



بسم الله الرحمن الرحيم

كلية نبتة
NAPATA COLLEGE

Medicine Program
Community Medicine Department

Thesis Title

**The Impact of Sudan's Armed Conflict in the Academic
Performance of Napta Medical Students During April 2025**

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Dedication

This work is dedicated to our beloved parents, whose unconditional love, sacrifices, and endless encouragement have been my foundation. Without their belief in me, this journey would not have been possible. To our siblings, for their laughter and support—you are my strength.

Acknowledgement

Completing this thesis would not have been possible without the support, guidance, and encouragement of many individuals and institutions. We owe our deepest gratitude to:

Our advisor/supervisor **Dr. Murwan Eissa Osman**, for his invaluable expertise, patience, and unwavering belief in our work. His insightful feedback and mentorship shaped this project in ways we could not have achieved alone.

List of Abbreviations

Abbreviation	Full Term
SPSS	Statistical Package for the Social Sciences
PTSD	Post-Traumatic Stress Disorder
WHO	World Health Organization
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
NGO	Non-Governmental Organization
SD	Standard Deviation
COVID-19	Coronavirus Disease 2019

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Abstract

Background:

Sudan's armed conflict, which escalated in April 2023, has severely disrupted higher education, particularly medical training which depends on stable infrastructure and clinical exposure. Students at private institutions like Napta College have faced academic, psychological, and financial challenges due to displacement, insecurity, and limited institutional support.

Aim:

To assess the impact of Sudan's armed conflict on the academic performance of medical students at Napta College during April 2025.

Methodology:

A descriptive cross-sectional study was conducted using a structured, self-administered online questionnaire. The survey targeted all medical students at Napta College. Data were analyzed using SPSS version 25, including descriptive statistics and Fisher's Exact Test for categorical comparisons.

Results:

Out of 800 enrolled students, 71 participated. A total of 62.7% of displaced students and 66.7% of non-displaced students were able to continue their education; the difference was not statistically significant ($p = 0.795$). However, 74.6% of students reported moderate to severe impacts on lectures and clinical training. Psychological distress was common, with 71.8% not seeking psychological support. Furthermore, 80.3% had limited access to learning materials, and 46.5% reported moderate to severe financial difficulties. Despite this, 77.5% of students adopted coping strategies.

Conclusion:

While displacement alone did not significantly affect educational continuation, the broader impacts of conflict—including academic disruption, limited resources, financial hardship, and psychological stress—negatively affected students' academic performance. Targeted institutional, psychological, and financial support is urgently needed to sustain medical education during crises.

Keywords: Armed conflict, academic performance, medical education, displacement, psychological impact, Sudan

Abstract in Arabic

الخلفية:

تسبب النزاع المسلح في السودان، الذي تصاعد في أبريل 2023، في تعطيل شديد للتعليم العالي، خاصة التعليم الطبي الذي يتطلب بنية تحتية مستقرة وتدريبًا سريريًا منتظمًا. وقد واجه طلاب المؤسسات الخاصة مثل كلية نبتة تحديات أكاديمية ونفسية ومالية بسبب النزوح وانعدام الأمن وضعف الدعم المؤسسي.

الهدف:

تقييم تأثير النزاع المسلح في السودان على الأداء الأكاديمي لطلاب الطب في كلية نبتة خلال أبريل 2025.

المنهجية:

أجريت دراسة وصفية مقطعية باستخدام استبيان إلكتروني ذاتي التعبئة. استهدفت الدراسة جميع طلاب كلية نبتة، وتم تحليل البيانات باستخدام برنامج SPSS الإصدار 25، بما في ذلك الإحصاءات الوصفية واختبار فيشر للمتغيرات النوعية.

النتائج:

شارك في الدراسة 71 طالبًا من أصل 800 طالب مسجل. تمكن 62.7% من الطلاب النازحين و 6.7% من غير النازحين من مواصلة تعليمهم، ولم يكن الفرق ذا دلالة إحصائية ($p = 0.795$). ومع ذلك، أبلغ 74.6% عن تأثير متوسط إلى شديد على المحاضرات والتدريب السريري. وكانت الـ ضغوط النفسية شائعة، حيث لم يسع 71.8% للحصول على دعم نفسي. كما أبلغ 80.3% عن صعوبة في الوصول إلى المواد التعليمية، و 46.5% عن صعوبات مالية متوسطة إلى شديدة. وعلى الرغم من ذلك، اعتمد 77.5% من الطلاب استراتيجيات للتكيف.

الاستنتاج:

على الرغم من أن النزوح لم يكن له تأثير كبير بمفرده على استمرارية التعليم، إلا أن الآثار العامة للنزاع—بما في ذلك الاضطرابات الأكاديمية، وضعف الموارد، والصعوبات المالية، والضغوط النفسية—أثرت سلبًا على الأداء الأكاديمي للطلاب. هناك حاجة ملحة لتوفير دعم مؤسسي ونفسي ومالي مستهدف للحفاظ على التعليم الطبي أثناء الأزمات.

الكلمات المفتاحية: النزاع المسلح، الأداء الأكاديمي، التعليم الطبي، النزوح، التأثير النفسي،

السودان

Chapter One

Introduction

1.1. Background

Armed conflicts significantly destroy the formation of universities, especially in conflict-related areas where institutions are exposed to destruction, shifting and resource shortages. Sudan, a country with a long history of political instability, has been exposed to catastrophic armed conflict since April 2023, having a strong impact on the education sector (1). Medical students who require a stable learning environment and actual clinical exposure are particularly affected by disorders of academic activity, shifts, and psychological stress (2).

The Sudan conflict led to widespread displacement of students and faculty, damage to educational infrastructure, and the suspension of academic programs at many universities (3). Private medical universities, often resistant to independent fundraising, were not immune to these challenges. Many students were forced to move, and research disruptions strengthened their financial burdens and strengthened combat struggles that could affect academic achievement (4).

Previous studies highlighted the negative effects of armed conflict on medical training in various regions, including Syria and Yemen, with students reporting significant learning disabilities, reducing opportunities for clinical training, increasing increased psychological stress, and ultimately leading to lower academic performance (5,6). However, only data on the specific effects of Sudan's conflicts have on medical students at private institutions. This study aims to assess the impact of current armed conflicts. Through analyses of student academic achievement before and after conflict and investigation of psychological and logistical challenges, this study seeks to provide valuable insight into the broader outcomes of the war with medical training. This result can inform political decisions that intervened in the development of interventions to support medical students in conflict-related fields.

1.2. Problem Statement

Armed conflicts have detrimental effects on tertiary education, and medical students are significantly impacted academically, psychologically, and professionally. Conflict affects education through the destruction of facilities, displacement of professors, and limitation of access to clinical practice, all of which determine the quality of the medical graduates (7). Research has identified that students from conflict zones suffer from increased stress, anxiety, and PTSD rates, which also negatively affect mental capacity and scholastic achievement (8). A survey study among Syrian medical students amidst the civil war revealed that more than 70% of them had experienced disruption in education owing to violence and displacement, resulting in knowledge deficiency and reduced competency (9). Likewise, wars in Iraq and Palestine have caused extended educational disruption and insufficient clinical exposure among medical trainees (10,11). Since there is current unrest in Sudan, it is necessary to take into consideration the impact of these interruptions on medical students in Khartoum since interruption of their education and training would have long-term implications for the nation's health workers.

1.3 Justification

Since medical personnel play a crucial part in the healing process after a war, evaluating their academic difficulties enables policymakers to make suggestions that will support medical education in times of crisis. Private medical schools serve a sizable student body that contributes to the nation's healthcare profession, while sometimes being disregarded in educational evaluations. Institutional methods to improve students' academic resilience, such as alternate learning modalities and psychological support, might be grounded in research on this topic. These data can also be used by international health groups to plan emergency interventions to keep education going in areas affected by conflict. To avoid long-term effects on Sudan's healthcare system and accessibility, this gap must be closed.

1.4 Research Questions

1. To what extent has Sudan's war affected the academic performance of medical students in a Khartoum private college?
2. What are the main challenges medical students are facing in continuing their education amidst the war?
3. In what ways has the conflict influenced the clinical training and learning of practical skills among medical students?
4. What have been the conflict's psychological impacts on the medical students, and how have these related to their academic performance?
5. What coping mechanisms and institutional responses have been put in place to mitigate the impact of the conflict on medical education?

1.5 Objectives

1.5.1 General Objective

To assess the impact of Sudan's armed conflict on the academic performance of Napta Medical Students during April 2025

1.5.2 Specific Objectives

1. To assess the extent of disruption in academic activities among medical students due to the ongoing conflict.
2. To evaluate the availability and accessibility of educational resources, including faculty support, clinical training, and learning materials.
3. To analyze the psychological impact of the conflict on medical students and its association with academic performance.
4. To examine the effect of displacement and financial difficulties on students' ability to continue their medical education.
5. To explore institutional and student-led strategies for adapting to conflict-related educational challenges.

Chapter Two

Literature Review

2.1 Concept:

2.1.1 Introduction

Armed conflict significantly disrupts higher education, particularly in conflict-affected regions where infrastructure, faculty availability, and student well-being are compromised [12]. Medical education, being resource-intensive and highly structured, faces unique challenges during such crises, with students experiencing psychological distress, displacement, and academic discontinuity. This literature review examines the impact of armed conflict on medical education, with a focus on academic performance, clinical training disruptions, psychological consequences, and institutional responses.

2.1.2 Armed Conflict and Medical Education Disruptions

Throughout history, war and conflict have been closely associated with significant disruptions in medical education. Research suggests that ongoing violence results in the destruction of educational facilities, a shortage of teaching staff, and restricted access to clinical training sites [13]. A study on Syrian medical students during the civil war revealed that more than 60% experienced interruptions in their education due to displacement and the closure of institutions [14]. Similarly, in Iraq, extended conflict resulted in medical graduates with less practical training, raising concerns about the future competence of physicians [15].

The recent armed conflict in Sudan has already resulted in the closure of many universities, forcing students to emigrate to other countries or to remote learning with limited accessibility. Also, the destroying physical infrastructure like lecture halls, libraries, and laboratories is depriving students of essential academic resources. Limited access to the internet and power cuts have been among the worst problems making online

learning hit and miss. Moreover, many professors have fled war zones, leaving schools understaffed and students without proper guidance. Research reveals such displacement in students usually leads to knowledge deficits between theory and practice [11]. In addition, economic struggles stemming from the conflict have led many students to quit or delay their studies, exacerbating labor shortages in the healthcare sector [12].

A wider study of the conflicts in Africa shows similar patterns. Observational studies on Libyan medical students reported that years of warfare caused a fall in the graduation rates by 50%, a rise in absenteeism, and a substantial decrease in knowledge retention as a result of disrupted learning environments [16]. A similar study assessing Somali medical students noted that instability due to war compelled students to rely on informal training and mentorship, leading to gaps in standardized medical knowledge [17]. Now, Sudanese medical students face similar difficulties amid sustained warfare, with unequal access to clinical and theoretical medical education.

Furthermore, interruptions in the organized education apparatus have a lasting impact on the medical workforce. In the regions affected by conflicts, severe shortages of manpower, especially trained healthcare workers, exist because of educational disruptions, resulting in a weakened healthcare system [15]. In Sudan, the instability has strained the fragile medical workforce even more, as graduates leave the country because they are uncertain about what will happen to their careers. Therefore, the compounded effects of war on medical education directly undermine the general public health system, exacerbating the crisis of an already precarious health infrastructure [16].

2.1.3 Psychological and Academic Consequences of War

Students' cognitive abilities and emotional well-being are affected by being in a stressful learning environment created by armed about the armed conflicts. Students in desperate countries experience chronic stress, anxiety, and post-traumatic stress disorder (PTSD) [17]. In a study conducted with Palestinian medical students, 70% reported symptoms of PTSD, which had a significant effect on their academic performance and concentration [18]. Sudanese medical students, especially in Khartoum, are facing similar problems, with many saying they are unable to keep up with work because of forced displacement, economic hardship and constant exposure to violence.

The impact of conflict on students' emotions can be expressed as exhaustion, depression and lack of desire to continue their studies. Most students have sleep problems, intrusive thoughts on the issue of their safety and an enervating feeling of uncertainty regarding their future careers [19]. Further studies conducted in Afghanistan validate that due to mental health deterioration from conflict, the academic performance of medical students is significantly reduced and dropout rates increase [20]. Student cognitive impediments by trauma-related symptoms including memory loss and problems with social cognition lead to poor retention and clinical application of medical knowledge after trauma. In conflict zones, the service of mental health support is extremely less and in short supply, which worsens their condition as students face little to no resources that provide relief from a state of distress [21].

In addition, displaced peers and faculty members break down social support systems in medical schools. The lack of group learning opportunities diminishes student engagement which makes it challenging

for them to understand complex medical terms. Moreover, in some instances, psychological distress related to conflict prompts students to abandon the spray or the medical career altogether [21].

A study by Saleh et al. However, this research [22] on Syrian refugee medical students also showed that peer mentoring and online support groups can help counteract the effects of psychological distress on academic performance. Likewise, settings deeply affected by conflict such as Iraq and Yemen, where trauma-informed teaching methods have been implemented [23], offer students mental health support and mental health instruction embedded within their medical education. Moreover, a study in Ethiopia also found that resilience training can help students to cope with stress and also to perform better in academic settings even in the face of crisis [24].

2.1.4 Impact on Clinical Training and Practical Skills

Clinical training is a cornerstone of medical education, but war interrupts access to hospitals and real-world learning experiences. Many teaching hospitals in conflict zones are either destroyed or taken over for emergency war care, substantially reducing students' exposure to common medical cases [25]. Syrian medical students complained of insufficient familiarity with surgical procedures, owing to the transformation of hospitals into trauma facilities [14].

Continuous bombardment over the 2023 in Khartoum have caused hospitals to be attacked making access to bedside learning for students hard especially when hospitals are out of their discharge [26]. This discrepancy between training and real-world practice has led to questions regarding the preparedness of medical graduates for independent practice, particularly relating to procedural competency and independent management of critical cases. Furthermore, the interruptions of hospital-based education are restricting students from observing a wide array of medical conditions, leading to a gap in knowledge that subsequently impacts their ability to deliver holistic patient care once they graduate.

One of the most impactful effects of conflict-related hospital disruptions is the loss of structured mentorship. War pandemics, in conflict areas, experienced clinicians and educators often leave, and students are no longer subject to direct supervision during practical training. The lack of practical experience with real patients hamper clinical decision-making skills while simultaneously lowering students' confidence in their capacity to do medical procedures safely [28]. Students in other instances resort to learning concepts from online videos or simulations, which,

whilst valuable, are never an adequate substitute for genuine-life clinical encounters vs imaging or organography-based learning or teaching.

But simulating those experiences for skills development in a war zone is not an option, a recent study suggests — so telemedicine and virtual reality simulations may help make up for lost clinical training opportunities. A study by Ahmed et al. [25] proved that augmented reality based surgical simulation improves the surgical technical skills of medical students who have limited access to hospital based surgical training. In addition, partnerships between war-affected universities and alumni-owned international medical institutions have enabled students to perform their clinical rotations in less threatened areas, allowing them to gain valuable hands-on skills.

2.1.5 Institutional and Student Coping Strategies

Nonetheless, multiple coping strategies have been introduced to ensure the continuity of medical education in areas affected by conflict. Online learning platforms have been embraced by many, but they can face problems such as unstable internet connection and scarcity of physical clinical practice sessions [28]. Some universities in Yemen and Syria adopted hybrid systems combining remote theoretical teaching and occasional in-person practical classes whenever security conditions permitted [22-23]. In Sudan, efforts have been made but have been hampered by erratic power supply and lack of funds. Moreover psychological counselling programs and peer support groups used by medical students from warbearing countries have also successfully been used to overcome these war-associated educational stress [26]. Still, these strategies can only be successful with ample institutional support and governmental policies to protect medical education.

2.1.6 Conclusion

The evidence demonstrates that armed conflict has a profound impact on medical students'° academic performance, clinical skills and mental health as highlighted in the literature. Research from Syria, Iraq, Palestine and Afghanistan offers insights into the consequences of interrupted medical training. Although coping strategies like digital learning and mental health support programs can provide some short-term relief, institutional and governmental action is crucial to maintain educational continuity. As the crisis in Sudan continues, further research is needed to determine the impact specifically on medical students and strategies to mitigate the impact.

2.2 Previous Studies:

Dobiesz P, Rashid A, Ng C-K, et al. Maintaining health professional education during war: A scoping review. Med Educ. 2022;56(5):493-503. [27]

Abstract: War negatively impacts health professional education when healthcare is needed most. This scoping review describes the scope of barriers and targeted interventions to maintaining health professional education during war and summarizes the research. The review identified 56 studies covering 17 unique wars involving 17 countries. The studies concerned medical students (61.4%), residents (28.6%), and nursing students (10%). Thematic coding identified five categories of barriers and targeted interventions: curriculum, personnel, wellness, resources, and oversight, with most involving curriculum and personnel. The distribution of themes among various health professional trainees was similar. The frequency and specifics changed temporally, reflecting innovations in medical education and war, with increased focus on oversight and personnel during the modern era and greater emphasis on wellness, curriculum, and resources during the postmodern era.

Cherniavska I, Skrypnyk L. Educational losses of medical students and first-year medical interns in the conditions of war. Eur Humanit Stud State Soc. 2024;1(1):56-65. [28]

Abstract: The extremely difficult and challenging conditions that have prevailed over the past three years as a result of the COVID-19 pandemic and then Russia's full-scale invasion of Ukraine have negatively affected the state of higher education in Ukraine and caused significant educational losses for both secondary school and higher education students. As for the educational losses of medical students, they are significant and may lead to a loss of patient confidence in young doctors in the future and thus negatively affect the quality of future medical care. The article analyzes the results of a survey conducted among students of

the 4th, 5th, 6th courses and interns of the 1st year of internship at the Ivano-Frankivsk National Medical University and reveals that the most significant problem of educational losses during the three years of study in difficult conditions was the lack of opportunities to form clinical thinking, gain experience and skills at the patient's bedside, and teamwork skills. Despite all the difficulties, it is necessary and possible to minimize and compensate for educational losses and provide quality conditions for medical students to gain proper knowledge and practical experience with patients.

Talib ZM, van Schalkwyk SC, Couper ID, et al. Transforming medical education to support war-affected students. Med Educ. 2020;54(5):444-453. [29]

Abstract: This article discusses the need for transforming medical education to support students affected by war. The authors highlight the challenges faced by medical students in conflict zones, including disruptions in education, psychological stress, and limited clinical exposure. They propose strategies such as curriculum adaptation, psychosocial support, and international collaboration to ensure the continuity and quality of medical education for these students.

Elhadi M, Msherghi A, Khaled A, et al. The impact of war on medical education: A review of experiences from conflict zones. Med Educ Online. 2023;28(1):2184368. [8]

Abstract: This review examines the impact of war on medical education by analyzing experiences from various conflict zones. The authors identify common challenges such as infrastructure damage, faculty shortages, and compromised student well-being. They also discuss adaptive measures implemented in these settings, including the use of online learning platforms, international partnerships, and curriculum modifications to address the unique needs arising from conflict situations.

Jebril M, Abuzerr S, Zinszer K. The impact of war-related PTSD on medical students' academic performance in Palestine. J Affect Disorder. 2021;294:735-743. [11]

Abstract: This study investigates the prevalence of post-traumatic stress disorder (PTSD) among medical students in Palestine and its impact on their academic performance. The findings reveal a high prevalence of PTSD symptoms, which are significantly associated with lower academic achievement. The authors suggest the need for mental health support services and interventions to help medical students cope with the psychological effects of living in a conflict zone.

Chapter Three

Methodology

3.1 Study Design

This is a descriptive, cross-sectional study.

3.2 Study Area\ settings

This study will be conducted at Napata College, a private medical institution located in Khartoum City, Sudan. Strategically, it is further positioned in Khartoum North (Bahri), one of the three main urban divisions of the capital, alongside Omdurman and central Khartoum.

3.3 Study Population

3.3.1 Inclusion Criteria:

- All Medical Students enrolled Napata College from 1st to 5th year.

3.3.2 Exclusion Criteria

- Those who refuse to fill the questionnaire.
- Those who miss filling the questionnaire during the study period.

3.4 Variables under the Study

- **Dependent Variable:**

- **Independent Variable:**

- Displacement status
- Access to educational resources
- Psychological impact
- Financial hardship
- Employment during study
- Institutional support received

- **Confounding Variable:**

- Psychological support received
- Loss of family support
- Coping mechanisms

- **Background variable:**

- Age
- Gender
- Academic year
- City of current residence

3.5 Sample Technique and Sample size

3.5.1 Sample Technique

- voluntary-response convenience sample

3.5.2 Sample size

- All medical students enrolled in Napta College = 800 Students

3.6 Data Collection Techniques and Tools

3.6.1 Data Collection Techniques

Data was collected using a structured, self-administered questionnaire designed specifically for this study. The questionnaire will be distributed online through google forms.

3.6.2 Data Collection Tools

3.6.2.1 Questionnaire:

The questionnaire included information about participants' demographic characteristics (such as age, gender, academic year, current city of residence, and displacement status), academic performance before and after the onset of the armed conflict, access to educational resources including internet connectivity and faculty support, psychological impacts such as levels of stress, depression, and anxiety, financial and social challenges faced during the conflict period, and the coping mechanisms and institutional support strategies utilized by students to mitigate the effects of the conflict on their education.

3.7. Data Management and Analysis

- Data was entered, cleaned, and analyzed using SPSS 25th version.
- Descriptive statistics in term of frequency tables with percentages and graphs. Means and standard deviations was presented with relevant graphic representation for quantitative data.
- Bi-variable analysis to determine the associations between the outcome variables and the other relevant influencing factors with Chi square test (for categorical variables) and t-test for (quantitative variables) statistical tests.

3.8 Ethical Considerations

- A written consent was obtained from the community department, Napta College to start the research.
- A verbal consent was taken from all study participants during the study period.

Chapter Four

Results

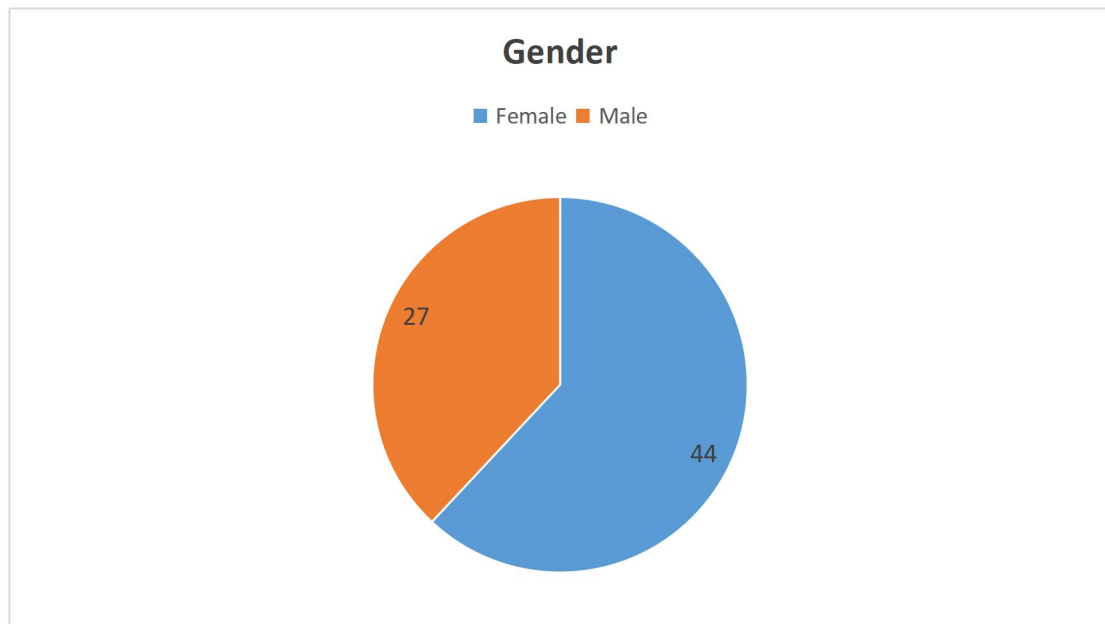


Figure 1 Gender Distribution of Participants (n=71)

A pie chart showing the gender breakdown of respondents. The majority (62%) identified as female, while 38% identified as male. This highlights a gender imbalance in the sample, which may influence the interpretation of other findings.

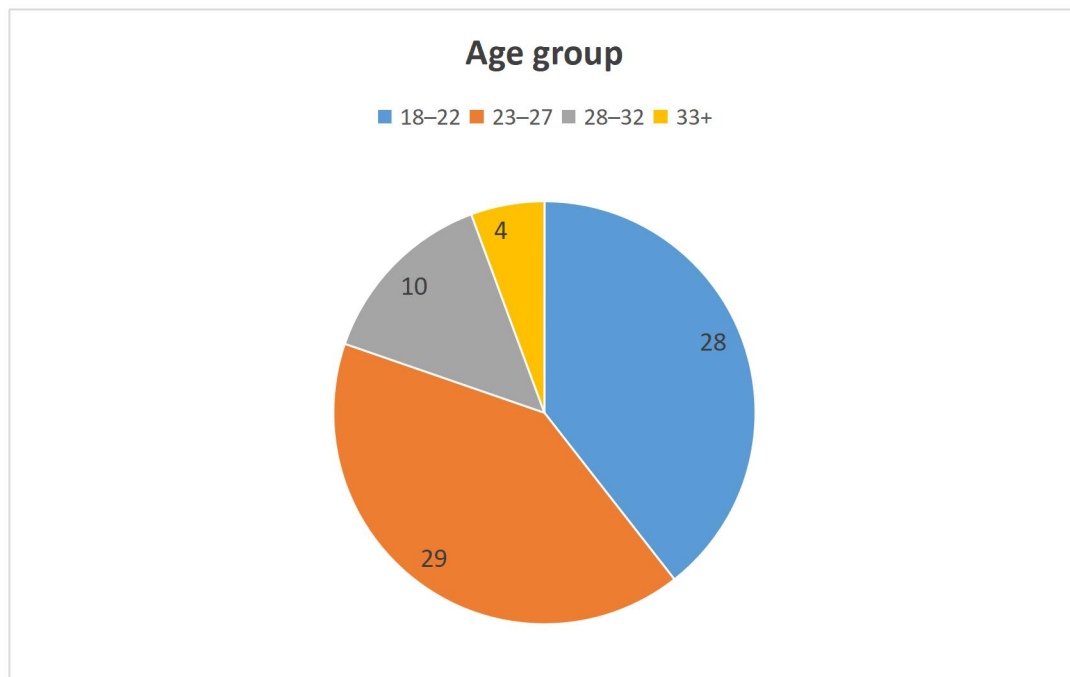


Figure 2 Age Distribution of Participants (n=71)

A pie chart illustrating the age groups of participants. The largest groups were 23–27 years (40.8%) and 18–22 years (39.4%), with smaller representation from older age brackets (28–32: 14.1%; 33+: 5.6%). Suggests a predominantly young adult sample.

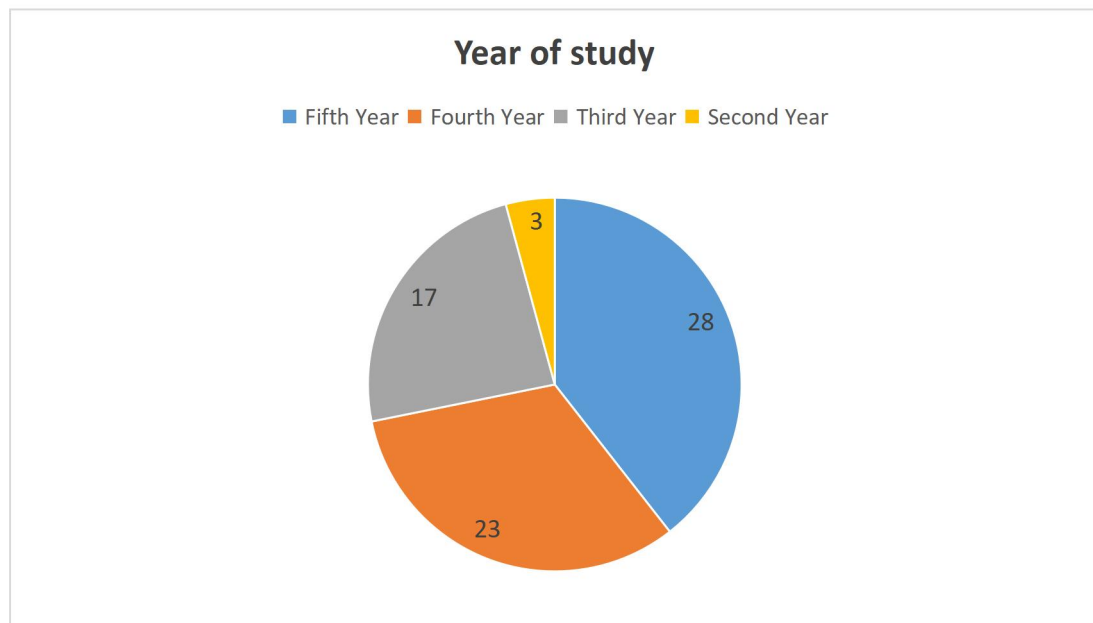


Figure 3 Year of Study Distribution (n=71)

A pie chart displaying participants' academic progression. Fifth-year students dominated (39.4%), followed by fourth-year (32.4%) and third-year (23.9%). Second-year students were minimally represented (4.2%), possibly due to displacement impacts.

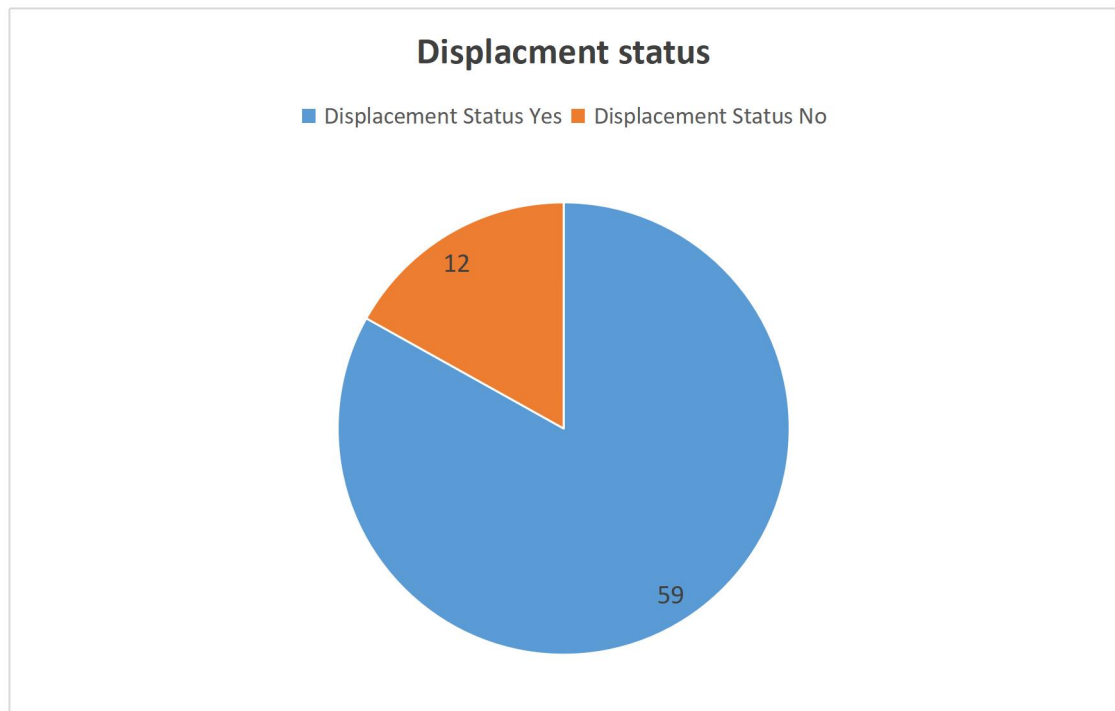


Figure 4 Displacement Status of Participants (n=71)

A pie chart comparing displaced (83.1%) and non-displaced (16.9%) respondents. The high displacement rate underscores the study's focus on conflict-affected populations.

Conflict Impact on Academics

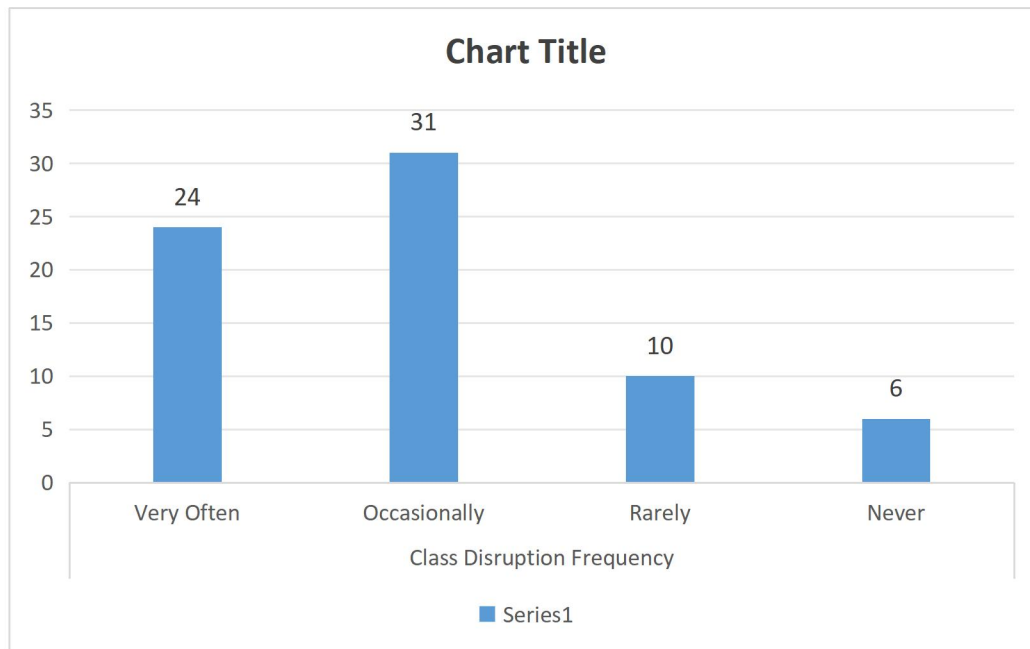


Figure 5 Frequency of Class Disruptions Due to Conflict (n=71)

Bar chart showing that 43.7% of students experienced occasional class disruptions, while 33.8% faced very frequent disruptions, highlighting significant academic instability.

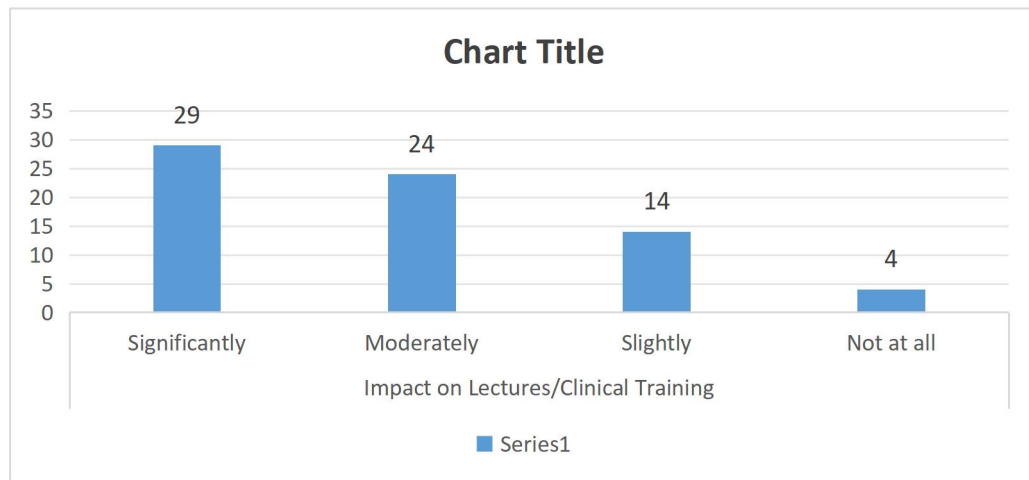


Figure 6 Impact on Lectures and Clinical Training (n=71)

This Bar chart revealing that 40.8% of students reported significant impacts on their lectures/training, with another 33.8% experiencing moderate effects, demonstrating substantial educational challenges.

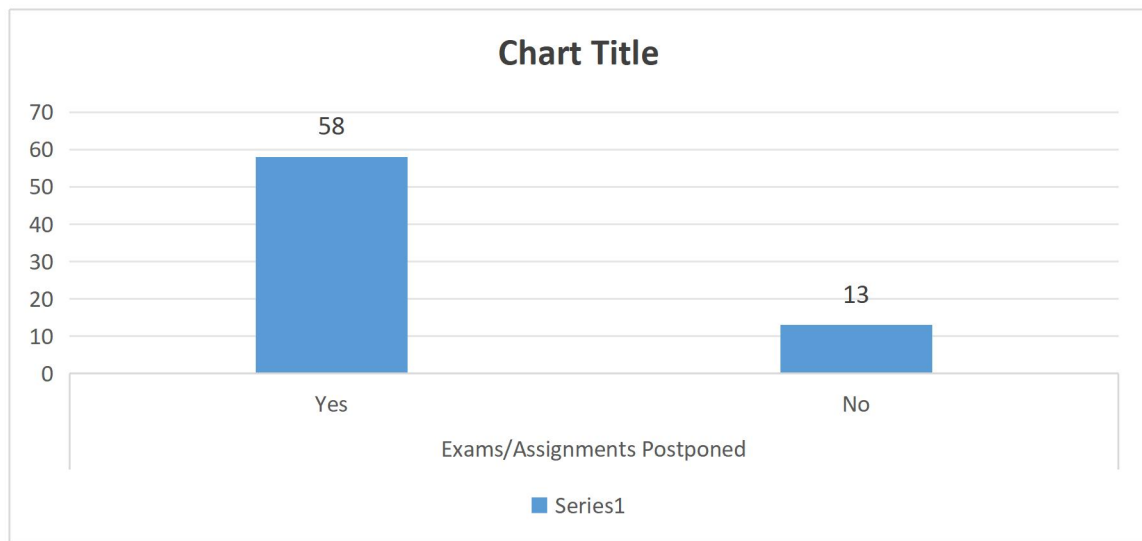


Figure 7 Postponement of Exams and Assignments (n=71)

This Bar chart indicating that 81.7% of students had exams/assignments postponed, underscoring the widespread academic disruptions caused by conflict.

2. Resource Accessibility & Support

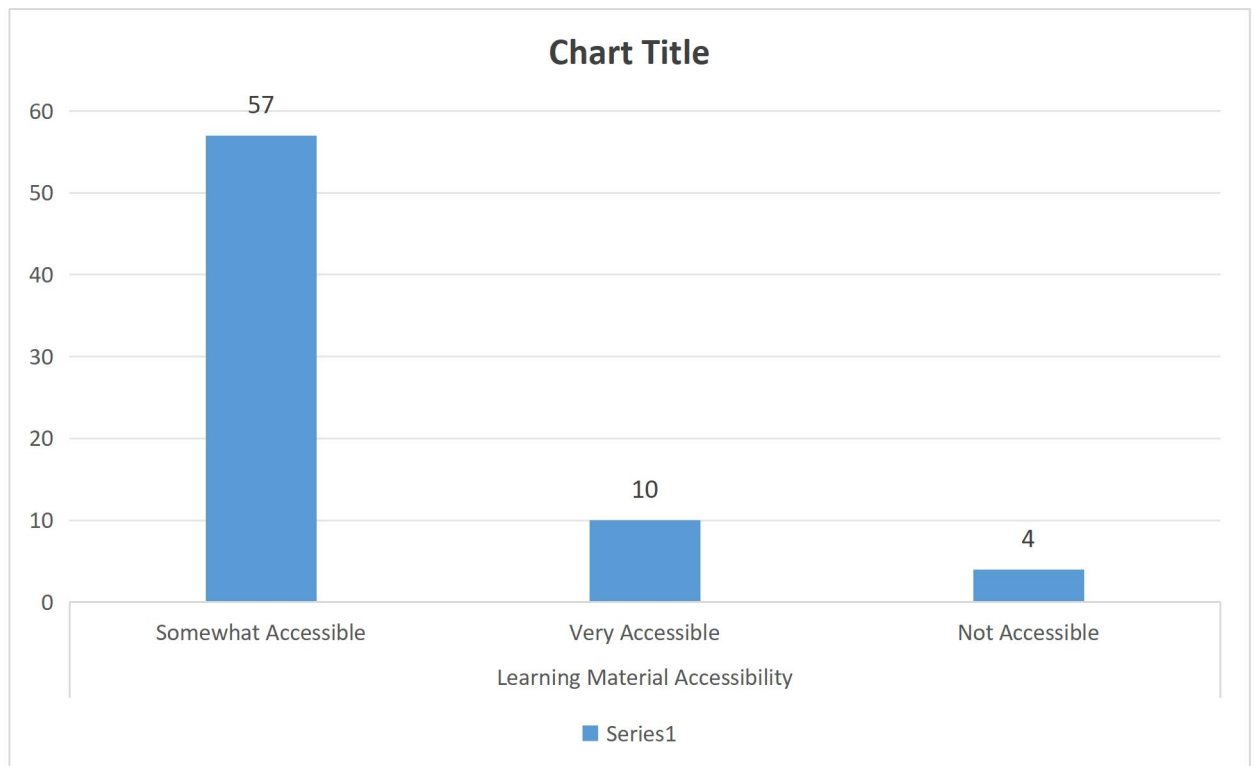


Figure 8 Accessibility of Learning Materials (n=71)

Description: Bar chart showing 80.3% of students found materials only somewhat accessible, suggesting significant resource limitations despite partial availability

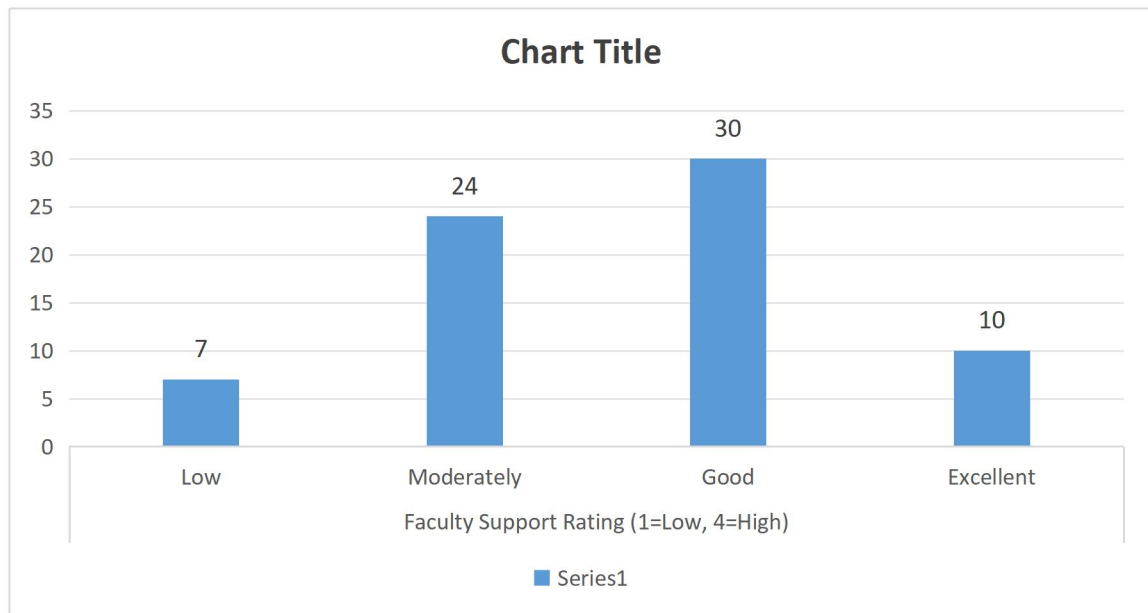


Figure 9 Faculty Support Quality Ratings (n=71)

Description: Bar chart displaying faculty support perceptions, with 42.3% rating it as good but only 14.1% as excellent, indicating room for improvement in academic support.

3. Psychological & Financial Impact

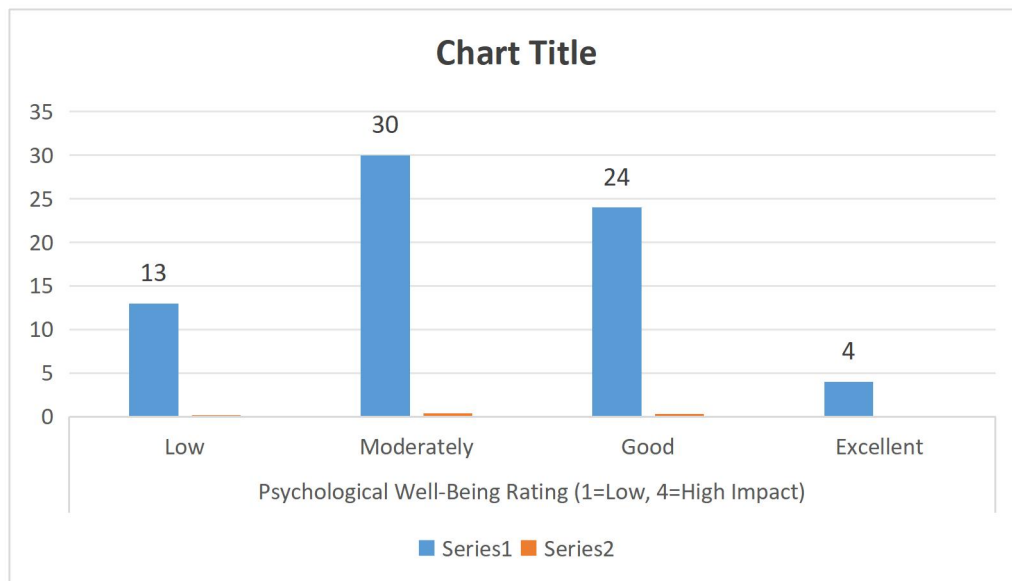


Figure 10 Psychological Well-Being Ratings (n=71)

Bar chart illustrating that 42.3% reported moderate psychological distress, while 18.3% indicated low well-being, revealing mental health challenges.

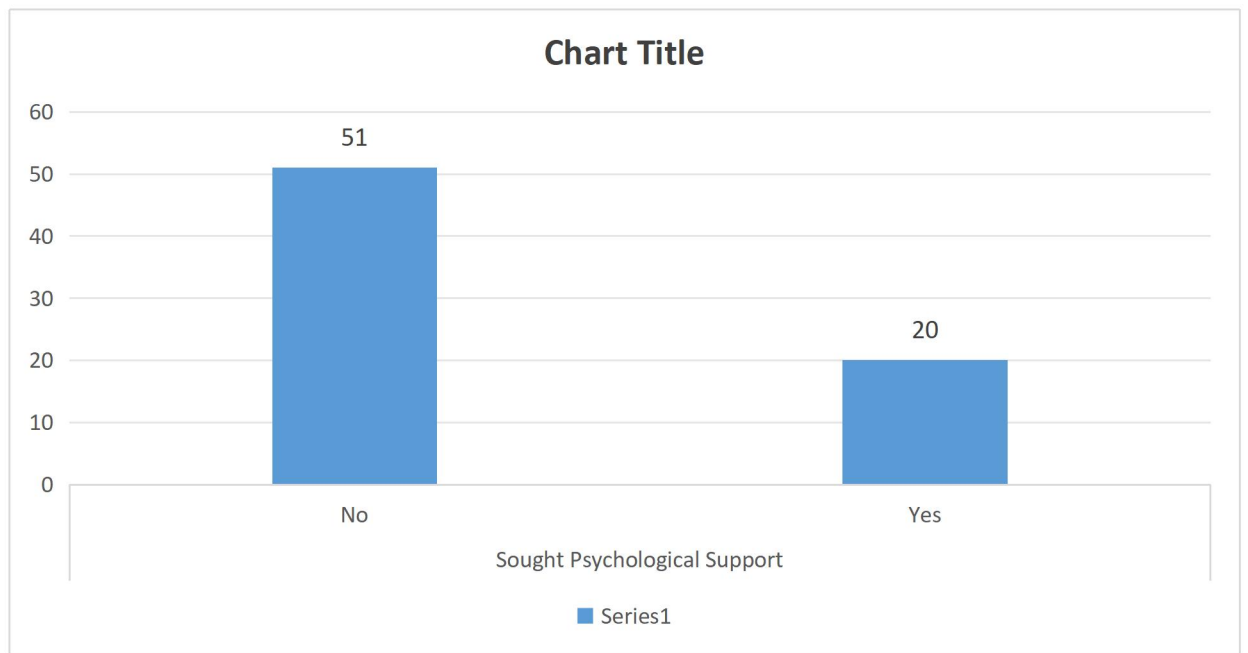


Figure 11 Utilization of Psychological Support Services (n=71)

Description: Bar chart showing 71.8% of students didn't seek psychological help despite reported distress, suggesting potential barriers to mental health access.

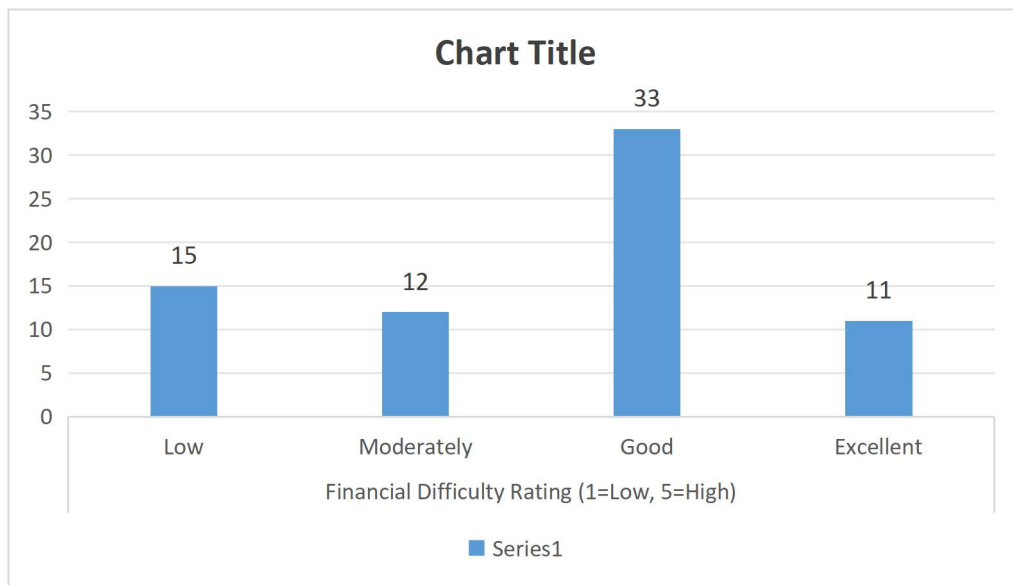


Figure 12 Severity of Financial Difficulties (n=71)

Description: Bar chart demonstrating that 46.5% faced good (moderate-high) financial strain, with 15.5% experiencing severe difficulties, reflecting economic hardships.

4. Adaptation Strategies & Needed Support

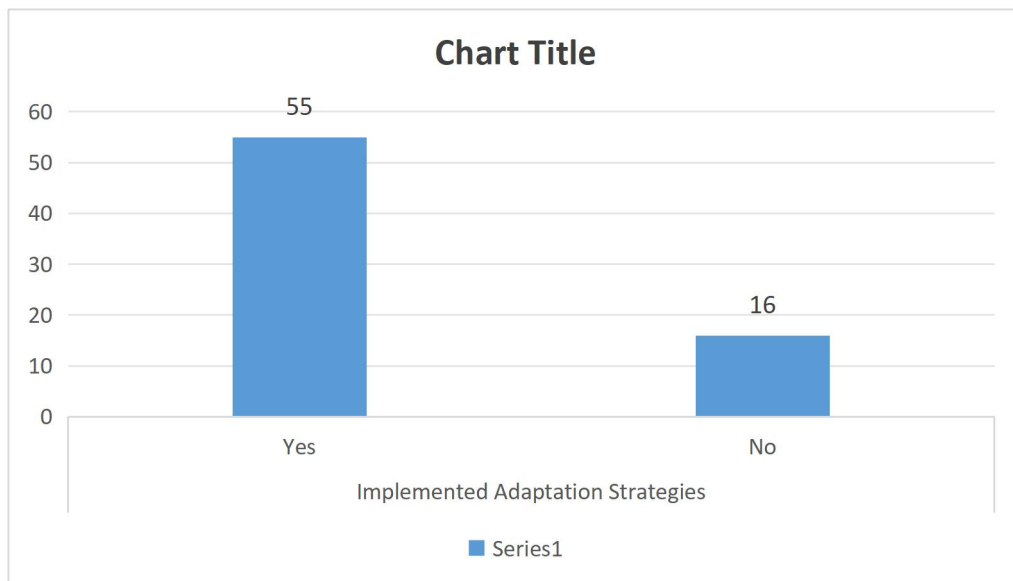


Figure 13 Adoption of Adaptation Strategies (n=71)

Description: Bar chart indicating 77.5% of students implemented coping strategies, showing resilience but also revealing 22.5% who couldn't adapt effectively.

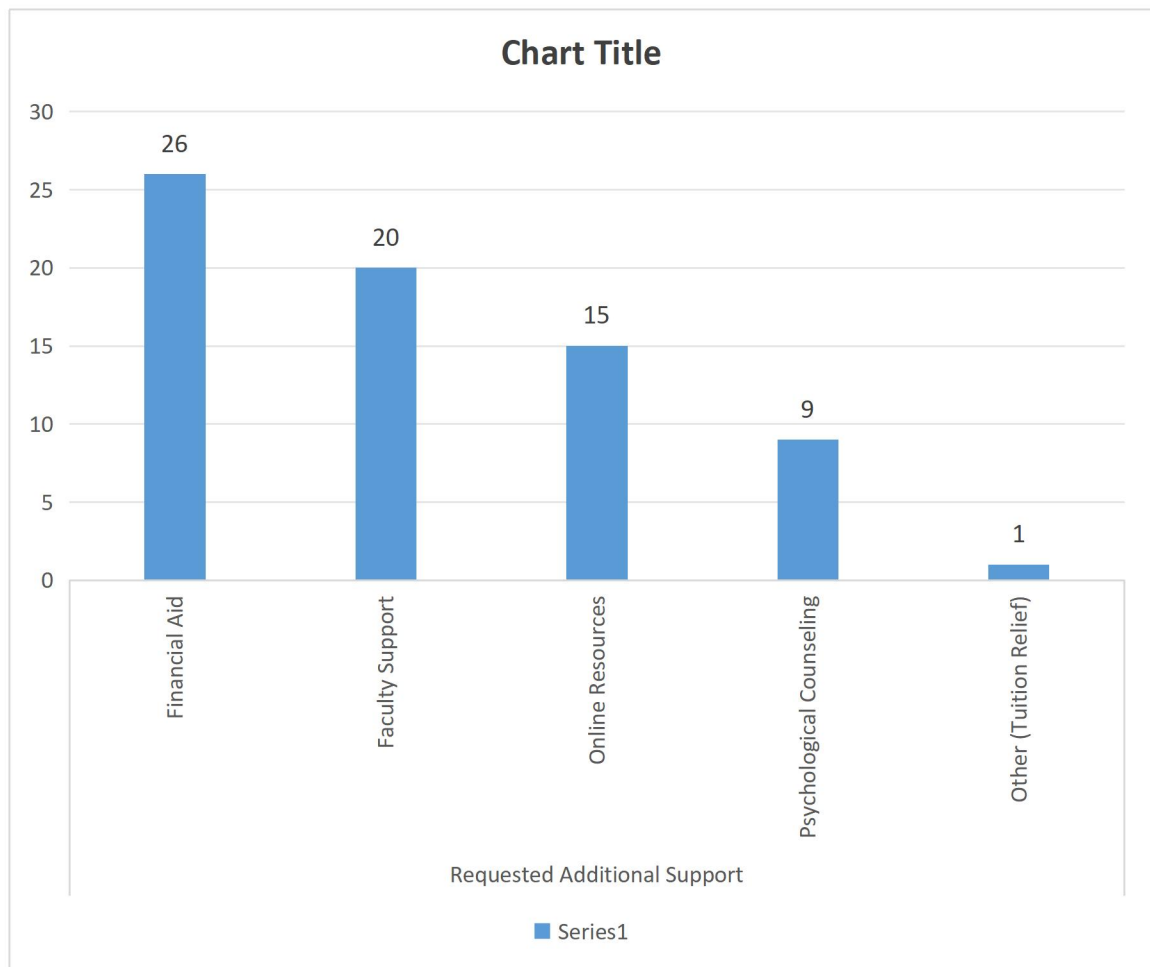


Figure 14 Most Requested Forms of Additional Support.(n=71)

Description: Horizontal bar chart ranking needs: Financial Aid (36.6%) and Faculty Support (28.2%) were most critical, followed by Online Resources (21.1%), highlighting key assistance requirements.

Table 1 Correlation Matrix of Key Study Variables (n=71)

This table shows key correlations among study variables. Faculty support ($r = 0.252$, $p = 0.034$) and class disruption ($r = 0.289$, $p = 0.014$) were positively associated with training impact, while learning access was negatively correlated ($r = -0.345$, $p = 0.004$), suggesting that better support and access reduce training disruption. The correlation between financial difficulty and psychological well-being was weak and not significant ($r = 0.135$, $p = 0.322$).

Variable Pair	Pearson's r	p-value
Faculty Support × Attendance Impact	0.252	0.034
Learning Access × Attendance Impact	-0.345	0.004
Class Disruption × Attendance Impact	0.289	0.014
Financial Difficulty × Psychological Wellbeing	0.135	0.322

Table 2 Education Continuation by Displacement Status (n=71)

This table compares the number of students able and unable to continue their education based on whether they were displaced, showing no statistically significant difference between the two groups ($p = 0.795$).

	Continued	Not Continued	Total	p-value
Not Displaced	8	4	12	0.795
Displaced	37	22	59	
Total	45	26	71	

Chapter Five

Discussion

Discussion

This study aimed to assess the impact of Sudan's armed conflict on the academic performance of medical students at Napta College during April 2025. The findings reveal that the conflict has substantially disrupted educational continuity, clinical training, psychological well-being, and resource accessibility among the student population, although not all effects were statistically significant.

One of the central findings relates to the displacement status of students and its association with education continuation. As shown in Table 2, 66.7% of non-displaced students and 62.7% of displaced students were able to continue their education. The difference, however, was not statistically significant ($p = 0.795$), indicating that displacement alone was not a determining factor in whether students could persist in their studies. Similar findings have been observed in other conflict zones, where academic continuity was affected more by infrastructural and institutional limitations than displacement alone [14, 16].

Despite the lack of statistical significance in educational continuation by displacement, the broader data indicate widespread disruption. Figure 5 illustrates that a significant proportion of students faced class interruptions, with 43.7% reporting occasional and 33.8% reporting very frequent disruptions. Furthermore, as depicted in Figure 6, over 74% of participants experienced moderate to severe impacts on their lectures and clinical training. These findings align with studies on Syrian and Libyan medical students, where ongoing violence led to institutional closures, reduced graduation rates, increased absenteeism, and informal learning practices [14, 16, 17].

Academic scheduling was also severely affected. Figure 7 shows that 81.7% of students experienced the postponement of exams and assignments, underscoring the difficulty in maintaining a structured academic calendar during times of crisis. This trend is mirrored in studies from Yemen and Iraq, where war conditions forced medical faculties to delay or cancel critical assessments and rotations [15, 28].

Access to educational resources was another major challenge. As presented in Figure 8, most students (80.3%) reported that learning materials were only somewhat accessible, while faculty support (Figure 9) was mostly rated as moderate or good,

with only 14.1% describing it as excellent. These findings are consistent with reports from other war-affected settings, where destruction of infrastructure, internet instability, and the migration of faculty reduced academic quality [11, 12, 13].

Psychological distress emerged as a significant issue. Figure 10 reveals that over 60% of students experienced moderate to severe psychological distress. However, as shown in Figure 11, the majority (71.8%) did not seek psychological support services, possibly due to stigma, lack of access, or limited institutional provision. Studies from Palestine and Afghanistan have reported similar trends, with high prevalence of PTSD symptoms linked to decreased academic performance and increased dropout rates [18, 20]. The absence of structured mental health services in conflict zones further exacerbates the issue [21].

Financial hardship was another recurring theme. Figure 12 indicates that 46.5% of students experienced moderate to high financial strain, and 15.5% faced severe difficulties. War-related economic decline has similarly impacted medical students in Somalia, Libya, and Sudan, leading many to delay studies or seek employment to support themselves [17, 16, 11].

Despite these difficulties, many students showed remarkable resilience. As shown in Figure 13, 77.5% adopted coping strategies such as online learning, peer support, or self-study. However, 22.5% were unable to implement any coping mechanisms, highlighting the need for more institutional guidance. Similar adaptive behaviors have been documented among students in Syria and Yemen, where hybrid learning models and student-led initiatives helped sustain educational momentum under insecure conditions [22, 23]. Furthermore, resilience training and trauma-informed teaching strategies have shown promise in Ethiopia and Iraq, aiding students in managing war-related stress and maintaining academic engagement [24, 26].

Students also highlighted their priorities for institutional support. As illustrated in Figure 14, financial aid (36.6%) and faculty support (28.2%) were the most requested forms of assistance. This aligns with findings from the literature, where sustainable funding and consistent faculty engagement have been critical in supporting medical education during protracted crises [27, 28, 29].

Correlational data further support these conclusions. Faculty support ($r = 0.252$, $p = 0.034$) and class disruption ($r = 0.289$, $p = 0.014$) were positively associated with training impact, while access to learning resources was inversely related ($r = -0.345$, $p = 0.004$), suggesting that improved support and resource availability significantly mitigate academic disruption. These findings echo a global review of war-affected educational systems, where resource continuity and mentorship were found to be key buffers against academic regression [27].

In summary, while displacement alone did not significantly impact educational continuation, the broader effects of conflict—class disruptions, clinical exposure gaps, psychological distress, and limited resource access—collectively disrupted the academic journey of Napta medical students. These findings are consistent with international studies and emphasize the urgent need for multi-faceted institutional strategies, including psychological support, flexible learning systems, and targeted financial assistance, to safeguard medical education during times of armed conflict.

Chapter six

Conclusion and recommendation

Conclusion

This study investigated the impact of Sudan's armed conflict on the academic performance of medical students at Napta College during April 2025. The findings reveal that although displacement status alone was not significantly associated with education continuation, the conflict had a profound overall effect on students' academic and psychological well-being. A large proportion of students experienced class disruptions, delays in examinations and assignments, and a decline in the availability of clinical training opportunities. Furthermore, the study identified major challenges related to the accessibility of educational resources, reduced faculty support, widespread financial hardship, and significant levels of psychological distress—factors that collectively disrupted academic continuity.

Despite these challenges, many students demonstrated resilience through self-directed learning, online resources, and peer collaboration. However, a substantial minority lacked the resources or support systems necessary to adapt effectively. The correlation analysis underscored the importance of faculty support and learning material accessibility in mitigating the educational impact of conflict.

The findings align with previous studies from other conflict-affected countries, suggesting that the Sudanese experience is part of a broader regional and global pattern. It also highlights the pressing need for targeted interventions to support medical students in crisis contexts. Addressing these educational disruptions is essential not only for the individual students but also for the future of Sudan's healthcare workforce and public health system.

Recommendations:

Based on the findings of this study, we propose these recommendations:

Strengthen Institutional Support Mechanisms

Universities should establish structured academic support systems, including flexible teaching schedules, catch-up programs, and remote learning alternatives to accommodate displaced and affected students.

Enhance Faculty Availability and Engagement

Institutions should ensure continued faculty presence and mentorship through digital platforms and rotating in-person engagements, even during crisis periods.

Expand Access to Educational Resources

Investment in digital libraries, offline-accessible content, and subsidized textbooks is essential to ensure students can access materials regardless of internet quality or location.

Provide Mental Health Services

Universities should implement mental health counseling services and train faculty in trauma-informed teaching methods to support students' psychological resilience.

Financial Assistance and Scholarships

Emergency grants, tuition waivers, and need-based scholarships should be made available to students suffering economic hardship due to the conflict.

Develop Emergency Preparedness Plans for Education

Higher education institutions should collaborate with national and international stakeholders to develop contingency plans for sustaining education during crises, including conflict, displacement, and infrastructure damage.

Encourage Peer and Alumni Support Networks

Establishing structured peer mentoring programs and leveraging alumni networks—particularly those abroad—can provide practical support and guidance to students during and after periods of disruption.

Further Research and Monitoring

Longitudinal studies should be conducted to track the ongoing effects of conflict on medical education and to evaluate the effectiveness of interventions over time.

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Annexes:

- Questionnaire

Consent Form:

I voluntarily agree to participate in this study. I understand that my participation is confidential and that I may withdraw at any time without any consequences.

- ☐ I agree to participate
- ☐ I do not agree to participate

Section 1: Demographic Data

1. **Name:** (Optional)
2. **Age:**
_____ years
3. **Gender:**
 - ☐ Male
 - ☐ Female
4. **Academic Year:**
 - ☐ 1st Year
 - ☐ 2nd Year
 - ☐ 3rd Year
 - ☐ 4th Year
 - ☐ 5th Year
5. **City you currently live in:**
6. **Were you displaced because of the war?**
 - ☐ Yes
 - ☐ No
7. **If displaced, where are you currently located?**

Section 2: Academic Performance

8. **How would you describe your academic performance before the war?**
 - ☐ Excellent
 - ☐ Good
 - ☐ Average
 - ☐ Poor
9. **How would you describe your academic performance after the war started?**
 - ☐ Excellent
 - ☐ Good
 - ☐ Average
 - ☐ Poor
10. **Did you face any academic disruption (e.g., missing semesters, failed courses)?**

- ☐ Yes
- ☐ No

Section 3: Access to Educational Resources

11. Do you have reliable internet access for academic purposes?

- ☐ Always
- ☐ Sometimes
- ☐ Rarely
- ☐ Never

12. Do you have access to necessary books and lecture materials?

- ☐ Always
- ☐ Sometimes
- ☐ Rarely
- ☐ Never

13. Are faculty members easily reachable for academic support?

- ☐ Always
- ☐ Sometimes
- ☐ Rarely
- ☐ Never

Section 4: Psychological Impact

14. Rate your current level of stress:

- ☐ None
- ☐ Mild
- ☐ Moderate
- ☐ Severe

15. Rate your current level of depression:

- ☐ None
- ☐ Mild
- ☐ Moderate
- ☐ Severe

16. Rate your current level of anxiety:

- ☐ None
- ☐ Mild
- ☐ Moderate
- ☐ Severe

17. Have you received any psychological support during the conflict?

- ☐ Yes
- ☐ No

Section 5: Financial and Social Challenges

18. Have you experienced financial hardship due to the conflict?

- ☐ Severe
- ☐ Moderate
- ☐ Mild
- ☐ None

19. Have you lost family financial support because of the conflict?

- ☐ Yes
- ☐ No

20. Are you currently working (employed) while studying?

- ☐ Yes
- ☐ No

Section 6: Coping Mechanisms and Institutional Support

21. Which strategies have you used to cope with educational challenges?

(You can select more than one)

- ☐ Online learning
- ☐ Group study sessions
- ☐ Self-study
- ☐ Seeking help from peers
- ☐ Seeking help from faculty

22. Has the college provided any support to facilitate your learning?

- ☐ Yes
- ☐ No

23. If yes, what type of support was most helpful?