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Evaluation of Wartime Effects on Higher Education and Research in Gaza: Perspectives from Students and Academicians

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ABSTRACT

This study investigates the impact of the 2023–2025 war on Gaza's higher education sector by analysing empirical data from 138 participants, including academics (20.3%), university students (77.5%), and administrative staff (2.2%). Using a structured survey instrument, the study captures the effects of prolonged conflict on research activity, teaching continuity, institutional stability, and academic resilience. The findings reveal that 92.7% of respondents experienced forced displacement, and 89.3% reported that their research was either severely or very severely affected. Only 35.7% of academicians managed to publish research papers or participate in academic conferences during the war, while 25% ceased all teaching and research activity. Furthermore, 57.1% of faculty reported monthly expenditures exceeding 4,000 NIS post-war, compared to 25% before the conflict, reflecting a collapse in economic stability and inflation-driven hardship. Despite these conditions, 53.6% of academics reported generating new research ideas, 28.6% acquired new methods, and 17.9% gained access to new tools and datasets. Remote and digital adaptation emerged as key strategies, where 39.3% of faculty continued teaching from within Gaza, and 57% of students engaged in online learning. However, the shift to solitary research was evident, with 75% of respondents conducting research individually. These results highlight both the systemic breakdown of Gaza's academic infrastructure and the adaptive responses of its scholarly community. The study concludes that while the war has critically undermined academic institutions, it has also catalysed methodological shifts and revealed the urgent need for targeted global interventions to support academic continuity in conflict-affected regions.

1. INTRODUCTION

Since October 2023, Gaza has been enduring an unprecedented humanitarian and infrastructural catastrophe as a result of the ongoing military conflict [1, 2]. The escalation of hostilities has led to the systematic destruction of essential infrastructure, including schools, universities, and research centres, as well as large-scale displacement of civilians [3, 4]. The higher education sector, a cornerstone of Gaza's social and intellectual development, has been among the most severely affected, with teaching and research activities either suspended or forced into makeshift, remote, or fragmented arrangements [5, 6]. The war has displaced thousands of students, academics, and administrative personnel, pushing many into internal displacement within Gaza or into exile abroad, while others have remained under conditions of siege, insecurity, and communication blackout [7, 8].

Before the current war, Gaza's higher education system was already under severe strain due to long-standing political instability, repeated conflicts, and a protracted blockade that restricted mobility, access to resources, and international collaboration [9, 10]. The Gaza Strip's universities collectively employed roughly 5,000 staff members, including about 2,000 academic faculty across various disciplines. Despite chronic resource shortages, limited research funding, and digital isolation, the academic community demonstrated resilience through virtual learning initiatives, cross-border collaborations, and local innovation [11, 12]. However, since October 2023, the escalation of warfare has resulted in the near-total paralysis of educational operations: at least 51 university buildings have been completely destroyed and another 57 severely damaged, according to recent UNESCO and Times Higher Education reports [13]. This large-scale devastation, coupled with the forced displacement of students and academics, has led to the suspension of studies for nearly all higher education students in Gaza, effectively erasing years

of institutional progress and causing a profound erosion of the region's intellectual capital [14].

The situation in Gaza mirrors similar crises observed in other conflict zones, where war disrupts not only the physical infrastructure of learning but also the human and institutional capacity to sustain higher education [15, 16]. Examples from Ukraine, Yemen, Syria, and Sudan have demonstrated that wars can lead to widespread displacement of students and faculty, loss of institutional autonomy, collapse of research productivity, and long-term educational inequality [17-19]. In Gaza, these dynamics are compounded by siege conditions that hinder humanitarian access, limit reconstruction, and exacerbate social and economic vulnerability [20].

The humanitarian dimension of Gaza's crisis includes massive internal displacement, widespread food and water insecurity, and the collapse of healthcare systems [21]. University staff and students face additional challenges loss of income, psychological trauma, and lack of access to digital resources, undermining their ability to maintain academic engagement [17, 22, 23]. With a large proportion of the population now displaced or living in temporary shelters, the prospects of restoring higher education soon remain uncertain without immediate international intervention and coordinated recovery efforts [24, 25].

Educational disruption in Gaza has reached catastrophic levels, mirroring and amplifying the broader humanitarian crisis facing internally displaced persons (IDPs) and the civilian population [21, 26]. Since October 2023, all schools in the Strip have remained closed, leaving an estimated 645,000–745,000 school-age children without formal schooling and suspending the studies of about 88,000 higher education students for more than two academic years [5, 27]. The education infrastructure has been devastated. Recent assessments indicate that between 87% and 97% of school buildings have been damaged or directly hit, with the vast majority requiring complete reconstruction or major rehabilitation before they can safely reopen [28]. This collapse affects not only learners but also approximately 22,000 teachers whose workplaces and livelihoods have been severely disrupted [29]. Universities have suffered similar destruction, with at least 12 institutions fully or partially destroyed, leaving tens of thousands of university students without access to classrooms, laboratories, or libraries [30]. Many schools and campuses now function as overcrowded shelters for IDPs, where unsafe, congested conditions and repeated displacement undermine any attempt to resume learning [31]. Against this backdrop, UN agencies and partners have launched emergency interventions, such as temporary learning spaces, remote and hybrid initiatives, and psychosocial support programmes, but these efforts can only partially offset the massive loss of instructional time, learning opportunities, and academic continuity [13]. Collectively, the destruction of facilities, prolonged school closures, and the psychosocial toll of war have produced a profound education crisis that threatens long-term human capital development and the future reconstruction capacity of Gaza's society [15].

Even though several reports and media analyses have documented the ongoing war in Gaza, the academic and institutional dynamics of its impact on higher education remain poorly understood. Most existing publications have focused on the immediate humanitarian crisis, infrastructure destruction, and casualty figures, leaving a significant gap in empirical data describing how the conflict has affected university communities, particularly academics, students, researchers, and administrative staff. To date, there has been no comprehensive, data-driven assessment of the displacement patterns, educational disruptions, and socio-economic challenges faced by Gaza's higher education sector during the war. To address this research gap, the present study adopts a descriptive analytical approach to examine the experiences and conditions of individuals affiliated with universities and research institutions in Gaza between October 2023 and mid of 2025. The methodology employs a structured questionnaire consisting of both closed and open-ended questions designed to capture information on participants' institutional affiliations, academic levels, displacement and migration preferences, family circumstances, financial and psychological challenges, war-related inflation in living expenses, and coping mechanisms such as the pursuit of remote teaching, online learning, or alternative employment. This approach aims to generate foundational qualitative and quantitative data that can inform future reconstruction policies and resilience strategies for the higher education and research sectors in Gaza.

2. METHODOLOGY

2.1 Study design

This study adopted a descriptive design to investigate the impact of the ongoing war on Gaza's higher education and research sectors. A structured questionnaire was developed in Arabic, the primary language of instruction and communication in Gaza, following international guidelines for survey design and validation [32, 33]. The questionnaire aimed to collect both quantitative and qualitative data through a combination of multiple-choice and open-ended questions. The survey consisted of three main sections. The first section gathered participants' demographic and professional information, including identification as academic staff, administrator, or student. The second section examined the effects of war dynamics on their academic or institutional affiliation, displacement status, financial and social challenges, and changes in living conditions. The third section contained questions related to informed consent, voluntary participation, and optional personal details such as name, institution, and contact information for potential follow-up.

Given the limited field access due to ongoing hostilities and communication disruptions, the questionnaire was distributed electronically through academic networks, professional associations, and social media platforms, including Telegram, Facebook, and WhatsApp groups for university staff and students in Gaza.

2.2 Study sample

The questionnaire targeted three primary respondent groups representing the spectrum of Gaza's higher education community: academicians, including professors, associate professors, assistant professors, and lecturers affiliated with public and private universities; students, both undergraduate and postgraduate, enrolled across various disciplines; and administrative staff, including deans, department heads, and senior university officials responsible for academic coordination and institutional management, and university students, both undergraduate and postgraduate. This stratification allowed for comparative analysis of how the war

has differently affected teaching, learning, research productivity, and institutional governance.

The final sample consisted of 138 respondents, including students (n = 107), academic staff (n = 28), and administrative staff (n = 3). Students constituted the majority of respondents, and within this group, female students accounted for 92.5% of the sample. While this composition reflects the demographic characteristics of survey respondents, it also introduces sampling imbalance, which necessarily constrains the generalizability of the findings.

Accordingly, all results are interpreted and reported descriptively and contextually, using formulations such as "within this sample" or "among surveyed respondents." The findings should therefore be understood as indicative of reported experiences rather than representative of the entire higher education population. In addition, given the huge number of administrative respondents, the analysis does not support administrator-specific inference, and results related to this group are presented only for descriptive completeness without comparative or inferential interpretation.

2.3 Participant recruitment

Participants were recruited voluntarily through digital dissemination of the survey link on academic forums and communication channels associated with Palestinian universities. Institutional gatekeepers and group administrators provided permission to share the questionnaire with their respective communities. Given the highly unstable security environment and restrictions on movement, participation was limited to those with access to mobile internet or digital communication tools.

Prior to distribution, the survey instrument was reviewed and validated by a panel of five academic experts from Palestinian universities to ensure linguistic clarity, contextual appropriateness, and internal consistency. Ethical considerations were maintained by including a detailed informed consent statement outlining the study's objectives, voluntary nature, and data confidentiality.

2.4 Data collection

The data collection phase was carried out during an exceptionally challenging period marked by ongoing hostilities, infrastructural collapse, and frequent communication blackouts across the Gaza Strip. The survey was officially launched in March 2025 and remained accessible for a period of four months, concluding in July 2025. Given the restrictions on mobility and the widespread destruction of university facilities, digital data collection was chosen as the only feasible method.

The questionnaire was designed on Google Forms, ensuring accessibility across a wide range of devices, including smartphones, tablets, and laptops. The form was designed with a responsive interface to facilitate completion under unstable internet conditions. Participants could complete the survey in Arabic within approximately 10–15 minutes. To maintain respondent privacy, no IP addresses or identifying digital metadata were collected. All responses were automatically anonymized upon submission and securely stored in encrypted cloud-based repositories accessible only to the research team.

The link to the questionnaire was disseminated through multiple online channels, including official and unofficial university staff and student WhatsApp and Telegram groups, academic Facebook pages, LinkedIn networks connecting Palestinian scholars, and targeted email invitations sent through professional associations and institutional mailing lists.

Due to the intermittent availability of electricity and internet connectivity, data collection was conducted in cycles, synchronized with periods of network stability. The research team closely monitored response rates, and periodic reminders were sent every two weeks through social media and professional networks to encourage participation and maintain momentum. To ensure inclusivity, special attention was given to reaching displaced participants, including academics and students who had relocated to Egypt and other host countries during the war.

Participants were informed at the beginning of the survey about the purpose of the study, data confidentiality, and the voluntary nature of their participation. An electronic informed consent form was provided, and only respondents who indicated agreement could proceed to the questionnaire. No financial incentives or compensation were offered to avoid participation bias.

Despite the severe logistical constraints, the study achieved a satisfactory response rate, representing a cross-section of Gaza's higher education community. Responses were then downloaded, cleaned, and prepared for statistical and thematic analysis. Incomplete entries were screened and excluded to preserve data quality and analytical consistency.

2.5 Data analysis

Descriptive statistical analyses were conducted using Microsoft Excel 365. Quantitative variables such as displacement frequency, monthly expenditures, and family size were expressed as percentages and frequency distributions, while qualitative responses were analyzed thematically to capture nuanced experiences.

3. RESULT AND DISCUSSION

3.1 General characteristics of participants

The online survey remained open from March to July 2025 and achieved a moderate yet significant response rate, particularly given the severe challenges imposed by the wartime context. The process of data collection was hindered by frequent electricity blackouts, limited internet connectivity, and widespread displacement that disrupted digital communication networks. Despite these constraints, the engagement level of participants reflects a strong academic commitment and the willingness of Gaza's intellectual community to contribute to documentation and scholarly assessment of their circumstances.

A total of 138 responses were obtained from a diverse cross-section of higher education stakeholders, comprising academics (20.3%), university students (77.5%), and administrative staff (2.2%), as shown in Figure 1.

This composition aligns closely with the structural realities of Gaza's higher education system, where faculty and students together constitute the backbone of academic activity, while administrators represent smaller but crucial institutional pillars. The inclusion of these three categories ensures that the data captures the entire spectrum of academic life from teaching and learning processes to governance and research

management.

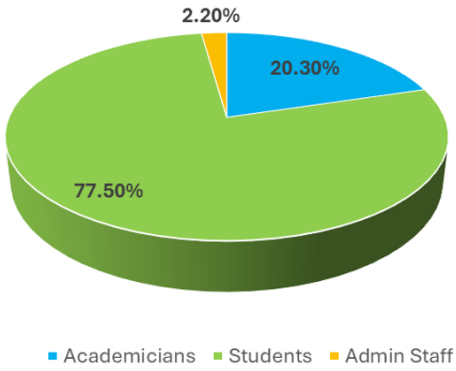


Figure 1. Respondents' profiles

3.2 Descriptive analysis of the respondent categories

3.2.1 Descriptive analysis of academicians

The respondents' institutional affiliations were broad and representative of Gaza's major universities and higher education centres. The Islamic University of Gaza, Al-Azhar University, and Al-Quds Open University accounted for the largest share of responses, reflecting their size, historical prominence, and wide academic networks. This institutional diversity provided a comprehensive overview of how the war has impacted both large-scale universities and smaller, resource-limited institutions. Table 1 summarizes the demographic information for the academic respondents.

Table 1. Demographic data on the academic respondents' profiles

Profile	Frequency	Percentage (%)
Sex		
Male	21	75
Female	7	25
Age		
20 - 30	0	0
31 - 40	9	32.1
41 - 50	8	28.6
More than 51	11	39.3
Universities		
Al Aqsa University	11	39.3
Islamic University	7	25
AL Quds Open University	6	21.4
Al Azhar University	4	14.3
Academic Ranks		
Professors	5	17.9
Associate Professor	4	14.3
Assistant Professor	11	39.3
Lecturer	8	28.6
Working Mode		
Full Time	14	50
Part Time	14	50
Specialization		
Humanities and Social Sciences	19	67.9
Engineering and Computer Sciences	3	10.7
Medical and Health Sciences	2	7.1
Economics and Administrative Sciences	2	7.1
Legal Sciences	1	3.6
Applied Science	1	3.6

In terms of demographic distribution, the sample was mainly composed of male respondents (approximately 75%). The results show that none of the respondents were between 20 and 30 years old, indicating that younger academicians were not represented in the survey sample. The majority of respondents were above 31 years, reflecting that participants were generally experienced individuals within their professional fields. Specifically, 39.3% of respondents were above 51 years old, making this the largest age group in the study. This suggests that the sample is dominated by senior academicians who are likely to possess extensive experience and decision-making authority in their respective organizations. The 41–50 age group constituted 28.6%, while the 31–40 years accounted for 32.1%. This demographic structure is significant, as it highlights a cohort that is professionally active, family-responsible, and deeply integrated into teaching and research roles, making them especially vulnerable to the war's disruptions.

Furthermore, the regional distribution of respondents reveals the geographic inclusivity of the sample. Participants were drawn from all five governorates of Gaza (North Gaza, Gaza City, Central Area, Khan Younis, and Rafah), mirroring the spread of higher education institutions across the region. The largest concentration originated from Khan Younis City (39.3%) and Gaza City (21.4%), where most universities are historically located. Respondents from Khan Younis and Rafah contributed valuable insights into the conditions of southern institutions, which, despite being less resourced, became temporary hosts for displaced academics and students from the north.

The diversity in institutional affiliation and demographic characteristics strengthens the study's validity and enhances the representativeness of its findings. Despite the limitations imposed by wartime logistics, the data provide a credible cross-sectional snapshot of Gaza's higher education community during one of the most disruptive periods in its history. It also reflects a remarkable level of academic resilience and civic responsibility, as participants engaged in research activities even amidst personal insecurity, displacement, and material deprivation.

3.2.2 Descriptive analysis of students

The survey successfully reached 107 university students representing a broad geographic distribution across Gaza's five governorates. The majority of the students were females (92.5%), indicating that male students were largely occupied during the war with responsibilities such as securing food, shelter, and financial support for their families. The results indicate that the majority of student respondents were aged between 21 and 30 years (56.1%), followed by 38.3% of respondents aged younger than 20 years. Moreover, 4.7% are between 31 and 40 years, who are most probably postgraduate students. Among the undergraduate participants, the largest proportion consisted of first-year and third-year students, accounting for about 30.8% and 29% of the total sample, respectively. Students in the second year participated with (approximately 23.4%), followed by postgraduate students with 14%. This distribution indicates that the majority of surveyed undergraduates were first and second-level students, reflecting both their deeper engagement in academic life and their heightened vulnerability to the interruption of graduation requirements and research projects caused by the conflict.

The majority of respondents were undergraduate students (91.5%), while 8.5% were studying a master's degree. Most

respondents had been enrolled in universities located in Gaza City and North Gaza (approximately 95%), where the majority of higher education institutions were concentrated before the war, followed by students from the southern areas of Khan Younis and Rafah (5%) (Figure 2(a)). At the time of the war, most students reported living with their families or relatives, while a smaller proportion resided in university dormitories or rented apartments. Students were distributed across multiple fields of study, reflecting the academic diversity of Gaza's higher education sector, as shown in Figure 2(b).

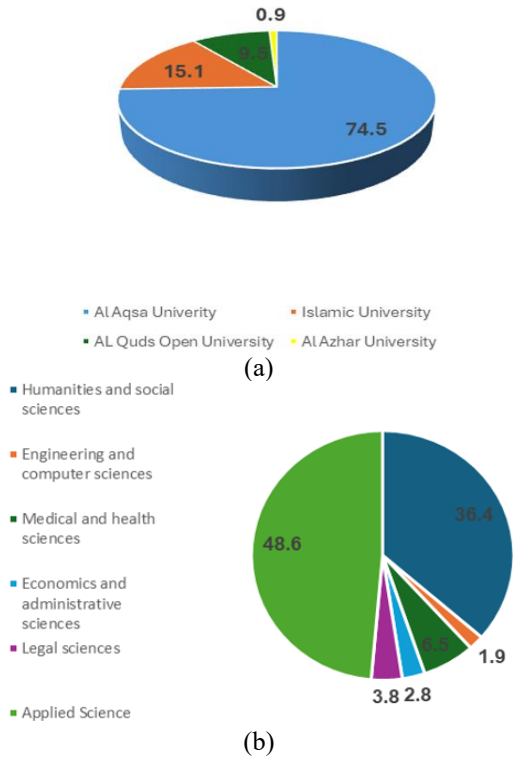


Figure 2. Distribution of students (a) Among universities, (b) According to field of study

Table 2. Demographic data on the students' respondents' profiles

Profile	Frequency	Percentage
Students		
Sex		
Male	8	7.5
Female	99	92.5
Age		
Less than 20	41	38.3
21 - 30	60	56.1
31 - 40	5	4.7
41 - 50	1	0.9
Universities		
Al Aqsa University	79	74.5
Islamic University	16	15.1
AL Quds Open University	10	9.5
Al Azhar University	2	1.86
Academic Program		
Undergraduate	97	90.65
Postgraduate	10	9.35

The largest share specialized in pure and applied sciences (about 48.6%), followed by humanities and social sciences disciplines (36.4%), and medical and health sciences (6.5%). Smaller proportions were enrolled in law and administrative sciences (3.8%), economics and administrative disciplines (2.8%), and engineering and computer studies (6%). This composition aligns with national enrolment trends, where education fields dominate Gaza's academic landscape (PCBS, 2023; UNESCO, 2024). Table 2 summarizes the reported data on students' profiles.

3.3 Effect of war on financial changes in monthly expenditures

3.3.1 Academicians respondents

The war in Gaza has not only devastated physical infrastructure and institutions but has also dismantled the fragile economic foundations that sustain academic life. Figure 3(a) illustrates the distribution of monthly household expenditures among academicians before the war in Gaza, offering important context about the community's financial standing prior to the current crisis. The data show that even before the escalation of violence, most individuals in Gaza's higher education sector were living with limited financial stability, their monthly spending carefully balanced between basic needs and professional or academic responsibilities.

Two groups stood out equally in size: those spending between 2,000 and 3,000 NIS (1 USD = 3.4 NIS) and those spending more than 4,000 NIS, each representing about a quarter (25%) of respondents. This balance paints a picture of a modest middle-income segment existing alongside a smaller group of relatively stable households, often senior academics or families with more than one breadwinner. Yet beneath these surface differences, both groups shared a deep sense of financial fragility, shaped by years of restricted movement, inconsistent salaries, and rising living costs. Another 21.4% of participants reported monthly expenses between 3,000 and 4,000 NIS, while an equal proportion spent between 1,000 and 2,000 NIS. These households represent the quiet struggle of Gaza's young professionals, part-time lecturers. Only a small minority (7.1%) of respondents reported spending below 1,000 NIS, a figure that reflects the harshest edge of poverty, where every shekel counts toward food, rent, and survival.

Taken together, these figures reveal a striking truth: economic hardship was not new to Gaza's academic community. Even before the war, people lived within a narrow financial margin, constantly negotiating between maintaining their professional aspirations and meeting daily needs. There was no real buffer, no safety net just persistence and adaptation. The war that began in October 2023 did not introduce poverty; it intensified an already precarious existence, collapsing what little stability people had managed to build.

The effect of the war was clearly shown in Figure 3(a), emphasizing that the economy has collapsed under the effect of war. When compared with pre-war conditions, the data show an almost total reversal in Gaza's financial landscape. Before the conflict, household expenditures were modest but diverse, reflecting a fragile balance between struggle and survival. After the war began, that balance disintegrated. More than half of academicians (57.1%) now report spending higher than 4,000 NIS per month. This figure is staggering not only because it represents a sharp increase from the pre-war level of just 25%, but because it reflects a population living well below the poverty threshold. This number alone encapsulates the collapse of livelihoods, income sources, and the local economy. It signifies a descent from scarcity into deprivation, from financial precarity into humanitarian dependence.

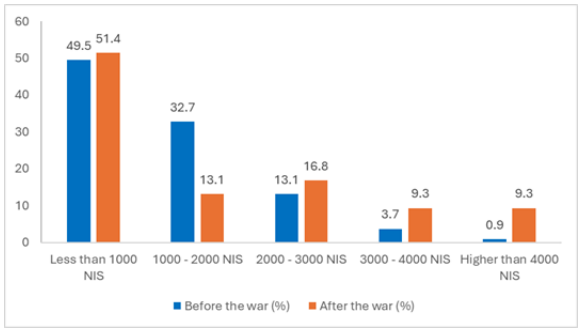
The once present middle class, those who reported monthly expenditures between 2,000 and 4,000 NIS, has largely vanished. The number has been drastically increased from 46.4% to only 21.5% remain in this range. These statistics are more than economic indicators; they mark the erosion of Gaza's intellectual and professional backbone, the academic staff, who sustained its academic institutions. The disappearance of these categories reflects not only a loss of income but a loss of stability, identity, and self-reliance.

As salaries were suspended, campuses destroyed, and businesses shuttered, Gaza's academics and students found themselves confronting choices no one in higher education should have to make, whether to buy food or pay tuition, whether to flee or continue teaching in ruins. The war's economic impact extends beyond numbers; it has redefined what survival means. The increase in the lowest spending category is not evidence of thrift, but of collapse: of markets, salaries, and access to basic necessities. Families that once managed modestly have been thrust into extreme poverty, surviving on aid packages or the kindness of neighbors equally impoverished.

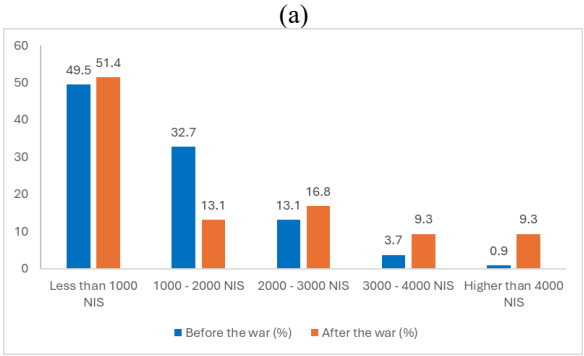
For the higher education community, these changes are devastating. Economic instability translates directly into academic paralysis. Faculty members face unpaid months, forcing them to abandon teaching or seek menial labour. The academic process itself has been stripped of its foundation, time, concentration, and hope.

Figure 3(a) and 3(b), therefore, do not merely describe a shift in financial categories. It captures a human collapse, the dismantling of dignity through economic exhaustion. It shows how an educated, striving population has been driven into dependency, and how Gaza's intellectual capital, its teachers and learners, have been reduced to survivalists.

In the end, what these numbers truly measure is not spending, but loss: the loss of agency, aspiration, and continuity. For a community built on the pursuit of knowledge, such deprivation is not only material but also existential.



(a)



(b)

Figure 3. The effect of war on monthly expenses on (a) Academicians, (b) Students

3.3.2 Students respondents

Figure 3(b) illustrates the profound impact of the war on students' monthly expenditures, comparing their financial situations before and after the outbreak of the conflict. The changes reflected here go far beyond numerical differences; they represent the collapse of a fragile economic balance that once enabled students to pursue higher education amid chronic instability.

Before the war, the financial landscape among students was already strained but somewhat varied. Nearly half (49.5%) reported spending less than 1,000 NIS per month, an amount that barely covered transportation, internet costs, and minimal food expenses. A further 32.7% were in the 1,000-2,000 NIS range, managing modest but functional student lives, attending lectures, paying small tuition instalments, and contributing occasionally to family needs. The remainder represented smaller proportions of students whose spending exceeded 2,000 NIS, typically those from more stable households or with part-time income sources.

After the war, this delicate balance collapsed. The proportion of students spending less than 1,000 NIS increased to 51.4%, showing that more than half of all students have been pushed into extreme economic limitation. At the same time, the share of students spending between 1,000-2,000 NIS plummeted from 32.7% to just 13.1%, reflecting the erosion of middle-level expenditure groups, the very group that once represented Gaza's struggling but persistent academic class.

Interestingly, a small rise appeared in the 3,000-4,000 NIS categories after the war (from 3.7% to 9.3%), possibly due to inflation rather than improved living conditions. Students reported that the cost of basic goods, transportation, and rent soared dramatically, so even limited spending translated into higher nominal figures without any real increase in purchasing power. In other words, those appearing to "spend more" were not better off; they were paying far more for far less.

The near disappearance of students spending more than 4,000 NIS before the war (0.9%) further demonstrates the levelling effect of economic collapse. The war has effectively erased the few financial distinctions that once existed among students, leaving most in similar conditions of hardship.

From a human perspective, these figures represent the daily reality of scarcity and sacrifice. Many students have had to abandon university housing, skip meals, or give up on digital access simply to stretch limited resources. Others reported sharing food, water, and study materials with peers displaced by bombings. As one student poignantly remarked, "Before the war, my stipend could cover transport and online access; now, I count every shekel just to buy bread."

Beyond personal hardship, these changes have deep academic consequences. Financial instability has forced many students to suspend their studies, delay graduation, or withdraw entirely. Institutions, in turn, face mounting arrears as tuition payments collapse. The data in Figure 3 thus reflect not only personal financial distress but the systemic unravelling of Gaza's higher education ecosystem, where economic survival now competes directly with intellectual pursuit.

The pattern seen here mirrors findings from broader humanitarian assessments. According to the World Food Programme (2025), the cost of essential goods in Gaza rose by more than 250% during the war, while UNRWA (2024) reported widespread income loss among youth and students [34]. These external findings align with the survey's results, confirming that the war has transformed Gaza's academic

community from a struggling but functioning system into one of mass impoverishment and educational paralysis.

3.4 Effect of displacement on respondents

The humanitarian impact of the 2023 conflict in Gaza deeply affected the higher education community. A key aspect of this crisis was the forced displacement of individuals from their homes due to aerial bombardments, infrastructure collapse, and unsafe living conditions. This section analyses the displacement patterns, shelter conditions, family dynamics, and psychosocial impacts among academics and students during the war, using real-time survey data collected from 138 participants.

The geographic equilibrium was drastically altered following the onset of the war in October 2023. The relentless bombardment and large-scale urban destruction in northern and southern Gaza precipitated a massive wave of internal displacement. According to the survey, approximately 92.7% of participants were forced to leave their homes, marking a near-total disruption of residential and institutional stability. Many respondents reported undergoing multiple waves of displacement, as areas initially deemed "safe" were later subjected to renewed airstrikes or ground incursions.

The patterns of displacement revealed by the survey illustrate the severity of Gaza's humanitarian crisis. The majority of displaced respondents (44.5%) found temporary refuge in tents or shelters, open areas, or near damaged public facilities, despite overcrowding, inadequate sanitation, and poor ventilation. A further 32.8% of respondents relocated to the homes of relatives or friends in the southern governorates, primarily Khan Younis and Rafah, which initially served as perceived "safer zones''. Yet, by early 2025, these areas themselves became the focal point of new military operations, forcing many to relocate yet again. Moreover, 6.6% of the respondents moved to schools owned by the government or UNRWA, using them as shelters. These conditions posed immense challenges to maintaining academic continuity or even basic safety. A small but notable fraction (around 4%) managed to leave Gaza, often leveraging academic connections, research fellowships, or international scholarships. This limited outmigration reflects both the intensity of border restrictions and the scarcity of humanitarian evacuation pathways for Gaza's academic community.

The analysis of family composition among the displaced population showed that 75 respondents (59%) were accompanied by 6 to 10 family members, while 24 respondents (18%) were with smaller family units of 2 to 5 members. This demographic insight underscores the challenges of housing extended families in limited spaces, with implications for sanitation, food supply, and psychosocial stressors.

The shifting geographic distribution also had institutional consequences. Universities in southern Gaza, once peripheral, suddenly became central hubs of academic refuge and informal coordination, hosting displaced faculty and students from the north. In contrast, northern institutions such as the Islamic University and Al-Azhar University suffered catastrophic physical damage, resulting in the complete loss of laboratories, archives, and administrative buildings. This spatial reconfiguration of academic presence illustrates how war not only displaces individuals but also restructures the geography of education, forcing a relocation of intellectual and institutional capacity to areas of temporary stability.

Beyond physical displacement, the survey responses highlight virtual and psychological dislocation. Many participants described losing access to their academic networks, research materials, and communication infrastructure. The destruction of homes and workplaces led to the erosion of local academic communities and the fragmentation of research teams. This reality mirrors patterns observed in other conflict zones such as Syria, Yemen, and Sudan, where protracted warfare has transformed the geography of higher education into one of fragmentation, dispersion, and adaptive resilience.

Nearly 98% of the displaced respondents (n = 135) provided qualitative responses describing the adverse impact of displacement on their mental, social, academic, and professional lives. These responses are frequently cited: heightened psychological stress and anxiety due to displacement trauma, interrupted academic progression, particularly among university students, loss of professional engagement, with many academics and staff unable to continue teaching or research activities, and family disruption due to separation, crowding, or temporary loss of communication with loved ones. The convergence of these issues illustrates the compounded vulnerabilities experienced by Gaza's academic community, where displacement not only dislodged physical shelter but also dismantled institutional continuity and personal well-being.

Overall, the findings reveal a deeply disrupted academic landscape in Gaza, characterized by forced mobility, institutional destruction, and regional realignment. The displacement of such a large proportion of academics, students, and administrators has effectively reversed decades of educational development and displaced not only people but also the intellectual core of Palestinian higher education.

3.5 General effect of the war on academicians and students in higher education institutes

3.5.1 Effect on academicians

The analysis of academic engagement following the war in Gaza reveals a deeply fragmented educational landscape. Among the 28 respondents who answered the question regarding the continuity of their teaching and research duties (Figure 4), 39.3% reported that they were able to continue working remotely from within Gaza. This subgroup represents the most resilient academic actors, maintaining productivity despite infrastructural collapse, displacement, and psychological stress. An additional 17.9% indicated that they were conducting their academic responsibilities remotely from outside Gaza, reflecting either pre-existing international academic affiliations or emergency relocation. These individuals benefitted from access to stable digital infrastructure and, potentially, institutional support in host countries.

By contrast, 25% of respondents declared a complete cessation of all teaching and research activity. This group likely represents those most severely affected by the war, academics and researchers who faced direct threats to safety, lost access to workspaces, or experienced debilitating psychological trauma. A smaller segment, 7.1%, reported successful academic integration into institutions abroad. While this pathway demonstrates the possibility of academic continuity through transnational mobility, the low proportion suggests limited international absorptive capacity for displaced scholars from Gaza.

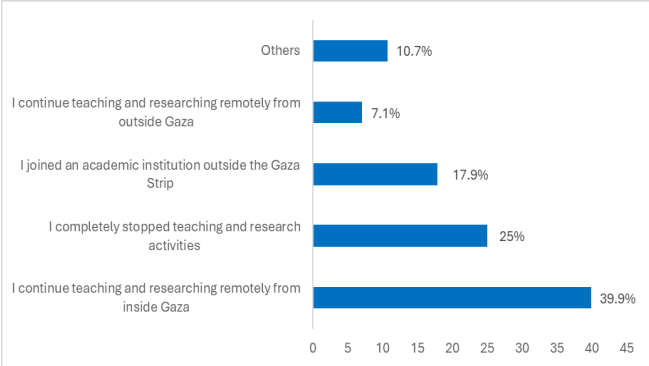


Figure 4. Responses of academicians on the effect of war on their teaching and research activities

Notably, 10.7% of respondents selected "other," indicating that their academic status did not conform to predefined categories. This result suggests that many educators and researchers have assumed informal, hybrid, or ad hoc roles not easily captured by traditional classifications such as providing community-based learning, conducting unstructured research, or performing mentorship without institutional affiliation. The prevalence of this category underscores the need to reconceptualize academic activity in emergency contexts, where roles and responsibilities often transcend formal job descriptions.

Collectively, the data reflect a spectrum of academic adaptation under duress. While a slight majority remained engaged in some form of teaching or research, the high rate of disengagement and informalization reveals systemic fragility. The findings call attention to the urgent need for flexible academic policies, emergency digital learning infrastructure, and global academic solidarity networks that can accommodate scholars navigating conflict zones.

3.5.2 Effect on university students

The current survey aimed to assess the academic conditions of university students during the ongoing war on Gaza by analyzing responses from 107 participants to a structured questionnaire. The findings indicate a spectrum of academic resilience and disruption, with a notable emphasis on continued enrolment but through diversified and often improvised modes of study, as shown in Figure 5.

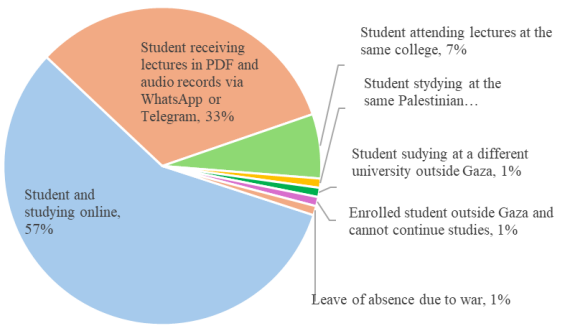


Figure 5. Responses of students on the effect of war on their teaching and research activities

The most frequently reported academic status was the continuation of studies through online learning platforms, accounting for 57% of responses. These students indicated that they were still actively enrolled and attending their lectures virtually. This outcome reflects a significant reliance on remote education as a continuity mechanism during armed conflict. It aligns with broader trends observed in conflict-affected regions, where digital learning infrastructures have been leveraged to mitigate educational disruption [35]. Online education, despite its limitations under conditions of war, including unstable internet access, electricity shortages, and digital inequality, appears to have functioned as a critical lifeline for students striving to maintain academic progress under crisis.

Additionally, 32.7% of the surveyed students reported that they were continuing their academic education through using PDF lectures or recording lectures via the internet. In addition, a small portion of students (6.5%) reported that they are continuing their studies at the same college or university. This group represents those whose institutions were either geographically removed from immediate danger zones or had maintained minimal operational capacity. Their continued in-person attendance suggests that some university campuses either avoided direct structural damage or managed to establish safe zones for educational activities. In conflict contexts, the preservation of educational spaces has been noted to carry psychological and social stability functions beyond academic development, reinforcing students' sense of normalcy and purpose [36, 37].

However, beyond these two dominant categories, the remaining responses comprising roughly 5% of the sample highlight a complex and deeply fragmented academic reality. Several students indicated that they had shifted to alternative institutions or were attending universities outside Gaza, or using another virtual method, which is often due to unreliable access to live instruction. This points to a phenomenon of academic displacement, in which students are compelled to modify or relocate their learning pathways due to the destruction of infrastructure, family displacement, or personal safety concerns. Displacement of students and faculty is a well-documented outcome of armed conflicts, often resulting in educational discontinuity, cognitive stress, and reduced academic attainment [38-41].

A smaller but critical segment (0.9%) reported that they had formally suspended or deferred their studies. This group includes individuals who explicitly stated that they were no longer enrolled due to the war or had postponed their education pending improved security conditions. The presence of such cases signals a breakdown in institutional continuity for the most vulnerable students, particularly those residing in heavily bombarded or evacuated areas. The implications of study deferral during war are extensive, potentially extending to long-term academic delay, diminished employment prospects, and psychosocial distress [42].

Overall, the survey reveals a dual narrative. On one hand, the high percentage of students maintaining academic engagement, whether online or in-person, demonstrates notable resilience in the face of adversity. On the other hand, the existence of multiple categories of disruption, ranging from temporary reliance on asynchronous resources to full educational deferral, indicates systemic fragility. The data suggest that while educational institutions in Gaza and surrounding areas have attempted to adapt to war conditions through digital transformation and institutional flexibility, these efforts have not reached all students equally. Issues such as digital infrastructure, regional safety, and displacement status critically mediate students' access to learning.

This analysis highlights the importance of tailored

educational interventions for conflict-affected students, including mobile learning technologies, psychological support services, and trans-institutional academic partnerships that allow displaced students to continue their studies with minimal loss. Further research is needed to track longitudinal academic outcomes of this population, particularly as the war persists and institutional capacity may further erode.

In addition to the above mentioned, the analysis also reveals that 43% of surveyed university students reported being compelled to work as a direct result of the war, highlighting the significant socioeconomic strain imposed by the conflict. This shift in student roles is likely driven by the collapse of household incomes, displacement, and the need to self-finance tuition and living costs amid institutional and humanitarian breakdown. While 57% of students were not forced into labor, the substantial minority facing this burden suggests a dual challenge of academic continuity and economic survival. Forced employment under such conditions risks compounding educational disruption, increasing dropout rates, and intensifying psychological stress, particularly in the absence of institutional support systems. These findings underscore the urgent need for targeted financial aid, flexible academic accommodations, and mental health services for conflict-affected student populations.

3.6 Effect of war on academic and research activities

The data from a subset of 28 respondents provides a critical view into the status of teaching and research activities among Gaza-based academics following the outbreak of war. A total of 39% of participants indicated that they continue to perform their academic duties remotely from within Gaza, while 18% reported doing so from outside the Strip, as shown in Figure 6. These two groups, comprising 57% of the sample, reflect a remarkable degree of professional perseverance despite the extreme constraints imposed by active conflict, such as displacement, destruction of facilities, loss of internet access, and psychological trauma. This resilience aligns with the observations of El-Khodary and Aboudagga [43], who found that a substantial proportion of university students and faculty adapted to war conditions by shifting to online modes of education, even as their institutions were rendered physically inaccessible. Nevertheless, the data also reveal severe disruptions in academic functioning. A significant 25% of respondents reported that they had completely stopped both teaching and research activities. This cessation likely reflects not only infrastructural devastation, such as the destruction of campuses and communication networks, but also the psychological and logistical toll of survival during war, including displacement, family loss, and uninhabitable living conditions.

According to Abusamra [5], many academic staff in Gaza were either internally displaced or forced to emigrate, contributing to a breakdown in local academic operations and a potential long-term "brain drain" that undermines future reconstruction efforts in the education sector.

An additional 7.1% of respondents reported formal relocation to other educational institutions outside Gaza. This academic migration represents both a loss and a coping mechanism: while it allows individuals to preserve their professional trajectories, it may also lead to permanent institutional fragmentation if these personnel are not reintegrated into the local academic system post-conflict. Literature on conflict-related academic displacement highlights that such transitions, although beneficial to individual survival and career continuity, often translate into structural deficits for war-torn education systems, particularly when there are no national frameworks to retain or repatriate academic talent [44].

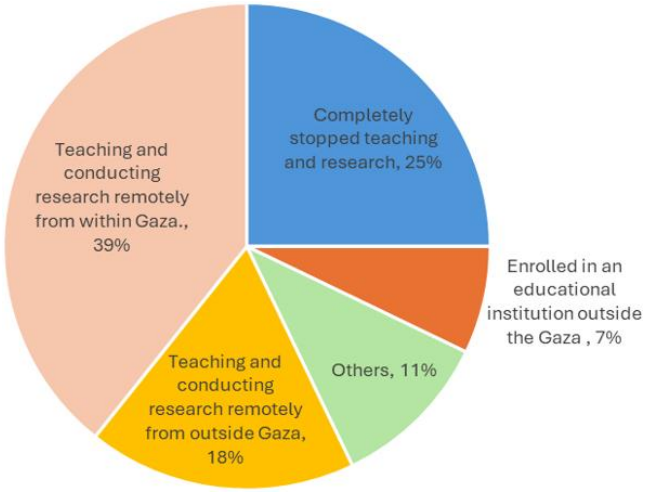


Figure 6. Responses of academicians on performing teaching and research duties during the war

Finally, 10.7% of participants selected "Other," a category likely encompassing informal arrangements such as interrupted teaching schedules, volunteer-based instruction, or unreported institutional affiliations. These ambiguous cases point to the complexity of academic work in wartime, where formal and informal roles often blur, and continuity is negotiated on a day-to-day basis.

The respondents were also asked about their research activities during the war as illustrated in Figure 7. The results show a substantial shift in research practices among academics during the war, with 75% of respondents indicating that they are now conducting their research individually. This dramatic trend toward solitary research highlights the fragmentation of institutional and collaborative academic structures caused by the conflict. The disruption of physical access to universities, the displacement of faculty, and the collapse of communication infrastructures have likely severed many of the formal and informal research networks that supported collective scholarly work prior to the war. As a result, scholars have been forced to adapt by working independently, often without the benefit of peer collaboration, mentorship, or resource-sharing.

In contrast, the others (15%) of respondents reported ongoing involvement in research groups. Of these, 11% maintained their previous collaborative arrangements, while 4% formed new research groups during the war, while 7% reported involvement in both old and new group structures. These cases demonstrate resilience and adaptability, suggesting that some scholars have successfully restructured their collaborative environments, possibly through online platforms or partnerships with institutions outside Gaza. However, these groups represent a minority, indicating that such adaptations are not widespread or universally accessible.

The sharp decline in collaborative research activity raises concerns not only about the immediate productivity of Gaza's academic community but also about the long-term capacity for innovation and scholarly development. Research collaboration is a key driver of academic quality, peer learning, and access

to international scientific discourse. Its breakdown, if prolonged, risks deepening academic isolation and slowing the intellectual recovery of the region. This underscores the urgent need for strategic interventions, such as digital research networks, funding for collaborative projects, and institutional frameworks that support academic resilience in conflict settings.

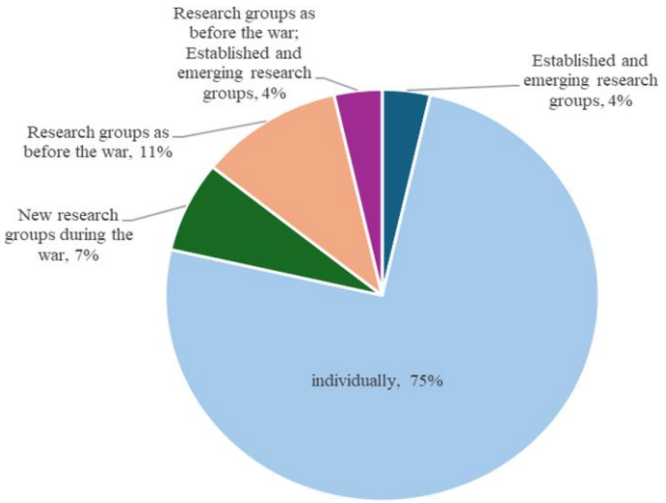


Figure 7. Responses of academicians on research practices during the war

These findings are consistent with broader literature on the effects of war on academic systems. Studies have shown that academic collaboration is among the first casualties of conflict, particularly in regions where digital infrastructure is fragile and academic mobility is restricted [5]. In such contexts, the absence of formal support structures often leaves researchers reliant on individual effort, which, while commendable, may limit research scope, depth, and impact. In addition, the respondents were asked about the new skills, research methods, or new ideas that they gained during the war. The results reveal a significant transformation in the research practices and intellectual output of academics during the war on Gaza. A majority of participants (53.6%) reported generating new ideas as a direct outcome of their scholarly engagement in this crisis context, suggesting that the war functioned as a powerful stimulus for critical thinking and conceptual innovation. Additionally, 28.6% indicated they had learned new research methods, while 17.9% acquired new tools, data, or research questions, highlighting a multidimensional enrichment of the research process. The conflict appears to have driven a re-evaluation of conventional methodologies and prompted a shift toward more contextually relevant, adaptive, and urgent research agendas.

Beyond methodological and intellectual shifts, the war also reshaped collaborative dynamics. Respondents noted the formation of new research groups, the reactivation of dormant academic networks, and both the opportunities and challenges of working in teams under pressure. This adaptive reorganization illustrates the resilience of academic communities in times of disruption, as well as their ability to mobilize knowledge production and solidarity in response to collective trauma. While a minority of participants reported difficulties in group coordination and organization, these challenges reflect the strain of working in high-risk environments rather than a failure of academic cooperation. Figure 8 summarizes the results of the respondents.

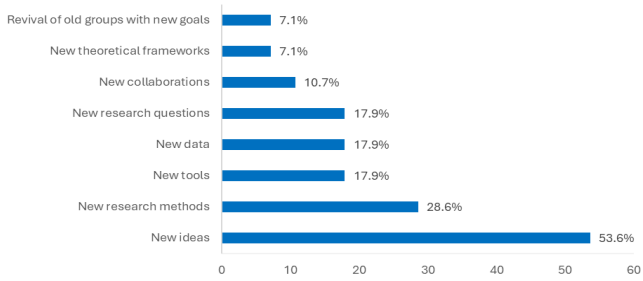


Figure 8. Responses of academicians on the new skills and tools gained during the war

Additionally, participants were asked whether they produced research by publishing journal articles or by participating in online conferences. The results offer critical insight into the extent of scholarly dissemination among academics during the war on Gaza. They show that only 35.7% of respondents were able to publish academic papers or participate in conferences, while the remaining 64.3% did not engage in either form of academic output. This pattern underscores the profound impact of conflict on the ability of researchers to share their work through formal channels.

Despite the intellectual activity that continued during the war, as indicated in other parts of the survey, the majority of academics faced significant barriers to visibility and engagement in the wider scholarly community. These obstacles likely stemmed from a combination of infrastructural damage, limited internet access, institutional closures, psychological stress, and logistical challenges in communicating or submitting work. The identical proportions across both publication and conference participation suggest that the same structural constraints affected various aspects of academic dissemination, regardless of format. This emphasizes the need for more robust support systems and accessible platforms to ensure that scholars in conflict zones are not excluded from global academic discourse.

The overall findings of the study point to a deeply disruptive impact of the war on Gaza on academic research activity. According to the final dataset, 50% of respondents reported that their research was affected to a very high or extreme degree, while another 39.3% indicated a high level of negative impact. Only a small portion, just 10.7% combined, experienced moderate or minor disruption, and no respondents reported being completely unaffected. These results offer a clear and sobering picture for the vast majority of academics; the war did not merely present challenges, and fundamentally obstructed their ability to conduct, complete, or disseminate research.

This aligns with earlier findings in the study that revealed low levels of publication and conference participation during the conflict, despite high levels of intellectual activity and the development of new ideas. The contrast between internal academic engagement and external academic output highlights the structural and psychological burdens imposed by the war, including the loss of infrastructure, limited access to communication tools, disrupted institutional support, and personal trauma.

Together, these findings reinforce the notion that while academic resilience and creativity persisted under extreme conditions, the broader research ecosystem lacked the capacity to absorb and support scholarly work during crisis. This underlines the urgent need for strategic interventions such as remote publishing platforms, emergency funding, institutional

partnerships, and psychosocial support to safeguard academic continuity in conflict-affected regions. The Gaza case thus becomes a vital reference point for understanding how wars undermine not just lives and economies, but also the production of critical knowledge.

4. THOUGHTS AND DECLARATIONS OF RESPONDENTS ON HOW THE WAR AFFECTED THEM

In extreme situations like war, the physical and mental burdens on those who remain can be particularly severe [45]. In this study, displacement caused a systemic breakdown across psychological, social, and professional areas for academics. Reports consistently describe widespread fear, increased anxiety, and a persistent sense of instability that hinder cognitive function and academic involvement. Repeated moves disrupted personal boundaries, strained family relationships, and created substantial financial burdens, including loss of privacy and control over children's environments. Academic work became nearly impossible: the lack of electricity, internet access, and essential teaching materials made research and teaching intermittent or impossible. Professional networks fragmented, scholarly communication stopped, and productivity dropped sharply. Although some academics continued fieldwork and community support efforts, these activities were undertaken under conditions of deep psychological stress and lack of resources, highlighting the extraordinary pressures they faced.

Administrators also reported widespread psychological and social burdens. Their roles, which depend on organizational stability and institutional oversight, were undermined by infrastructure deterioration and the unpredictability of displacement. Many noted significant emotional distress and a reduced capacity to support academic staff and students. As institutional systems collapsed, administrative work became mostly reactive, driven by crisis management rather than strategic planning. The cumulative effect left a lasting impact on their mental health and weakened the functional cohesion of the institutions they served. Students also faced numerous challenges, with war-related stressors greatly affecting their mental health, leading to increases in anxiety, stress, depression, and post-traumatic stress symptoms, all of which can harm academic performance [10, 46, 47].

Palestinian students experienced similar multi-layered disruptions, but with consequences that directly threatened educational continuity and developmental stability. Many faced extended interruptions in their studies, loss of academic materials, and difficulty accessing online instruction due to a lack of electricity, connectivity, or safe study environments. Psychological distress was widespread, including fear, depression, and trauma symptoms, often heightened by exposure to injury, destruction, or the death of family members. Social structures weakened as students became separated from peers and, in some cases, had to assume adult responsibilities. Economic pressures added to these challenges, causing instability within families and limiting students' ability to focus on their studies. These conditions significantly damaged academic performance, career goals, and psychosocial health.

Although academics and students experienced displacement in different institutional roles, their stories show clear similarities. Both groups reported severe psychological strain, disruptions to social networks, and almost complete collapse of academic routines due to loss of vital infrastructure. Still, notable differences exist. Academics mainly struggled with the loss of their professional identities, an inability to produce scholarly work, and the fragmentation of long-standing responsibilities. Students, on the other hand, faced threats to their educational paths and future prospects, with interruptions occurring during critical periods of personal and academic growth. While academics mourned the disruption of careers they had already built, students faced the unravelling of careers they had yet to start. These parallel but distinct types of loss reveal how displacement reshapes the academic landscape along generational and structural lines, impacting each group in unique yet interconnected ways.

5. RECOMMENDATIONS

• Develop emergency academic infrastructure

In conflict zones where physical campuses are destroyed or inaccessible, establishing resilient digital systems is essential. This includes creating cloud-based libraries, secure learning management systems, virtual science laboratories, and asynchronous learning platforms. These tools ensure that teaching, research, and collaboration can continue remotely, even under siege or displacement. Partnerships with international universities and tech companies could facilitate resource-sharing and infrastructure support.

• Implement targeted financial support mechanisms

Economic collapse during war severely undermines both institutional operations and individual academic engagement. Immediate financial assistance in the form of emergency research grants, tuition waivers, hardship stipends for students, and salary stabilization funds for staff is critical. These measures help sustain teaching, prevent dropouts, and enable the continuation of research. Long-term funding programs should also be introduced to rebuild institutional capacity and offset structural losses.

• Strengthen academic mobility and protection frameworks

Conflict-affected academics and students need structured mobility pathways that protect their careers and allow academic continuity. Governments, academic networks, and international agencies should facilitate temporary academic visas, remote affiliations, and exchange programs that offer safe and productive environments. Protection programs must also include legal aid, digital access, and credential recognition for displaced scholars and learners.

• Expand collaborative research and teaching networks

To mitigate academic isolation, transnational research networks should be developed, connecting scholars in conflict zones with global peers. These networks should prioritize inclusive, flexible collaboration models such as open-access publishing, joint research funding, and digital mentorship that allow conflict-affected researchers to contribute meaningfully despite resource limitations. This approach also promotes knowledge co-production and equitable academic representation.

• Design context-specific post-war reconstruction strategies

Higher education should be prioritized in recovery planning, alongside healthcare and housing. This includes not only rebuilding physical infrastructure but restoring digital systems, laboratories, administrative structures, and academic

archives. Reconstruction strategies must involve local academic stakeholders and be guided by the principle of "build back better," incorporating resilience, inclusivity, and international best practices.

6. CONCLUSION

The findings of this study provide robust empirical evidence of the war's profound impact on higher education and scientific research in Gaza. A staggering 92.7% of respondents experienced forced displacement, with many enduring multiple relocations due to ongoing bombardment, infrastructure collapse, or the absence of secure shelter. This widespread displacement not only disrupted personal lives but also dismantled the physical and institutional continuity of universities and research centres. Economically, 57.1% of academicians and over 51% of students reported monthly expenditures exceeding 4,000 NIS post-war a significant rise from pre-war figures, highlighting the sharp inflation and financial deterioration that exacerbated academic paralysis. In terms of academic output, only 35.7% of academicians were able to publish articles or attend academic conferences during the war, indicating a steep decline in scholarly dissemination. Similarly, 25% of faculty reported a complete cessation of teaching and research activities, while another 10.7% continued in informal or undefined roles. The data further reveal a collapse in collaborative research practices: 75% of academics reported conducting research individually, reflecting institutional fragmentation and the breakdown of team-based scholarship. Yet, amid this collapse, signs of resilience emerged. Over half of the academic respondents (53.6%) reported generating new research ideas, while 28.6% adopted new methods and 17.9% accessed new tools or data, demonstrating intellectual adaptability despite the hostile environment. Moreover, 57% of students and 39.3% of academics continued learning or teaching through online platforms, showcasing how digital adaptation became a crucial survival mechanism. These dual outcomes of severe disruption alongside innovation highlight the complex interplay between vulnerability and agency in Gaza's academic sector under siege.

Collectively, the results underscore the urgent need for international academic solidarity, investment in digital infrastructure, emergency funding, and strategic mobility frameworks to prevent the permanent erosion of higher education in conflict zones. Gaza's academic community has demonstrated remarkable resilience, but without sustained structural support, its intellectual future remains at critical risk.

Ethical statement

This study was reviewed and approved by ASU Ethical Committee with the approval number 027/2025, dated February 10, 2025. All participation was done on a voluntary basis, and all participants gave their informed consent for inclusion before they participated in the study.

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