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IMPACT OF THE 2023 WAR IN GAZA ON NON-COMMUNICABLE DISEASE SERVICES: EVIDENCE FROM HEALTHCARE FACILITIES

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ABSTRACT

Background: The 2023 war in Gaza caused major disruption to the healthcare system, affecting the delivery of essential services for patients with non-communicable diseases (NCDs), particularly diabetes, hypertension, and cardiovascular diseases. These conditions require continuous follow-up, regular monitoring, and uninterrupted access to medications. **Objective:** This study aimed to assess the impact of the 2023 war in Gaza on the accessibility, continuity, and quality of NCD services across healthcare facilities. **Methods:** A cross-sectional analytical approach was used, supported by secondary data from recent reports, peer-reviewed studies, and healthcare facility information related to the Gaza Strip. The analysis focused on healthcare facility functionality, medication availability, treatment adherence, patient access to services, and reported barriers to NCD care during and after the conflict. **Results:** The findings showed that NCD service delivery was severely affected by the war. Fewer than 20% of governmental primary healthcare clinics remained fully operational during peak conflict periods, limiting patients' access to routine care and follow-up. Medication adherence among patients with diabetes and hypertension declined by nearly 50%, mainly due to medication shortages, restricted mobility, displacement, and insecurity. Delays in treatment and follow-up contributed to poorer glycemic control, uncontrolled blood pressure, and increased risk of complications. Psychological stress, displacement, staff shortages, and damage to healthcare infrastructure further weakened continuity of care. **Conclusion:** The 2023 war in Gaza critically disrupted NCD services and increased the vulnerability of patients requiring long-term chronic disease management. Strengthening healthcare system resilience, ensuring essential medication supply, supporting primary healthcare services, and integrating NCD care into emergency response plans are urgently needed to reduce preventable morbidity and mortality in conflict-affected settings.

KEYWORDS: Gaza war, non-communicable diseases, diabetes, hypertension, primary healthcare, medication adherence, conflict, health services.

1. INTRODUCTION

The Gaza Strip has experienced prolonged political instability, armed conflict, displacement, and repeated humanitarian crises, all of which have placed severe pressure on its healthcare system. The escalation of war in October 2023 caused extensive damage to health infrastructure, disrupted medical supply chains, restricted patient mobility, and reduced the ability of healthcare facilities to provide routine and emergency services (WHO HeRAMS, 2026). While immediate trauma care often becomes the main focus during armed conflict, patients with non-communicable diseases (NCDs) remain highly vulnerable because their conditions require continuous follow-up, regular monitoring, and uninterrupted access to essential medications.

Non-communicable diseases, including diabetes mellitus, hypertension, and cardiovascular diseases, represent a major public health burden in Gaza. These conditions depend on stable primary healthcare services, laboratory testing, medication availability, and ongoing patient education. When these services are interrupted, patients are more likely to experience poor glycemic control, uncontrolled blood pressure, disease complications, avoidable hospital admissions, and increased long-term

morbidity and mortality (Aldabbour et al., 2025; Hejaz, 2025). Therefore, disruption of NCD services during war does not only affect short-term access to care but also creates long-term consequences for both patients and the health system.

During the 2023 war, healthcare facilities in Gaza faced repeated closures, severe shortages of medicines and medical supplies, staff exhaustion, and damage to infrastructure. Reports indicated that fewer than 20% of governmental primary healthcare clinics remained fully operational during peak periods of the conflict, limiting access to routine chronic disease services (WHO HeRAMS, 2026). At the patient level, medication adherence among individuals with diabetes and hypertension declined substantially, largely due to drug shortages, financial hardship, displacement, transportation barriers, and insecurity (Hejaz, 2025). In addition, psychological stress, trauma, and displacement further worsened the ability of patients to manage chronic diseases effectively (WHO, 2025).

Healthcare staff also experienced major challenges while attempting to maintain NCD services during the crisis. Many healthcare workers were themselves exposed to displacement, insecurity, psychosocial stress, and resource scarcity, while continuing to provide care under emergency conditions. These pressures reduced the capacity of facilities to maintain regular follow-up appointments, provide patient counseling, and ensure continuity of chronic disease management (Asfour et al., 2025; Abdallah et al., 2026). As a result, the war created both system-level barriers, such as facility damage and supply shortages, and patient-level barriers, such as reduced mobility, stress, and inability to obtain medications.

Understanding the impact of the 2023 war on NCD services is essential for guiding humanitarian response, protecting vulnerable patients, and strengthening health system resilience in Gaza. Evidence on service disruption can support better emergency preparedness, including medication stockpiling, mobile clinics, remote follow-up, staff support systems, and prioritization of chronic disease care during crises. Therefore, this study aims to assess the impact of the 2023 war in Gaza on the accessibility, continuity, and quality of NCD services across healthcare facilities, with particular attention to service availability, medication adherence, patient outcomes, and barriers faced by both patients and healthcare providers.

2. METHODOLOGY

2.1 Study design

This paper used a cross-sectional literature review and secondary data analysis design. The design was appropriate for summarizing available evidence on health-service functionality, access to care, medication adherence, and patient outcomes during and after the 2023 conflict.

2.2 Study setting

The review focused on healthcare facilities in the Gaza Strip, including governmental hospitals and primary healthcare centers (PHCs) in northern, central, and southern Gaza. Facilities discussed in the reviewed literature included major hospitals and selected PHC clinics that provide NCD-related care.

2.3 Data sources

Data were drawn from recent humanitarian reports, institutional reports, and peer-reviewed studies published between 2023 and 2026. The reviewed sources included WHO reports, Al-Quds University-related publications, and studies addressing NCD care, diabetes treatment, healthcare costs, health-system resilience, and service availability in Gaza.

2.4 Key variables

- Service functionality: whether PHCs and hospitals were fully functional, partially functional, or non-functional.
- Access to care: patient ability to reach facilities and attend follow-up visits.
- Medication availability and adherence: continuity of medicine supply and patient ability to take prescribed treatment.
- Patient outcomes: self-reported or documented worsening of blood pressure control, glucose control, and complications.
- Health-system barriers: infrastructure damage, staff shortages, displacement, insecurity, and supply-chain disruption.

2.5 Data analysis

Quantitative indicators were summarized using descriptive statistics, including percentages and proportions. Qualitative information from reports and studies was analyzed thematically to identify recurring barriers to NCD care, including access restrictions, medication shortages, psychosocial stress, facility damage, and loss of treatment continuity.

2.6 Ethical considerations

Because this paper relied on published reports and secondary data, no direct contact with patients or healthcare staff was conducted. All information was reported in aggregate form, and no personally identifiable data were used.

2.7 Limitations

The findings should be interpreted with caution. The use of secondary data limits causal inference, and some indicators may vary across governorates and time periods. Access restrictions during conflict may also affect the completeness and accuracy of available data. In addition, patient-reported adherence and outcomes may be influenced by recall bias.

3. RESULTS

The reviewed evidence indicates that NCD service delivery in Gaza was severely affected by the October 2023 war. The main findings are summarized below.

Domain	Main finding	Implication for NCD patients
Facility functionality	Less than 20% of governmental PHC clinics were reported to be fully operational during peak disruption.	Reduced access to routine follow-up, screening, prescription renewal, and chronic disease counselling.
Medication adherence	Adherence among diabetes and hypertension patients dropped by nearly 50%.	Higher risk of uncontrolled blood pressure, poor glycemic control, acute complications, and preventable deterioration.
Continuity of care	Follow-up visits and treatment schedules were interrupted by displacement, insecurity, and restricted mobility.	Delayed management and loss of regular monitoring for high-risk patients.
Health workforce	Staff shortages, fatigue, displacement, and psychosocial stress reduced the capacity to maintain routine services.	Lower service quality and reduced ability to provide consistent NCD care.
Infrastructure and supplies	Hospitals and clinics experienced intermittent closures, damage, and supply-chain disruption.	Reduced availability of medicines, laboratory tests, referrals, and emergency support for complications.

3.1 Service availability

Service availability declined sharply. Less than 20% of governmental PHC clinics remained fully operational, while many facilities were partially functional or non-functional. This reduced access to regular consultations, medication refills, laboratory monitoring, and early management of complications.

3.2 Medication adherence

Medication adherence among patients with diabetes and hypertension declined by nearly 50%. The most important contributing factors were medicine shortages, cost pressures, displacement, unsafe travel, and difficulty reaching functional clinics. For chronic diseases, even short interruptions in treatment can cause clinically significant deterioration.

3.3 Patient outcomes

Delayed treatment and interrupted follow-up contributed to worsening glycemic control and elevated blood pressure. Psychological stress, trauma, poor nutrition, overcrowded shelters, and displacement further compounded these outcomes. Patients with pre-existing cardiovascular disease were especially vulnerable because unstable blood pressure, stress, and limited access to care can increase the risk of serious complications.

3.4 Health-system barriers

The health system faced several simultaneous barriers: damaged infrastructure, intermittent hospital closures, staff shortages, insecurity, and disrupted supply chains. These barriers limited the ability of facilities to provide both emergency and routine chronic disease services.

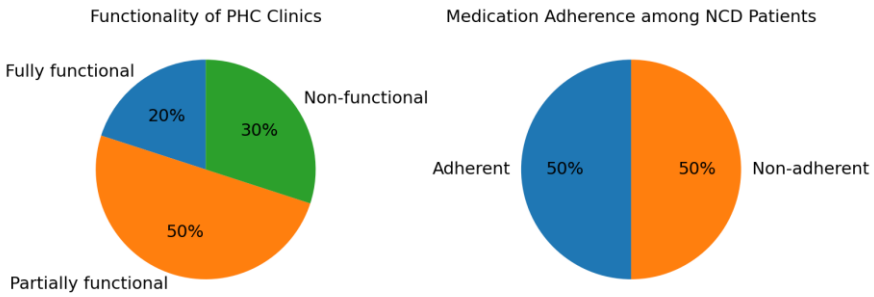

Figure 1: Summary indicators of PHC functionality and medication adherence among NCD patients during the 2023 conflict.

4. DISCUSSION

The findings of this study indicate that the 2023 war in Gaza severely disrupted the delivery of non-communicable disease (NCD) services, particularly for patients with diabetes, hypertension, and cardiovascular diseases. This disruption reflects a common pattern in humanitarian emergencies, where health systems become overwhelmed by trauma care, displacement, infrastructure damage, and shortages of essential supplies. Although emergency response often prioritizes acute injuries, NCDs require continuous care, regular follow-up, and uninterrupted access to medications. When these services are interrupted, patients are at increased risk of avoidable complications, disability, and premature mortality (Aebischer Perone et al., 2017; Jobanputra et al., 2016).

One of the key findings was the sharp decline in the functionality of primary healthcare clinics. Primary healthcare plays a central role in NCD management because it provides routine monitoring, prescription refills, health education, and early detection of complications. In conflict settings, the loss or partial functioning of primary healthcare facilities forces patients either to delay care or to seek help from overcrowded hospitals, which are often already under pressure. Previous studies have shown that maintaining primary healthcare services during humanitarian crises is essential for reducing preventable complications among patients with chronic diseases (Ruby et al., 2015; Sphere Association, 2018).

Medication adherence was also seriously affected during the war. Patients with diabetes and hypertension often depend on daily medication, regular monitoring, and stable access to healthcare providers. The reported decline in adherence can be explained by medication shortages, restricted movement, displacement, insecurity, financial hardship, and loss of regular follow-up. This finding is consistent with evidence from other humanitarian settings, where interruption of treatment for diabetes and hypertension has been associated with poor disease control and increased risk of complications such as stroke, renal disease, cardiovascular events, and diabetic emergencies (Kehlenbrink et al., 2019; Slama et al., 2017).

The findings also suggest that displacement and psychological stress worsened NCD outcomes. War-related stress can negatively affect blood pressure, blood glucose control, sleep, diet, and the ability of patients to follow treatment instructions. Displacement may also separate patients from their usual healthcare providers, medical records, pharmacies, and support networks. In this context, NCD care should not be limited to medication distribution only. It should also include psychosocial support, patient counseling, community-based follow-up, and clear referral pathways for patients at high risk of complications (World Health Organization, 2016; Aebischer Perone et al., 2017).

Healthcare workers were another critical factor in the continuity of NCD services. During armed conflict, healthcare staff often work under extreme pressure while facing personal insecurity, exhaustion, displacement, and limited resources. These conditions reduce the capacity of the health system to maintain routine chronic disease care. Humanitarian health guidelines emphasize that protecting healthcare workers, supporting service continuity, and ensuring safe access to care are essential components of an effective emergency health response (Sphere Association, 2018; World Health Organization, 2018).

The results of this study have important implications for health policy and humanitarian planning. First, NCD services should be recognized as essential services during emergencies, not as secondary or optional care. Second, emergency preparedness plans should include stockpiling of essential NCD medications, flexible medication refill systems, mobile clinics, and decentralized care points. Third, simple remote follow-up methods, such as phone-based monitoring or community health worker visits, may help maintain contact with patients when access to facilities is restricted. Finally, health information systems should be strengthened to identify high-risk patients and prioritize those who need urgent follow-up.

Overall, this study confirms that armed conflict affects health not only through direct injuries but also through indirect disruption of chronic disease care. The interruption of NCD services during the 2023 war in Gaza may contribute to long-term morbidity and mortality if continuity of care is not restored. Strengthening primary healthcare, ensuring medication availability, supporting healthcare workers, and integrating NCD care into humanitarian response plans are essential steps to protect vulnerable patients during future crises.

5. Recommendations

- Prioritize NCD medicines, insulin, antihypertensives, cardiovascular medications, and basic monitoring supplies in humanitarian aid packages.
- Develop emergency refill systems that allow patients to obtain chronic medications even when their usual clinic is closed.
- Use mobile clinics and community-based distribution points to reach displaced patients and those unable to travel safely.
- Create simple patient-tracking and remote follow-up systems for high-risk diabetes, hypertension, and cardiovascular patients.
- Support healthcare workers through staffing rotation, mental health support, and clear emergency protocols.

- Integrate NCD continuity of care into national and humanitarian emergency preparedness plans.
- Strengthen data collection during emergencies to monitor service functionality, medicine availability, adherence, and patient outcomes.

6. CONCLUSION

The 2023 war in Gaza had a serious impact on the continuity and quality of non-communicable disease (NCD) services, particularly for patients with diabetes, hypertension, and cardiovascular diseases. The disruption of primary healthcare facilities, shortages of essential medicines, restricted patient movement, displacement, and psychological stress reduced patients' ability to receive regular follow-up and maintain treatment adherence. These findings reflect a wider challenge in conflict-affected settings, where health systems are often forced to prioritize emergency trauma care while routine chronic disease services become interrupted (Spiegel et al., 2010; Demaio et al., 2013).

The results emphasize that NCD care should remain a core part of humanitarian health response during armed conflict. Chronic diseases require continuous monitoring, reliable medication supply, and early management of complications. When these elements are disrupted, patients face increased risks of uncontrolled blood pressure, poor glycemic control, cardiovascular events, disability, and preventable death. Evidence from humanitarian settings shows that displaced and conflict-affected populations often experience major barriers to chronic disease care, including medication shortages, high treatment costs, fragmented services, and difficulty reaching healthcare facilities (Doocy et al., 2015; Kehlenbrink et al., 2019).

Therefore, strengthening NCD service delivery in Gaza requires urgent and coordinated action. Emergency preparedness plans should include essential NCD medication stockpiles, protection of primary healthcare services, mobile and community-based clinics, simplified referral systems, and practical follow-up methods for patients who cannot safely reach health facilities. Supporting healthcare workers is also essential, as their ability to continue providing care during emergencies directly affects the resilience of the health system. Integrating NCD services into emergency planning can reduce the indirect health consequences of war and help protect vulnerable patients during future crises (World Health Organization, 2013; UNHCR, 2021).

REFERENCES

1. Abdallah, A., Naser, A., Mustafa, M., et al. (2026). Assessing the impact of armed conflict on healthcare delivery in Gaza: A focus on non-communicable diseases. *BMC Public Health, 26*: 412. https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-026-1412-0
2. Aebischer Perone, S., Martinez, E., du Mortier, S., Rossi, R., Pahud, M., Urbaniak, V., Chappuis, F., Hagon, O., Jacquérioz, F., & Beran, D. (2017). Non-communicable diseases in humanitarian settings: Ten essential questions. *Conflict and Health, 11:* 17. https://doi.org/10.1186/s13031-017-0119-8
3. Aldabbour, B., Barakat, Y., Elamassie, S., et al. (2025). War and chronic illness: A health center-based study of Palestinians with non-communicable diseases in Gaza. *Conflict and Health*. https://conflictandhealth.biomedcentral.com/articles/10.1186/s13031-025-00679-9
4. Asfour, B., Hejaz, H. A., & Asia, M. R. (2025). Effects of October 2023 war on healthcare costs in Gaza. *Eastern Mediterranean Health Journal, 31*(4): 254–261. https://iris.who.int/handle/10665/382094
5. Demaio, A., Jamieson, J., Horn, R., de Courten, M., & Tellier, S. (2013). Non-communicable diseases in emergencies: A call to action. *PLOS Currents Disasters, 5*.
6. Doocy, S., Lyles, E., Akhu-Zaheya, L., Burton, A., & Burnham, G. (2015). Health service access and utilization among Syrian refugees in Jordan. *International Journal for Equity in Health, 15*: 108.
7. Hejaz, H. A. (2025). Effects of the October 2023 war on diabetes treatment and medication adherence in Gaza. *Eastern Mediterranean Health Journal, 31*(4): 268–273. https://iris.who.int/handle/10665/382092
8. Jobanputra, K., Boulle, P., Roberts, B., & Perel, P. (2016). Three steps to improve management of oncommunicable diseases in humanitarian crises. *PLOS Medicine, 13*(11): e1002180. https://doi.org/10.1371/journal.pmed.1002180
9. Kehlenbrink, S., Smith, J., Ansbro, É., Fuhr, D. C., Cheung, A., Ratnayake, R., & Boulle, P. (2019). The burden of diabetes and use of diabetes care in humanitarian crises in low-income and middle-income countries. *The Lancet Diabetes & Endocrinology, 7*(8): 638–647.
10. Kehlenbrink, S., Smith, J., Ansbro, É., Fuhr, D. C., Cheung, A., Ratnayake, R., & Boulle, P. (2019). The burden of diabetes and use of diabetes care in humanitarian crises in low-income and middle-income countries. *The Lancet Diabetes & Endocrinology, 7*(8): 638–647.
11. Ruby, A., Knight, A., Perel, P., Blanchet, K., & Roberts, B. (2015). The effectiveness of interventions for non-communicable diseases in humanitarian crises: A systematic review. *PLOS ONE, 10*(9): e0138303. https://doi.org/10.1371/journal.pone.0138303
12. Slama, S., Kim, H. J., Roglic, G., Boulle, P., Hering, H., Varghese, C., Rasheed, S., & Tonelli, M. (2017). Care of non-communicable diseases in emergencies. *The Lancet, 389*(10066): 326–330.
13. Sphere Association. (2018). *The Sphere Handbook: Humanitarian Charter and Minimum Standards in Humanitarian Response* (4th ed.). Sphere Association. https://spherestandards.org/handbook/

14. Spiegel, P. B., Checchi, F., Colombo, S., & Paik, E. (2010). Health-care needs of people affected by conflict: Future trends and changing frameworks. *The Lancet*, *375*(9711): 341–345.
15. UNHCR. (2021). *Operational guidelines on the prevention and control of noncommunicable diseases in humanitarian settings*. United Nations High Commissioner for Refugees.
16. World Health Organization. (2013). *Global action plan for the prevention and control of noncommunicable diseases 2013–2020*. World Health Organization.
17. World Health Organization. (2016). *Noncommunicable diseases in emergencies*. World Health Organization.
18. World Health Organization. (2018). *Noncommunicable diseases country profiles 2018*. World Health Organization.
19. World Health Organization. (2025). Mental health and healthcare system resilience in conflict-affected Gaza. https://www.who.int/en/health-topics/mental-health
20. World Health Organization. (2026). *Health Resources Availability Mapping System (HeRAMS) report: Gaza*. https://www.who.int/publications/i/item/9789240063826