable?	
(GAD-7)7	Feeling afraid, as if something awful might happen?	

SECTION V: Questionnaire to assess ASD symptoms by using (ASDS)

For each question answer as 1 = not at all, 2 = mildly, 3 = medium, 4 = quite, 5 = very much

Q. No	**Questions**	**Responses**
(ASDS)1	Did you experience or witness a traumatic event?	
(ASDS)2	Do you have intrusive thoughts about the event that come unexpectedly into your mind?	
(ASDS)3	Do you have recurrent dreams about the event?	
(ASDS)4	Do you have flashbacks or recurrent images of the event?	

(ASDS)5	Do you try to avoid thoughts or feelings associated with the event?	
(ASDS)6	Do you try to avoid external reminders of the event?	
(ASDS)7	Do you feel emotionally numb or detached from others?	
(ASDS)8	Do you feel a sense of a foreshortened future (e.g., you don't expect to live a normal life span)?	
(ASDS)9	Do you feel you are reliving the experience as if it were happening again?	
(ASDS)10	. Do you feel upset by reminders of the event?	
(ASDS)11	Do you have difficulty falling or staying asleep?	
(ASDS)12	Do you have difficulty concentrating?	
(ASDS)13	Do you feel irritable or have outbursts of anger?	
(ASDS)14	Do you feel hypervigilant or overly alert?	
(ASDS)15	Do you feel jumpy or easily startled?	
(ASDS)16	Do you feel as though you are detached from your surroundings or to yourself?	
(ASDS)17	Do you have difficulty recalling an important aspect of the event?	
(ASDS)18	Do you feel guilty about surviving while others died or were injured?	
(ASDS)19	Do you feel the event has changed your beliefs or expectations about yourself, others, or the world?	

Total score	----------
Acute stress disorder	1. Yes
	2.No
If Yes for ASD	link to psychiatry

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TIKUR ANBESSA

School of Nursing and Midwifery
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Ref. No/ቁጥር: chs/esn/92/2016/24

Date/ቀን: 18/03/2024

To: Addis Ababa Burn, Emergency and Trauma Hospital

From: Dr. Lemlem Beza

Head, Department of Emergency and Surgical Nursing

AAU, CHS

Subject: Letter of cooperation

Degsew Yirsaw is a second year Emergency Medicine and Critical Care Nursing MSc student and currently he is doing research on **"Acute stress disorder and associated factors among adult trauma patients in AaBET hospital, Addis Ababa, Ethiopia, 2024".** According to the decision made about ethical clearance for conducting research on department meeting, he is ethically cleared. Therefore, I politely ask your office to facilitate conditions during data collection process.

With Regards,

To-Nursing directorate

To- Sr- Jalane

please cooperate.

Dr Woldesenbet Waganew

Address: CHS administrative building 4th floor
Office number: 407

Email address: chs.esn@aau.edu.et