

Correlations between Types of Traumatic Events with PTSD among University Students in Goma, DR Congo

Ushindi Josue Muderhwa, Ph.D., Free University of Great Lake Countries
Goma town, DR Congo (ULPGL)

Abstract

Post-traumatic stress disorder (PTSD) is a psychological disorder that might arise in individuals following a critical incident where their natural ability of fight or flight responses is impaired or challenged. PTSD is among the mental health problems that every so often remains undiagnosed and untreated among people and specifically undergraduate students (Bourdon et al., 2020; Acuña et al., 2022). PTSD could be high in situations where students have been exposed to traumatic events in their lives such as in the war-torn Democratic Republic of Congo. Therefore, the objective of this study was to establish the correlation between types of traumatic events with PTSD among university undergraduates in Goma town, DR Congo. The exploratory survey design was adopted targeting 4,050 undergraduate students from two universities in Goma town. A consecutive sampling technique was used to select 809 participants. Data was collected using the PTSD Scale for DSM-5(PCL-5) and LEC Self-Report instrument and was analyzed using descriptive and inferential statistics with the aid of SPSS Version 22. The findings revealed that there were significant correlations between different types of traumatic events with PTSD among undergraduate students in the area. Traumatic events found to increase the PTSD risk significantly were exposure to natural disasters, sexual-related trauma, sudden violent death, severe human sufferings, and severe harm, injury, or death caused to others. It is, therefore, recommended that universities and relevant stakeholders should initiate professional mental health service provision in the universities in Congo.

Keywords: PTSD, Mental -Health, Trauma-related, Undergraduates, Correlation

Introduction and Background

Psychological well-being is one of the most significant variables influencing students' quality of life, and psychological health continues to be one of the key priorities in higher education

institutions. The risks posed by poor mental health could result in maladaptive behaviors, poor performance and even suicide when the students' mental health is not well attended to (Lin & Guo, 2024; Musau, 2023). Indeed, school failure, low GPAs as well as breakdowns in interpersonal relationships and suicide attempts have been linked to poor mental health (Hinkson et al., 2022; Rindels, 2021). Psychological distress, including (PTSD), depression, and anxiety, have been associated with negative impact on the cognitive and emotional aspect of an individual (Delcea et al., 2023). PTSD can severely impair college students' academic and social functioning; this disorder has also been associated with long-term health issues, for example, Wang et al., (2024) study in China; Smith (2023) in the US; Ayuba et al., (2022) in Nigeria; Mohamed et al., (2024) in Sudan.

Post-traumatic stress disorder, is a psychological problem that might arise in individuals following a critical incidence where their natural ability of fight or flight responses are impaired or challenged (APA, 2013). Symptoms of PTSD include physical, emotional and behavioral conditioned responses such as headaches, palpitation, sweating, shaking, and anger (Bajor et al., 2022; Bertolazi et al., 2024; Qian et al., 2022). Individuals with PTSD frequently report elevated levels of fear responses to memories of trauma, much as cues occur in a safe context (Schincariol et al., 2024). Post-traumatic stress disorder is among the mental health problems that every so often remain undiagnosed and untreated among undergraduates (Wong et al., 2024). According to Limone and Toto (2022), there are several factors predisposing university students to mental health challenges that can be broadly categorized as social, psychological, biological, lifestyle-based and academic factors.

An estimated 3.9% of the world population has experienced PTSD at some point in their lives (Bunting, 2023). PTSD is a mental health condition that adversely affects 10% to 20% of young adults worldwide (Kieling et al., 2024). Statistics from Healthy Minds Study, an annual web-based survey, show that the prevalence of PTSD among US college students increased from 3.4% in 2017-2018 to 7.5% in 2021-2022. In China, the prevalence of post-traumatic stress disorder (PTSD) among college students increased from 21.5 to 29.6% during the Covid-19 pandemic from 2020 to 2022 (Chen et al., 2024). In Africa, Asagba et al., (2021) found the prevalence of PTSD among college undergraduates in Nigerian universities to be 19%. Among college students in Rwanda, Niyonsenga et al., (2021) observed that 34% of the students met the criteria for PTSD.

The prevalence of PTSD has also been found to be higher among females than males in the US (Ng et al., 2020; WHO, 2024). For instance, estimates point out that among civilians, 5%-10% of all men and 7%-14% of all women in the United States of America struggle with PTSD (Williamson et al., 2022). Vasileva et al., (2022)) in Uganda found that females aged 18 years and above had higher clinical symptoms of PTSD as opposed to male college students.

A protracted traumatic experience or an extremely stressful, frightful, or upsetting incident can both lead to the development of post-traumatic stress disorder (Hendawy et al., 2020). Post-traumatic stress disorder can be triggered by a terrifying event, causing flashbacks, nightmares, and severe anxiety. Several predisposing factors have been linked to PTSD (Tortella-Feliu et al., 2019). Some of these predisposing factors are, however, difficult to avoid and are usually out of the student's control such as their history of trauma. Serious accidents, physical or sexual assault, abuse (including domestic or childhood abuse), exposure to traumatic events at work (including remote exposure), serious health issues (e.g., admission to intensive care), childbirth experiences (e.g., loss of a baby), war and conflict, and torture are some of the types of traumatic events that can result in post-traumatic stress disorder (PTSD).

For a long time, PTSD was closely linked to ~~with~~ war, whereby soldierly men were exposed to severe and acute prolonged stress (LeMoult et al., 2020). However, new evidence suggests that PTSD also occurs in noncombatant settings, including natural disasters, mass catastrophes, robbery, the death of loved ones, relationship breakups, various kinds of abuse, and serious accidental injuries (Jann et al., 2024). In the current study, the focus will be on wartime experiences and the potentially traumatic events (PTEs) in noncombat settings which are characteristic of the Eastern parts of the Democratic Republic of Congo (DRC). Some of these PTEs in non-combat settings also happened concomitantly with the conflict in the area, providing a unique context of PTEs.

Trauma can result in PTSD and depression. PTSD can also occur with depressive disorders and can lead to struggles with substance abuse (Redican et al., 2022). Georgescu and Nedelcea (2024) evaluated traumatic events among outpatients found with depression and showed that independent risk factors for depression and PTSD amplified those traumatic events. Using the National Comorbidity Survey to inspect the association between traumatic events, PTSD, and depression, Schafer, Clancy and Joiner (2022) showed that traumatic events were significantly linked with

PTSD and lifetime suicide attempts in the US. Further, with evidence from the National Comorbidity Survey Replication data in the US, Roberge et al. (2022) demonstrated that traumatic events were predictive of PTSD and depression, even after adjusting for comorbid mental disorders.

Approximately one in every three victims of severe trauma go on to acquire PTSD (Lewis et al., 2019). However, why some people develop the illness and others do not, is still not fully understood. It seems that some people are more susceptible to developing PTSD than others. According to Nnaemeka Amedu and Dwarika (2024)., around 70% of people globally will experience a potentially traumatic event during their lifetime, however, only a minority (5.6%) will go on to develop PTSD (Ressler et al., 2022). Although not all adolescents who have been exposed to traumatic experiences develop PTSD. Results of a meta-analysis of 43 studies pointed out that, overall, just about 16% of young adults developed PTSD, following contact with traumatic experiences globally (Boumpa et al., 2024).

The Democratic Republic of Congo has faced many episodes of conflicts. The worst of all occurred between 1997 and 2006, when most of the current university students were born and have been brought up witnessing multiple atrocities such as homicide, rape, terrible combat situations, cruel death of family members, torture, bombardments, gang attacks, robbery, and sexual violence (McDaniel-Bouley, 2023). Also, Fox, Byrne, and Surdey (2020) enumerated the most widespread critical incidences that students encounter and put their mental health state at risk as follows: sudden death of a close loved one, a close friend being involved in a road accident, a loved one surviving a life-threatening event, break-in, kidnapping, family violence, unwelcome sexual advances, and rape. Moreover, Whitehead (2023) indicated physical and sexual abuse, road accidents, relationship break-ups, natural phenomena, serious injuries, break-ins, and homicide were more prevalent critical incidences reported by students in Guinea-Bissau. Besides, studies have demonstrated that individuals who indicated more critical incidences, particularly rape, frequently showed more depression and anxiety, and PTSD symptoms (Mhlongo et al, 2023; Levi-Belz et al., 2024; Melese et al., 2024).

Limited studies have linked PTSD prevalence with trauma among university undergraduates (Walters et al., 2024). Therefore, the association between traumatic events, PTSD, and depressive behavior remains under-investigated among university students (worldwide, DRC etc.). On the

other hand, several investigations that used data from massive population mental health surveys established a relationship between traumatic events and increased risk for depressive behaviors such as suicide after controlling for socio-demographic variables and comorbid mental disorders (Jagdeo et al., 2009). Further, while many countries experience war, DR Congo is unique owing to the PTEs the population is exposed to during the conflict and in non-combat-settings some of which are experienced during the war. University students in such contexts are, therefore, more vulnerable to higher PTSD rates due to the students' transitional stages of development on entering a university campus and the socio-political contexts where they are born, brought up, study and live (Gindt et al., 2022; Robjant et al., 2020). However, not all traumatic events result in PTSD which makes it imperative to establish which traumatic events have higher likelihood of causing PTSD among undergraduate students. Therefore, the present study sought to establish the correlations between types of traumatic events and PTSD among University students in Goma town, DR Congo.

Methodology

This study adopted an exploratory survey design. Exploratory research is a methodology approach that investigates research questions that have not previously been studied in depth. For instance, correlations between specific types of PTEs and PTSD among university students in conflict areas made the exploratory design ideal for the study. The study was carried out in Goma town in the eastern Democratic Republic of Congo. Goma town is located on the northern shore of Lake Kivu and is contiguous to the Rwandan city of Gisenyi. The participants were recruited from two universities in Goma town. The two universities with a combined population of 4,050 students were purposively selected for this study since the universities had records of the students that met the criteria for this research. Those who took part in the study and were within the required age group met at least one of the criteria in each of the clusters for PTSD as included in DSM-5 were selected in the study. The inclusion criteria for this study involved appropriate participants that were university students aged between 18 to 25 years. Those who were below this age group were excluded. Participants were male and female junior students (first to third year of study) and senior students (fourth to fifth year of study). Those within the preferred age group who did not display PTSD symptoms in any of the clusters and who were not between moderate to clinical symptoms (Score 30 and above for PTSD) were excluded from participation in the study.

Casagrande et al. (1978) formula was concurrently applied to the population to determine the appropriate sample size which resulted in a sample size of 809 participants. Data for the study was collected using a researcher-formulated questionnaire used together with other standard instruments. The researcher-formulated questionnaire focused on socio-demographic information and traumatic events. The PTSD Checklist for DSM-5 (PCL-5), which is a 20-item self-report measure that assesses the presence and severity of PTSD symptoms was also used. This tool was translated into French since DR Congo is a French-speaking country and it was used on university students on both sites to assess PTSD symptoms. Lastly, the participants were then given the Life Events Checklist (LEC) which was to measure the levels of PTSD.

Statistical analysis was performed using descriptive statistics of continuous (mean and standard deviation) and categorical (proportions) variables to establish the correlations between types of traumatic events and PTSD among University students in Goma town, DR Congo.

Results

Introduction

Data was collected from 209 university students both male and female students from the two selected private universities who met the PTSD symptoms criteria as per the PCL-5. *Association between PTSD and Traumatic Events*

The study sought to establish the correlations between types of traumatic events with PTSD among undergraduate students. The objective was assessed through bivariate correlations (Pearson's correlations) between the variables. Table 1 displays the types of traumatic events and the overall association of PTSD and types of traumatic events the participants were exposed to.

Table 1: Association of PTSD and Types of Traumatic Events

Variables (N=809)	Experienced trauma Percent (%)	Did not experience trauma Percent (%)	Pearson correlation test	PTSD Scores
Natural disaster	475(58.7)	334(41.3)	Pearson correlation Sig. (2 tailed)	.087* 0.013
Fire or explosion	355(44.5)	454(55.5)	Pearson correlation Sig. (2 tailed)	-0.010 0.770
Transportation accident	578(71.4)	231(28.6)	Pearson correlation Sig. (2 tailed)	0.033 0.347
Serious accidents at work, home, or during recreational activities	349(43.1)	460(56.9)	Pearson correlation Sig. (2 tailed)	-0.031 0.382
Exposure to a toxic substance	357(44.1)	452(55.9)	Pearson correlation Sig. (2 tailed)	-0.034 0.335
Physical Assault	436(53.9)	373(46.1)	Pearson correlation Sig. (2 tailed)	-0.071 0.043
Assault with a weapon	527(65.1)	282(34.9)	Pearson correlation Sig. (2 tailed)	-0.024 0.487
Sexual assault	569(70.3)	240(29.7)	Pearson correlation Sig. (2 tailed)	0.100 0.004
Other unwanted or uncomfortable sexual experiences	416(51.5)	393(48.6)	Pearson correlation Sig. (2 tailed)	.185** 0.000
Combat or exposure to a war zone	514(63.5)	295(36.5)	Pearson correlation Sig. (2 tailed)	-0.040 0.262
Captivity	555(56.3)	254(43.7)	Pearson correlation Sig. (2 tailed)	0.044 0.209
Life-threatening illness or injury	487(60.2)	322(39.8)	Pearson correlation Sig. (2 tailed)	0.074 0.035
Severe human suffering	416(51.5)	393(48.5)	Pearson correlation Sig. (2 tailed)	.200** 0.000
Sudden violent death	573(70.9)	236(29.1)	Pearson correlation Sig. (2 tailed)	-0.062 0.080
Sudden accident death	519(64.2)	290(35.8)	Pearson correlation Sig. (2 tailed)	-0.041 0.244
Serious injury, harm or death you caused to someone	516(63)	293(37)	Pearson correlation Sig. (2 tailed)	-0.077 0.028
Any other very stressful event or experience	269(33.3)	540(66.7)	Pearson correlation Sig. (2 tailed)	0.212 0.000

The study results as reflected in Table 1 suggest that most participants who claimed that natural disasters happened to them personally met the criteria for trauma 475(58.7%) while those who experienced trauma because of being exposed to fire or explosion were 355(44.5%). Participants who met the criteria for trauma because of experiencing a transportation accident such as being directly involved in a motor accident, for example, collision, being hit by a moving motorized vehicle, falling for speeding motorbikes etc. were 578(71.4%) while 349(43.1%) of participants

experienced trauma as a result of a serious accident at work, home, or during recreational activities. Regarding exposure to toxic substances such as exposure to chemical gases particularly CO₂ from the adjacent Lake Kivu and banned pesticides (which are used very much in North Kivu Province), 357(44.1%) met the criteria for trauma. In terms of aggression, 436(53.9%) met the criteria for trauma resulting from physical assault while 527(65.1%) of participants who had experienced or witnessed another person assaulted with a weapon met the criteria for trauma. Further, 569(70.3%) respondents who had experienced sexual assault met the criteria for trauma. Also, 416(51.5%) of the participants who had been exposed to other unwanted or uncomfortable sexual experiences met the criteria for trauma. Unlike sexual assault, unwanted or uncomfortable sexual experiences can happen to people already in a relationship and usually entail being made to perform sexual acts that someone is either new to or does not like performing.

Among participants who had been exposed to combat or a war zone, 514(63.5%) met the criteria for trauma while 555(56.3%) of the participants who had either experienced or seen others in captivity met the criteria for trauma. Life-threatening illness or injury was also a type of trauma at baseline. Study findings showed that 487(60.2%) participants who had experienced or witnessed other people experiencing life-threatening illness or injury met the criteria for trauma. Also, among those who had either experienced or witnessed severe human suffering, 416(51.5%) met the criteria for trauma while among participants who had witnessed the sudden violent death of other people, 573(70.9%) met the criteria for trauma. Similarly, of participants who had witnessed sudden accident death, 519(64.2%) met the criteria for trauma. Serious injury, harm, or death participants caused to someone was also a type of trauma at baseline. Among participants who had either experienced or witnessed these events, 516(63%) met the criteria for trauma. Exposure to other unspecified very stressful events or experiences also led to the participants experiencing trauma. Most of the participants who experienced these very stressful events or experiences met the criteria for trauma 269(33.3%). This study in addition found the impact of types of trauma and the emergence of PTSD among the participants.

The results in Table 1 also suggest that there was a significant correlation between exposure to natural disasters and PTSD ($r=.087$; $p=0.013$). The correlation was, however, weak, meaning that exposure to natural disasters in the area had a small but significant effect on PTSD. The correlation

between sexual assault and PTSD ($r = .100$; $p = 0.004$) was significant. This meant the correlations did meet the decision criteria leading to the conclusion that increased exposure to sexual assault was significantly associated with increasing cases of PTSD among the students. Further, the correlation between other unwanted or uncomfortable sexual experiences and PTSD ($r = .185$; $p = 0.000$) was significant with $p \leq 0.05$. As a result, it was evident that unwanted or uncomfortable sexual experience was significantly associated with PTSD and depression among the participants in the area. The correlations also imply that increased exposure to other unwanted or uncomfortable sexual experiences could explain the increased cases of PTSD among the students.

The results also show the correlation between exposure to or experiencing life-threatening illness or injury and PTSD ($r = .074$; $p = 0.035$). This finding suggests that there was a significant association between the two variables and that an increase in exposure to life-threatening illness or injury would necessarily lead to an increase in PTSD cases among the participants. Severe human suffering was also found to be significantly correlated with PTSD ($r = .200$; $p = 0.000$) with $p \leq 0.05$. As such, it can be concluded that increases in exposure to severe human suffering would explain the increasing cases of PTSD among the participants. Further, the correlations were significantly above zero implying that the presence of other unspecified very stressful events or experiences were moderately associated with an increase in the cases of PTSD among the students.

The findings also show that the correlation between physical assault and PTSD was ($r = -.071$; $p = 0.143$). The correlation was not significant and, as such, did not meet the decision criteria. Therefore, physical assault was found not to be significantly associated with PTSD among the students in the area. Further, there was no significant correlation between sudden violent death and PTSD ($p = 0.080$) with $p > 0.05$. Other findings show that there was no significant correlation between participants' exposure to sudden death of other people arising from accidents and PTSD ($p = 0.244$) with $p > 0.05$. The study further found no correlation between serious injury, harm, or death inflicted by the participants on other people and PTSD ($r = -.077$; $p = 0.028$).

Discussion

Findings from our study showed that there was a significant association between natural disasters and PTSD. The findings support the existing literature, in the sense that quite a number of studies

discovered that natural disaster survivors usually exhibited PTSD symptoms (Felix et al., 2020; Lee et al., 2020; Marthoenis et al., 2019). As such, we find that it is possible that some of the students in Goma experienced post-traumatic event losses during the natural disasters (such as volcano eruptions and disease epidemics) that elevated their stress levels. Baldwin et al., (2023) and Shorey et al., (2022) explain that the chain of negative events following the disaster, such as challenges and losses that intensified the crisis; loss of one's home, difficulties of relocating, the necessity for a job change, and living in damaged surroundings could explain the post-traumatic event.

The study also established a significant association between sexual assault and PTSD. It was also noted that there was an association between other unwanted or uncomfortable sexual experiences and PTSD. The results from this current study confirm other studies, which also found a significant association between sexual-related trauma and PTSD (DiMauro & Renshaw, 2021; Dilip & Bates, 2021; Staff Writers, 2021). Therefore, the results imply that sexual violence-related trauma among the students contributed significantly to PTSD. Sexual violence has a particularly emotionally scarring impact on victims as it violates one's intimacy in a way that can lead to a lifetime trauma and alteration of one's trajectory for a lifetime.

Another finding that has brought the study to par with some other well-researched works is the way that it has shown a positive correlation between life-threatening illness or injury and PTSD. Life-threatening illness has been a continuing crisis that has a significant mental health impact and can result in conditions such as PTSD (Huang et al., 2023). The association of life-threatening illness or injury that we found is parallel to other recent studies among Chinese university students that was home-quarantined because of the COVID-19 pandemic by Tang et al., (2020). Findings from the study showed that PTSD was high and that feelings of extreme fear were the most significant risk factor for psychological distress among the participants in the study (Tang et al., 2020).

It was also established that over one-third of the students in the current study had either experienced severe suffering or life-threatening illnesses first-hand or witnessed somebody else (possibly a close relative) undergoing severe suffering and that had left them traumatized and depressed. These PTEs have also caused PTSD among some students. Our findings, therefore, corroborated recent research on psychological crises sequel to the Covid-2019 outbreak in China,

which found a significant correlation between PTSD and severe suffering (Zhang et al. 2020). Suffering can be understood as a perceived threat or damage to a sense of self, resulting from a threat or damage to one's body or self-identity (Ho et al., 2022).

Findings from this study further showed a significant association between serious injury, harm, or death participants caused someone and PTSD. Lack of readiness for the death, difficulty in making sense of the death, high level of negative appraisal about the self and others, and various social stressors put the bereaved at risk of PTSD, and this contributed significantly to the development of complicated grief. The findings, thus, agree with the results of a cross-sectional examination by Bhaskaran (2020) who found that university students who were affected by sudden death bereavement were more likely to experience negative outcomes such as complicated grief, and PTSD. The same study showed that rumination and avoidance were associated with poorer mental health outcomes concerning depression, generalized anxiety, suicidal ideation, and PTSD (Bhaskaran, 2020). The current results implied that traumatic events such as the sudden violent death of a loved one, sudden accident death, serious injury, harm, or death participant caused by someone were likely to cause PTSD and, therefore, this needs to be considered when providing treatment to persons-affected with trauma.

It also emerged that no correlation existed between physical assault and PTSD, thus failing to concur with previous studies. The current study results disagree with a study done among university students in South Africa by Lee et al., (2024) who found a significant association between PTSD and indirect violence on the one hand, and witnessing shooting or stabbing or beating as well as witnessing murder. Also, a cross-sectional survey among university students in 26 countries found that having a serious injury from physical abuse in the previous 12 months was associated with higher odds for PTSD symptoms in university students (Pengpid & Peltzer, 2020).

Conclusion

From the foregoing discussions of the results, the study concludes that there was a high prevalence of PTSD among university students in Goma town, DRC. Female students were the most affected by PTSD; more than twice as the female students presented with PTSD as male students. The most common types of events that met the trauma criteria experienced by the participants were very stressful events or experiences, natural disasters, and a transportation accident. Other traumatic

events experienced by the students were sexual violence, witnessing severe human suffering and death, and inflicting injury on other people. The study further concludes that a significant number of university students in Goma, DR Congo suffered from PTSD resulting from exposure to traumatic experiences. The traumatic events found to significantly increase the PTSD risk were exposure to natural disasters, sexual-related trauma, sudden violent death, severe human sufferings, and severe harm, injury, or death caused to others. Overall, the prevalence of PTSD among university students in the area was high and was caused by other PTEs apart from war.

Therefore, based on the high PTSD prevalence observed among the students in Goma, DRC mostly resulting from traumatic experiences, it is recommended that universities and relevant stakeholders need to initiate professional mental health service provision in the universities in Congo. This would make mental health services accessible to students suffering from trauma and other related conditions. Universities in the area need to consider regular screening of students for PTSD. This would go a long way in helping in the timely identification of students at risk of these conditions and subsequently identify those that might need further interventions.

Future research could be carried out to determine if there is complex trauma among university students and the intervention that would best help alleviate the symptoms. This is in consideration of the indication of possible complex trauma among university students, because of the myriad traumatic incidences they are frequently and repeatedly exposed to.

The first limitation of the current study was the small sample size. In this case, the study targeted university students diagnosed with PTSD and depression at the time of the study. The second limitation of the study was that mental health problems are sensitive due to stigmatization. PTSD and depression are sensitive topics that most individuals avoid discussing because of fear of being labeled or stigmatized, which could lead to bias responses during the study.

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