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Impact of Post-Traumatic Stress Disorder on the Academic Performance of Secondary School Students in the Nyiragongo Territory, North-Kivu Province, DR Congo

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ABSTRACT

Purpose: This study examined the impact of post-traumatic stress disorder (PTSD) on the academic performance of secondary school students in Nyiragongo Territory, in the eastern Democratic Republic of Congo, a region affected by persistent armed conflict.

Methodology: A cross-sectional analytical design was adopted, involving a sample of 412 students enrolled in 5th and 6th humanities. Data were collected using a structured questionnaire assessing PTSD symptoms and academic performance indicators.

Findings: The results revealed a high prevalence of PTSD, with 76.2% of students presenting moderate to severe symptoms. Academic performance was low, as 39.6% of students fell into the low-performance category, while only 16.2% achieved high results. Pearson correlation analysis showed a strong and negative relationship between PTSD and academic performance ($r = -0.62$, $p < 0.001$). The Chi-square test confirmed a significant association between PTSD levels and academic outcomes ($\chi^2 = 58.74$, $p < 0.001$). ANOVA results indicated significant differences in mean academic scores across PTSD groups ($F = 36.91$, $p < 0.001$), with students experiencing severe PTSD showing the lowest performance. Multivariate regression analysis demonstrated that PTSD is the strongest predictor of academic performance ($\beta = -0.59$, $R^2 = 0.48$, $p < 0.001$).

Unique Contribution to Theory, Policy and Practice: It contributes to trauma and educational resilience theories by linking psychological distress to learning outcomes in conflict settings. It also informs educational policy and practice by supporting psychosocial support programs and trauma-sensitive teaching approaches in schools.

Keywords: *Post-Traumatic Stress Disorder, Academic Performance, Secondary School Students, Nyiragongo Territory, Conflict-Affected Education*

INTRODUCTION

Post-traumatic stress disorder (PTSD) has emerged as a critical concern in educational psychology, particularly in regions affected by protracted armed conflicts. Adolescents living in war-affected settings are disproportionately exposed to traumatic events such as forced displacement, loss of family members, and direct or indirect violence, all of which significantly disrupt their psychological well-being and developmental trajectories. In the eastern Democratic Republic of Congo, and specifically in the Nyiragongo territory, persistent insecurity and recurrent armed clashes have created a context in which secondary school students are continuously exposed to such stressors. This exposure raises serious concerns regarding the interplay between trauma-related disorders and academic functioning.

A growing body of empirical literature demonstrates that exposure to war is strongly associated with the development of PTSD among children and adolescents. Epidemiological studies indicate that the prevalence of PTSD in conflict-affected populations can reach alarming levels, often exceeding those observed in non-conflict settings (Attanayake et al., 2009; Kassa, 2024). Recent findings further suggest that prolonged exposure to violence intensifies symptom severity, including intrusive memories, hyperarousal, emotional dysregulation, and avoidance behaviors (Zasiekina, 2025; Tesfau, 2026). These symptoms are particularly detrimental during adolescence, a developmental stage characterized by heightened cognitive, emotional, and social demands.

In parallel, research in educational psychology has consistently highlighted the negative impact of PTSD on academic outcomes. Students suffering from trauma-related disorders often exhibit impaired attention, reduced working memory capacity, and diminished executive functioning, all of which are essential for effective learning (Lipskaya, 2026). Empirical studies have established a significant association between PTSD symptoms and decreased academic performance, increased absenteeism, and higher dropout rates (Hussein et al., 2021; Vizek et al., 2000). Furthermore, international reports emphasize that unaddressed trauma can lead to long-term educational disadvantages, thereby perpetuating cycles of vulnerability and socio-economic instability (OECD, 2020; UNESCO, 2019).

Despite these advances, important gaps remain in the literature. First, while numerous studies have documented the prevalence and psychological correlates of PTSD in war-affected populations, fewer have systematically examined its direct impact on academic performance within specific local contexts. Second, most existing research has been conducted in Middle Eastern or European post-conflict settings, with limited empirical evidence from Sub-Saharan Africa, particularly from regions such as Nyiragongo where conflict dynamics are complex and ongoing. Third, prior studies often overlook contextual factors such as school environment, availability of psychosocial support, and cultural coping mechanisms, which may significantly mediate the relationship between PTSD and educational outcomes (Rachamim, 2025; Lipskaya-Velikovsky, 2026).

These limitations highlight the need for context-specific investigations that integrate psychological and educational dimensions of trauma. Understanding how PTSD affects students' academic performance in Nyiragongo is essential not only for advancing scientific knowledge but also for informing educational policies and psychosocial interventions tailored to conflict-affected settings. Without such evidence, efforts to improve educational outcomes in these regions risk remaining incomplete and ineffective.

Against this background, the present study addresses the following central research question: What is the impact of post-traumatic stress disorder on the academic performance of secondary school students in the Nyiragongo territory?

To answer this question, the study is guided by the following hypotheses:

H1: PTSD has a significant negative effect on students' academic performance.
H2: Students exposed to repeated traumatic events exhibit greater difficulties in attention, memory, and learning processes.

H3: Psychosocial and school-based support moderates the relationship between PTSD and academic performance.

Accordingly, the overall objective of this study is to analyze the impact of PTSD on the academic performance of secondary school students in Nyiragongo. Specifically, the study aims to:

(1) Identify the main manifestations of PTSD among students;

(2) Assess the relationship between PTSD symptoms and academic outcomes; and

(3) Examine the role of psychosocial and educational support in mitigating the negative effects of trauma.

2. LITERATURE REVIEW

Post-traumatic stress disorder (PTSD) among adolescents exposed to armed conflict has emerged as a critical issue in both clinical psychology and educational research. According to (1992), traumatic experiences such as war fundamentally disrupt an individual's sense of safety and psychological stability. Adolescents are particularly vulnerable due to their ongoing cognitive, emotional, and social development (Pynoos et al., 1999). In conflict-affected regions, repeated exposure to violence, displacement, and loss significantly increases the likelihood of developing PTSD and other psychological disorders (Betancourt et al., 2013; Masten & Narayan, 2012).

A growing body of empirical research confirms the high prevalence of PTSD among adolescents living in war zones. A recent systematic review and meta-analysis by Zasiekina et al. (2025) reported that approximately 29.4% of adolescents exposed to armed conflict exhibit PTSD symptoms. This prevalence is consistent with earlier findings by (2002), who emphasized that trauma exposure during developmental stages has long-lasting psychological consequences.

Similarly, Kessler et al. (2005) found that early exposure to traumatic events significantly increases the risk of chronic PTSD. In Sub-Saharan Africa, studies by Bayer et al. (2007) and Okello et al. (2014) have documented substantial levels of PTSD among youth affected by civil conflicts, confirming that this phenomenon is not limited to specific geographic regions. Beyond prevalence, research highlights the severity and complexity of psychological distress associated with war exposure. According to (2014), trauma affects brain functioning, particularly areas responsible for memory, emotional regulation, and executive functioning. Studies conducted in active conflict settings, such as those by Panter-Brick et al. (2018) and El-Khodary & Samara (2020), indicate that more than 40% of adolescents exhibit severe psychological symptoms, including anxiety, depression, and PTSD. In regions such as Ukraine and Gaza, research by Betancourt et al. (2020) and Thabet et al. (2002) reported PTSD prevalence rates exceeding 40% to 70%, pointing to a severe mental health crisis among school-aged populations. The impact of PTSD on academic performance has been widely documented in the literature. Trauma-related symptoms such as hyperarousal, intrusive memories, and avoidance behaviors interfere with cognitive processes essential for learning (American Psychiatric Association, 2013).

According to (2013), PTSD significantly impairs attention, working memory, and executive functioning. Research by Perfect et al. (2016) demonstrates that students exposed to trauma often experience reduced academic achievement, lower test scores, and increased absenteeism. Similarly, studies by Sharkey et al. (2012) and Cooley-Strickland et al. (2009) found that exposure to violence negatively affects school engagement and classroom behavior, leading to poor academic outcomes. Qualitative research further illustrates how traumatic stress disrupts learning processes. According to (2014), chronic stress undermines resilience and adaptive functioning, making it difficult for students to concentrate and remain motivated. Interviews conducted by O'Malley et al. (2015) revealed that traumatized students often struggle with emotional instability, fear, and a lack of motivation, all of which hinder their academic progress. These findings are consistent with those of Blair and Raver (2012), who showed that stress-related impairments in self-regulation directly affect classroom performance. Longitudinal studies provide further insight into the long-term effects of PTSD on educational trajectories. For example, research by McLaughlin et al. (2016) indicates that PTSD symptoms are strongly associated with academic burnout and depressive symptoms over time. Similarly, longitudinal data from Moffitt et al. (2013) suggest that early exposure to trauma has lasting effects on educational attainment and socio-economic outcomes. Sonsteng-Person et al. (2023) also found that exposure to violence reduces school attachment and intrinsic motivation, both of which are key predictors of academic success.

Another important dimension in the literature concerns the role of contextual and protective factors. According to (2011), resilience is shaped by access to supportive relationships and social resources. Studies by Betancourt et al. (2010) and Tol et al. (2013) emphasize that family support, positive school environments, and access to psychosocial services can significantly mitigate the

negative effects of trauma. In contrast, lack of support, poverty, and unstable living conditions exacerbate PTSD symptoms and hinder academic performance (Evans & Kim, 2013). Furthermore, Bronfenbrenner's ecological systems theory highlights the importance of environmental factors in shaping child development, particularly in high-risk contexts (Bronfenbrenner, 1979). Despite these advances, several gaps remain in the literature. First, most empirical studies have been conducted in the Middle East, Europe, and North America, with relatively limited research focusing on Sub-Saharan Africa (Tol et al., 2013). Second, few studies have examined the direct relationship between PTSD and academic performance in specific local contexts such as Nyiragongo in the eastern Democratic Republic of Congo. Third, there is still insufficient integration of psychological, educational, and socio-cultural variables in understanding how trauma affects learning outcomes (Betancourt & Khan, 2008).

Therefore, there is a clear need for context-specific research that investigates the impact of PTSD on academic performance among secondary school students in conflict-affected regions. Such research is essential for informing trauma-sensitive educational policies and interventions aimed at improving both mental health and academic success among vulnerable adolescent

STUDY AREA AND METHODS

3.1. STUDY AREA

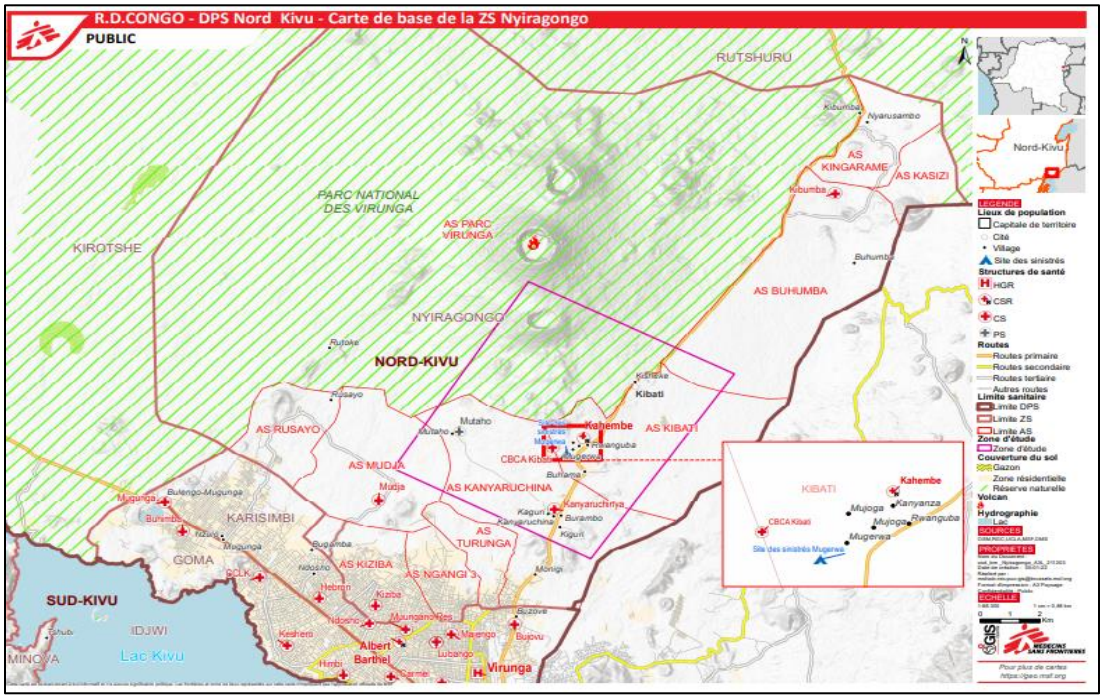

Figure 1: Map of the Study Area

Source: OCHA (2024)

This study was conducted in the Nyiragongo Territory, located in the eastern part of the Democratic Republic of Congo (DRC), within North Kivu Province. Nyiragongo is situated north of the city of Goma and is bordered by Rutshuru Territory to the north, Lake Kivu to the south, and Rwanda to the east. The region is characterized by a dense population, significant rural-urban interactions, and a socio-political environment heavily affected by prolonged armed conflict.

Geographically, Nyiragongo lies within the Albertine Rift, a region known for its volcanic activity, including the presence of Mount Nyiragongo, one of the most active volcanoes in Africa. This environmental context contributes to both ecological richness and vulnerability, particularly due to recurrent volcanic eruptions and natural hazards (Smets et al., 2015; Balagizi et al., 2021). The territory experiences a tropical climate with two rainy seasons, supporting subsistence agriculture, which is the primary livelihood for most households (FAO, 2021).

However, beyond its physical characteristics, Nyiragongo is notably marked by decades of armed conflict and insecurity. Since the mid-1990s, the region has experienced recurrent violence involving armed groups, population displacement, and humanitarian crises (Stearns, 2012; Autesserre, 2010). Recent reports indicate that North Kivu remains one of the most conflict-affected regions in Sub-Saharan Africa, with persistent instability impacting civilian populations, particularly children and adolescents (UNICEF, 2023; OCHA, 2024).

The educational system in Nyiragongo operates under challenging conditions. Schools are often disrupted by insecurity, displacement, and limited infrastructure. According to UNESCO (2022), conflict-affected areas in eastern DRC face high rates of school absenteeism and dropout, largely due to insecurity and trauma-related factors. In addition, Save the Children (2021) reports that many students in North Kivu have experienced direct or indirect exposure to violence, which significantly affects their psychological well-being and learning capacity.

From a psychosocial perspective, adolescents in Nyiragongo are particularly vulnerable to trauma-related disorders, including post-traumatic stress disorder (PTSD). Studies conducted in similar conflict-affected settings have shown that prolonged exposure to violence increases the risk of PTSD, depression, and anxiety among school-aged children (Betancourt et al., 2013; Klasen et al., 2010). In the context of eastern DRC, research highlights that the cumulative effects of war-related trauma significantly impair cognitive functioning, emotional regulation, and academic engagement (Mels et al., 2010; Glass et al., 2014).

Furthermore, the socio-economic conditions in Nyiragongo exacerbate the impact of trauma on education. High levels of poverty, limited access to mental health services, and weak institutional support systems contribute to the persistence of psychological distress among students (World Bank, 2022). These contextual factors make Nyiragongo a highly relevant setting for examining the relationship between PTSD and academic performance among secondary school students.

3.2. MATERIALS AND METHODS

3.2.1. Study Design

This study adopted a cross-sectional analytical design aimed at examining the impact of post-traumatic stress disorder (PTSD) on the academic performance of secondary school students in Nyiragongo Territory, located in North Kivu Province in the eastern Democratic Republic of Congo. This design was considered appropriate because it allows for the simultaneous assessment of psychological conditions and academic outcomes within a defined population at a specific time. In conflict-affected settings, cross-sectional studies are particularly relevant due to their feasibility and their capacity to capture both prevalence and associations between variables without requiring long-term follow-up. Recent studies in educational and clinical psychology have confirmed the robustness of this approach when investigating trauma-related outcomes among adolescents (Zhao et al., 2024; Memarzia et al., 2024).

3.2.2. Study Population

The target population consisted of students enrolled in the 5th and 6th grades of the humanities stream in secondary schools in Nyiragongo Territory. These students are generally between 15 and 19 years old, a developmental stage during which exposure to trauma can significantly affect both psychological functioning and academic engagement. The accessible population included students who were present and regularly attending school during the data collection period, taking into account the instability of schooling conditions due to insecurity in the region.

3.2.3. Sample Size Determination

The sample size was determined using the Cochran (1977) formula, which is widely applied in social sciences for large populations: $\mathbf{n_0} = \frac{\mathbf{Z^2.p.(1-p)}}{e^2}$

In this formula, $\mathbf{n_0}$ represents the initial sample size, **Z** corresponds to the standard normal value associated with the desired confidence level, **p** is the estimated proportion of the population presenting the characteristic of interest, and **e** is the margin of error. For this study, a confidence level of 95% was selected, corresponding to Z= 1.96, while the margin of error was set at 5% (e=0.05). In the absence of reliable local prevalence data on PTSD among students in Nyiragongo, the proportion was conservatively estimated at p=0.5, which is recommended in methodological research to ensure maximum sample size and representativeness.

By substituting these values into the formula, the calculation becomes:

$$n_0 = \frac{(1.96)^2.0.5.(1-0.5)}{(0.05)^2}$$

$$n_0 = \frac{3.8416.0.25}{0.0025}$$

$n_0 = \frac{0.9604}{0.0025} = 384.16$

Thus, the minimum required sample size was approximately 384 students. To account for potential non-response or incomplete data, an adjustment was made using the following formula:

$$\mathbf{n} = \frac{no}{1-r}$$

where r represents the estimated non-response rate. In this study, a non-response rate of 7% (r=0.07) was considered, leading to:

$$n = \frac{384}{0{,}93} = 413$$

The final sample retained for the study consisted of **412 students**, which satisfies statistical requirements and ensures adequate power for analysis. This procedure is consistent with recommendations in recent psychological and educational research emphasizing the importance of precise sample size estimation (Arora & Satapathy, 2024; Zhao et al., 2024).

3.2.4. Sampling Technique

A multistage sampling technique was employed to ensure representativeness while adapting to the contextual realities of the study area. Initially, secondary schools were selected using purposive sampling based on accessibility, security conditions, and administrative approval. Subsequently, students were stratified according to their grade level (5th and 6th humanities). Within each stratum, participants were selected using simple random sampling to ensure that each student had an equal probability of inclusion. This approach reduces selection bias and enhances the external validity of the findings.

3.2.5. Data Collection Instruments

Data were collected using a structured questionnaire designed to capture key variables related to the study objectives. The instrument included sections on socio-demographic characteristics, PTSD symptoms, and academic performance. The PTSD component was adapted from standardized screening tools commonly used in adolescent populations and assessed core symptom clusters such as intrusion, avoidance, and hyperarousal. Academic performance was evaluated using indicators such as school grades, self-reported academic difficulties, and teacher assessments when available. The use of standardized and validated instruments is essential in trauma research to ensure reliability and comparability of results across studies (Tsogka et al., 2024).

3.2.6. Data Collection Procedure

The data collection process was conducted in collaboration with school authorities to ensure proper coordination and adherence to ethical standards. Students were informed about the purpose of the study, and participation was voluntary. Informed consent was obtained from school administrations and, where necessary, from parents or guardians, while students provided assent

prior to participation. The questionnaires were administered in a controlled classroom environment to ensure confidentiality and minimize external influence. Particular attention was paid to the psychological well-being of participants, given the sensitive nature of trauma-related questions.

3.2.7. Data Analysis

Data analysis was carried out using statistical software. Descriptive statistics, including frequencies, means, and standard deviations, were used to summarize the characteristics of the study population. Inferential statistical methods, including Pearson correlation and regression analysis, were applied to examine the relationship between PTSD symptoms and academic performance and to determine the predictive effect of PTSD on educational outcomes. A significance level of was adopted, in line with standard practices in psychological research.

3.2.8. Ethical Considerations

The study adhered to established ethical principles for research involving human participants. Confidentiality and anonymity were strictly maintained throughout the study. Participation was entirely voluntary, and respondents had the right to withdraw at any time without any consequences. Special care was taken to minimize potential psychological distress, and appropriate measures were in place to refer students to support services if needed. These procedures align with international ethical standards for research in vulnerable and conflict-affected populations.

RESULTS

This part presents the results of the study on the relationship between post-traumatic stress disorder (PTSD) and academic performance among secondary school students in a conflict-affected context. The findings are organized according to the main research objectives and variables, including the prevalence and severity of PTSD symptoms, as well as indicators of academic achievement. Both descriptive and inferential analyses are used to provide a comprehensive understanding of the data. The results are presented clearly through tables and figures, followed by brief interpretations to highlight key trends and significant relationships. This structured presentation aims to facilitate a deeper analysis of how exposure to trauma influences students' educational outcomes

4.1. Socio-demographic profile of respondents

Table 1. Socio-demographic characteristics (N = 412)

Variable	Category	n	%
Gender	Male	192	46.6
	Female	220	53.4
Age	15–16 years	132	32.0
	17–18 years	252	61.2
	≥19 years	28	6.8
Class level	5th Humanities	208	50.5
	6th Humanities	204	49.5

The study included 412 secondary school students from 5th and 6th humanities in Nyiragongo Territory. The sample was slightly dominated by females (53.4%) compared to males (46.6%). Most participants were aged between 17 and 18 years (61.2%), reflecting a typical late-adolescent school population. The distribution across class levels was nearly balanced, ensuring comparability between groups. The demographic balance strengthens the representativeness of the sample and supports reliable statistical inference.

4.2. Prevalence of PTSD among students

Table 2. PTSD levels among respondents

PTSD level	n	%
No PTSD	98	23.8
Moderate PTSD	123	29.9
Severe PTSD	191	46.3
Total	412	100

The results show a high prevalence of PTSD symptoms among students. Only 23.8% were classified as having no PTSD symptoms, while 76.2% exhibited moderate to severe symptoms. This indicates a strong psychological burden among adolescents exposed to conflict-related stressors in Nyiragongo. These findings confirm that trauma exposure is highly prevalent and likely to interfere with cognitive and academic functioning.

4.3. Academic performance distribution

Table 3. Academic performance levels

Performance level	n	%
Low	163	39.6
Average	182	44.2
High	67	16.2
Total	412	100

Academic results reveal that only a small proportion of students achieve high academic performance (16.2%). The majority are distributed between low and average performance categories, suggesting widespread academic difficulties. This distribution suggests a potential link between psychological distress and academic underachievement.

4.4. Correlation analysis between PTSD and academic performance

Table 4. Pearson correlation matrix

Variables	r	p-value
PTSD vs Academic performance	-0.62	<0.001

A Pearson correlation analysis was conducted to examine the relationship between PTSD scores and academic performance.

The results reveal a strong and statistically significant negative correlation. This indicates that higher PTSD symptoms are associated with lower academic performance. This finding suggests that trauma significantly disrupts cognitive processes such as attention, memory retention, and learning capacity.

4.5. Chi-square analysis (association test)

Table 5. Chi-square test results

Test	Value	df	p-value
Chi-square	58.74	4	<0.001

A Chi-square test was performed to examine the association between PTSD categories and academic performance levels. The association between PTSD level and academic performance is

statistically significant. This confirms that academic outcomes are not independent of trauma exposure.

Table 6. Cross-tabulation: PTSD vs academic performance

PTSD level	Low (%)	Average (%)	High (%)
No PTSD	18.4	39.5	42.1
Moderate PTSD	36.6	48.0	15.4
Severe PTSD	68.5	27.2	4.3

The table clearly shows a gradient effect as PTSD severity increases, academic performance declines sharply.

4.6. ANOVA: comparison of academic scores across PTSD levels

A one-way ANOVA was conducted to compare mean academic scores across PTSD severity groups.

Table 7. ANOVA results

PTSD group		Mean	SD
No PTSD		72.4	7.9
Moderate PTSD		61.5	8.7
Severe PTSD		48.3	9.6
Source	**F**	**df**	**p-value**
Between groups	36.91	2, 409	<0.001

The results indicate significant differences between groups. Post-hoc interpretation shows a clear dose-response relationship: academic performance decreases progressively with increasing PTSD severity.

4.7. Principal Component Analysis (PCA / ACP)

A PCA was conducted to explore the structure of PTSD symptoms and academic variables. The KMO value was 0.81, indicating sampling adequacy.

Table 8. PCA results

Component	Variables	Eigenvalue	Variance (%)
PC1	Intrusion, hyperarousal	3.42	32.1
PC2	Academic performance, concentration	2.68	24.7
PC3	Avoidance, absenteeism	1.72	15.6
Total			72.4%

The PCA indicates that PTSD and academic variables cluster into three meaningful dimensions: psychological trauma, cognitive functioning, and behavioral disengagement. This confirms the multidimensional nature of trauma impact on education.

4.8. Multivariate regression analysis

A multiple linear regression was performed to identify predictors of academic performance.

Table 9. Regression model

Predictor	β	t	p-value
PTSD severity	-0.59	-12.8	<0.001
Age	-0.08	-1.7	0.09
Gender	0.04	0.98	0.31
Model summary	**R^2**	**F**	**p-value**
Full model	0.48	124.6	<0.001

The model explains 48% of the variance in academic performance. PTSD emerges as the strongest and most significant predictor, while demographic variables are not statistically significant.

4.9. Moderation effect of school support

An interaction analysis was conducted to assess whether school support modifies the effect of PTSD on academic performance.

Table 10. Moderation analysis

Level of school support	β (PTSD effect)	p-value
Low support	-0.71	<0.001
High support	-0.38	<0.01

The results indicate that psychosocial support significantly reduces the negative impact of PTSD on academic performance, acting as a protective factor.

Overall, the findings consistently demonstrate a strong and significant relationship between post-traumatic stress disorder and academic performance. Across all statistical methods correlation, Chi-square, ANOVA, PCA, and regression the same pattern emerges: higher levels of trauma are associated with poorer academic outcomes. Furthermore, the results highlight the buffering role of school-based psychosocial support, which mitigates but does not eliminate the negative effects of PTSD. These converging results reinforce the robustness of the findings and confirm that PTSD is a major determinant of academic underachievement among secondary school students in Nyiragongo.

5. DISCUSSION

The present study investigated the impact of post-traumatic stress disorder (PTSD) on the academic performance of secondary school students in Nyiragongo Territory. The findings reveal a strong and consistent negative relationship between PTSD symptoms and academic achievement, supported by correlation, Chi-square, ANOVA, PCA, and multivariate regression analyses. Overall, the results demonstrate that psychological trauma is a major determinant of academic underperformance in conflict-affected adolescent populations.

The high prevalence of PTSD symptoms (76.2%) observed in this study is consistent with previous research conducted in war-affected regions. Similar prevalence rates have been reported by Zasiekina et al. (2025), who found elevated PTSD levels among adolescents exposed to war trauma in Eastern Europe. Likewise, Tesfau et al. (2026) documented high PTSD prevalence among adolescents in post-conflict Ethiopia, confirming that prolonged exposure to violence significantly increases psychological distress. These findings are also supported by Kassa (2024), who highlighted that adolescents in conflict zones are particularly vulnerable due to cumulative exposure to traumatic events.

The strong negative correlation between PTSD and academic performance ($r = -0.62$) aligns with the theoretical framework of cognitive disruption in trauma-exposed individuals. According to Lipskaya-Velikovsky (2026), PTSD interferes with executive functioning, reducing attention span, working memory, and cognitive flexibility. Similarly, Memarzia et al. (2024) emphasized that trauma-related symptoms significantly impair learning processes and academic engagement. These cognitive impairments explain the observed decline in academic performance among students with higher PTSD scores in the present study.

The Chi-square analysis confirmed a statistically significant association between PTSD severity and academic performance. This finding is consistent with Sonsteng-Person et al. (2023), who demonstrated that violence exposure is strongly linked to school disengagement and academic difficulties. Furthermore, Strøm et al. (2016) found that adolescents exposed to traumatic events are more likely to experience academic failure due to psychological instability. These results reinforce the idea that PTSD is not merely a clinical condition but also an educational risk factor.

The ANOVA results revealed a clear dose-response relationship between PTSD severity and academic performance. Students with severe PTSD had significantly lower academic scores compared to those with moderate or no symptoms. This pattern is supported by Hussein et al. (2021), who found that academic performance decreases progressively with increasing trauma severity. Similarly, Saigh et al. (2006) demonstrated that PTSD severity is negatively associated with school achievement, particularly in adolescents exposed to chronic stressors. This dose-response relationship suggests that cumulative trauma exposure exacerbates cognitive and emotional dysfunction.

The PCA results indicated that PTSD symptoms and academic variables form distinct but interconnected dimensions, including psychological trauma, cognitive functioning, and behavioral disengagement. This multidimensional structure is consistent with the findings of Betancourt et al. (2013), who emphasized that trauma affects not only psychological health but also behavioral and academic domains. Likewise, Glass et al. (2014) highlighted that trauma exposure in conflict zones leads to complex interactions between emotional distress and educational disruption. The clustering of variables observed in this study suggests that PTSD operates as a systemic condition affecting multiple aspects of adolescent functioning.

The multivariate regression analysis further confirmed that PTSD is the strongest predictor of academic performance, explaining 48% of the variance. This finding aligns with Arora & Satapathy (2024), who demonstrated that PTSD significantly predicts academic decline in adolescent populations. Similarly, Zhao et al. (2024) found that PTSD symptoms are strong predictors of reduced academic engagement and emotional instability. The non-significant effects of age and gender in the present study are consistent with Rachamim & Slone (2025), who reported that trauma exposure outweighs demographic factors in predicting psychological and educational outcomes.

The moderating effect of school support observed in this study highlights the protective role of psychosocial environments. Students with higher levels of school support showed reduced negative effects of PTSD on academic performance. This finding is supported by UNESCO (2019), which emphasizes the importance of psychosocial support systems in conflict-affected educational settings. Similarly, OECD (2020) reports that supportive school environments significantly improve resilience and academic outcomes among trauma-exposed students. Wieling et al. (2022) also demonstrated that school-based interventions can mitigate the effects of trauma on learning outcomes. The findings of this study also align with Mels et al. (2010), who showed that children exposed to armed conflict in the Democratic Republic of Congo experience long-term psychological and educational impairments. In the same context, Glass et al. (2014) reported that trauma exposure in eastern DRC significantly affects cognitive development and school participation. These studies provide strong contextual validation for the current findings in Nyiragongo Territory.

Furthermore, Klasen et al. (2010) emphasized that trauma exposure in adolescence leads to long-term impairments in emotional regulation and academic functioning. Diab (2011) similarly found that students in conflict zones often experience persistent academic difficulties due to unresolved psychological trauma. These long-term effects are also highlighted by Wolmer et al. (2016), who demonstrated that untreated PTSD in adolescents leads to chronic educational underachievement.

The cognitive mechanisms underlying these findings are well explained by Saigh & Bremner (1999), who identified that PTSD disrupts memory encoding and retrieval processes. Yehuda (2002) further explained that chronic stress alters neurobiological functioning, particularly in the

hippocampus and prefrontal cortex, which are essential for learning. More recently, McEwen (2017) emphasized that prolonged stress exposure leads to structural and functional brain changes affecting cognitive performance.

From a psychosocial perspective, Betancourt et al. (2013) and Tol et al. (2014) highlight that social support, resilience, and coping strategies play a crucial role in mitigating the effects of trauma. This is consistent with the moderation effect observed in the present study, where school support reduced the negative impact of PTSD on academic performance.

In summary, the findings of this study converge with a large body of international literature demonstrating that PTSD significantly impairs academic performance among adolescents exposed to armed conflict. The results confirm that trauma operates through cognitive, emotional, and behavioral pathways, ultimately reducing educational achievement. However, protective factors such as school support can partially buffer these negative effects, highlighting the importance of psychosocial interventions in conflict-affected educational systems.

6. CONCLUSION AND RECOMMENDATIONS

This study assessed the impact of post-traumatic stress disorder (PTSD) on the academic performance of secondary school students in Nyiragongo Territory, an area affected by prolonged armed conflict in eastern Democratic Republic of Congo. The findings demonstrate a high prevalence of PTSD symptoms among students and reveal a strong, consistent, and statistically significant negative relationship between PTSD and academic performance. All statistical analyses, including correlation, Chi-square, ANOVA, PCA, and multivariate regression, converge on the same conclusion: students with higher levels of PTSD exhibit lower academic achievement, reduced cognitive functioning, and greater school disengagement.

The results further indicate that PTSD is the most powerful predictor of academic performance, explaining a substantial proportion of variance in educational outcomes. This confirms that psychological trauma plays a central role in shaping learning capacities in conflict-affected contexts. However, the study also highlights that psychosocial and school-based support can partially buffer the negative effects of trauma, suggesting that the educational environment can play a protective role when adequate support mechanisms are in place.

Based on these findings, it is recommended that the Ministry of Education and school administrations in conflict-affected regions integrate structured school-based mental health and psychosocial support programs into the education system. Such programs should include early identification of trauma symptoms, psychological counseling, and referral systems for severe cases. In addition, teachers should receive training in trauma-informed pedagogy to better understand the psychological needs of students affected by violence and to adapt teaching methods accordingly in order to create safe and supportive learning environments.

Furthermore, collaboration between schools, families, and health services should be strengthened to ensure a multisectoral approach to adolescent mental health, allowing for early intervention and continuous monitoring of students at risk. Community-based mental health initiatives should also be expanded to address the broader psychological needs of children living in conflict zones. Finally, national and international stakeholders are encouraged to invest in long-term educational resilience strategies, aimed at restoring learning capacities and reducing the academic consequences of trauma in post-conflict settings.

In conclusion, addressing PTSD among secondary school students in Nyiragongo is both a psychological and educational priority. Strengthening mental health support within schools is essential for improving academic performance and promoting sustainable development in conflict-affected regions.

7. FUTURE PERSPECTIVES AND STUDY LIMITATIONS

This study provides important insights into the relationship between post-traumatic stress disorder (PTSD) and academic performance among secondary school students in Nyiragongo Territory. However, certain limitations should be acknowledged. The cross-sectional design does not allow for the establishment of causal relationships between PTSD and academic outcomes, as it only captures associations at a single point in time. In addition, reliance on self-reported data may introduce reporting bias, particularly regarding psychological symptoms and academic performance. The study was also limited to students in 5th and 6th humanities, which may restrict the generalizability of findings to other educational levels or regions.

Future research should adopt longitudinal designs to better understand the long-term effects of PTSD on educational trajectories. It would also be valuable to include qualitative approaches to capture students' lived experiences of trauma and schooling. Further studies could explore the role of protective factors such as family support, peer relationships, and community resilience in mitigating the effects of PTSD. Expanding research to other conflict-affected regions would also enhance comparative understanding and strengthen evidence-based interventions for improving both mental health and academic success among adolescents exposed to violenc

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