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Establishing a multidisciplinary pain clinic in Gaza: navigating humanitarian, coordination, and collaborative challenges in an active conflict area

Ristiawan Muji Laksono,[1] Mohammad Kuntadi Syamsul Hidayat,[2] Nabil Ahmad Alastal[3]
[1]Department of Anesthesiology and Intensive Therapy, Faculty of Medicine, Universitas Brawijaya/Dr.Saiful Anwar General Hospital, Malang, Indonesia: [2]Faculty of Medicine, Universitas Brawijaya, Malang, Indonesia; [3]Nasser Medical Complex, Khan Younis, Gaza, Palestine

Correspondence: Ristiawan Muji Laksono, Department of Anesthesiology and Intensive Therapy, Faculty of Medicine, Universitas Brawijaya/ Dr.Saiful Anwar General Hospital, Malang, Indonesia, E-mail: ristiawanm@ub.ac.id

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Abstract

The prolonged humanitarian crisis in Gaza has overwhelmed hospital capacity, accompanied by the collapse of health infrastructure, severe physical exhaustion and starvation among local healthcare workers, and a total blockade restricting humanitarian access. Coordinating international Emergency Medical Teams (EMTs) in an active conflict zone poses substantial logistical, ethical, and cross-cultural challenges. To document the establishment process, humanitarian coordination challenges, and collaborative strategies of a Multidisciplinary Pain Clinic (MPC) initiated by the BSMI–Universitas Brawijaya EMT in Gaza, and to evaluate its clinical benefits for war-related pain and torture-associated conditions, with a focus on quality of life and functional recovery. A mixed descriptive approach was employed, incorporating systematic participatory observation, documentation of EMT coordination with local healthcare providers, field-based ethical analysis, and structured interprofessional reflection. The MPC integrated international specialists and local medical personnel operating in field tents under extreme resource constraints and persistent security threats. The MPC successfully implemented adaptive multimodal pain management strategies despite severe logistical disruptions caused by the blockade, ethical challenges related to scarce resource allocation, cross-cultural communication barriers, and widespread trauma among local healthcare workers. Clinical benefits included improved chronic pain control, enhanced mobility, and reduced psychological distress among war survivors and victims of detention-related torture. Key

enabling strategies included on-site nerve block training to support sustainable local capacity, real-time adaptation of protocols to available resources, and culturally sensitive, trust-based collaboration. This experience demonstrates that effective EMT deployment in conflict settings requires operational flexibility, ethical sensitivity, and strong partnerships with local providers. Multidisciplinary pain clinics play a critical rehabilitative and dignity-restoring role for war victims, contributing meaningfully to quality-of-life improvement amid complex humanitarian crises.

Introduction

The protracted armed conflict in the Gaza Strip since October 2023 has triggered one of the most complex humanitarian crises in contemporary history, producing profound, destructive impacts on health infrastructure and the medical system's ability to function.[1,2] High-intensity military assaults in densely populated areas have not only resulted in large-scale casualties but have also devastated a health system that was already fragile due to the prolonged blockade.[1] This fragmentation of services and collapse of capacity have created multi-layered challenges for the international humanitarian health response, particularly in the deployment of Emergency Medical Teams (EMTs) that must operate amid extreme security threats, severe shortages of vital logistics, and disrupted coordination with local health structures undergoing systemic collapse.[3,4]

The health crisis in Gaza has escalated to unprecedented levels, *i.e.*, Al-Shifa hospital reports >600% overload of intended capacity.[5] A health system already burdened by more than 15 years of blockade is now operating in a state of partial collapse, marked by critical shortages of specialist medical personnel, essential medicines, surgical equipment, and basic energy supplies for medical operations.[6,7] Within this context, the humanitarian health response faces operational barriers far exceeding the complexity of conventional humanitarian missions, necessitating strategic adaptation in deployment models, cross-stakeholder coordination mechanisms, and sustainability-oriented local capacity building.[8]

Stanski *et al*.[9] assert that humanitarian health responses in urban conflict zones possess fundamentally distinct challenges compared to other emergency settings, including geographic fragmentation of services, chronic disruptions in supply chains, mobility restrictions for civilian populations, and high security risks for medical personnel. The dynamics of modern urban warfare generate complex injury patterns such as multiple trauma, extensive burns, and blast injuries that require an integrated multidisciplinary approach.[10] Ferreira and Correia[11] further highlight that surgical frontiers in war zones are shaped by profound ethical dilemmas, in which clinical decision-

making must weigh extreme resource limitations, team security risks, and the equitable distribution of assistance amid a humanitarian crisis.

Efforts to coordinate EMT operations in Gaza are further hampered by a total blockade that restricts the entry of medical aid, creating logistical bottlenecks that disrupt the flow of medical supplies, specialized equipment, and rotation of international medical staff.[6] Levi *et al*.[12] report that hospitals in Gaza's border regions faced an acute crisis within the first 24 hours of escalating conflict, as the surge of trauma patients exceeded triage and intensive care capacity. This situation underscores the need for EMT deployment strategies that extend beyond acute trauma care to strengthening sustained services for chronic conditions increasingly neglected during conflict, particularly pain management, which is often positioned as a secondary priority despite its critical impact on patient recovery.

In the broader scope of global health emergencies, capacity-building approaches based on virtual training and remote coordination have demonstrated significant effectiveness in strengthening local medical capabilities in conflict zones.[13] D'Andrea *et al*.[13] document the success of virtual training models in enhancing trauma management competencies in Ukraine and Sudan, emphasizing the urgency of continuous and adaptive knowledge transfer. Kwang *et al*.[14] stress that the effectiveness of emergency response strongly depends on close collaboration between local health authorities and community leaders, who often remain resilient even as formal health structures collapse.

The experience of the BSMI mission in Gaza, as reported by Satiadharmanto *et al*.,[15] affirms that global health outreach in conflict zones requires a holistic approach that integrates clinical excellence, cultural sensitivity, an understanding of the sociopolitical context, and a commitment to sustainable community impact. The presence of international medical teams cannot be viewed merely as temporary clinical interventions; rather, it must be designed as a strategic effort to strengthen local health systems, restore the confidence of health workers suffering prolonged trauma, and leave a legacy of enhanced capacity beyond the mission's duration.[15]

Pain management in armed conflict represents an essential yet often overlooked dimension. Black and McManus[16] highlight that pain management in modern combat operations faces challenges such as limited access to opioid analgesics, difficulty in conducting intensive monitoring in the field, and the need for protocols applicable to non-specialist personnel. In Gaza, where chronic post-traumatic pain is highly prevalent and the number of pain specialists severely limited, establishing a multidisciplinary pain clinic constitutes a strategic intervention that not only alleviates individual suffering but also strengthens local capacity in a field historically under-served.

From an operational perspective, humanitarian deployment to conflict zones requires flexible and comprehensive logistical risk-mitigation strategies. Malhouni and Mabrouki[18] show that successful logistics management in the Democratic Republic of the Congo and Central Africa relies on route

diversification, pre-positioning of supplies, and strong local networks to support last-mile delivery amid fluctuating security conditions. These lessons are highly relevant to Gaza, which faces extreme logistical chokepoints due to the blockade.

Coyne *et al*.[3] emphasize that the success of EMT deployment in Gaza depends on seamless coordination between international teams, local health facilities, and adaptive referral mechanisms capable of responding to shifting security conditions. Effective models must integrate surge capacity for acute trauma while simultaneously strengthening chronic services such as pain management. Hadlandsmyth *et al*.[17] show that even in stable settings, the sustainability of pain clinics faces accessibility barriers, making mobile, adaptive, and locally integrated pain-clinic models highly relevant for Gaza.

Ethical dimensions of healthcare in armed conflict similarly demand serious attention. Gross notes that medical personnel face tensions between medical neutrality and the political realities surrounding humanitarian aid, between optimizing individual outcomes and maximizing population-level utility under scarce resources, and in allocating high-resource interventions amid poor prognoses. In Gaza, each clinical decision carries significant ethical implications, requiring careful navigation of principles of autonomy, beneficence, and justice.[18]

Gooding *et al.*[19] underscore the necessity of strengthening partnerships and cross-context knowledge-sharing mechanisms to improve emergency preparedness. In parallel, Migdad *et al*.[20] demonstrate that systemic barriers in Gaza's aid distribution demand logistical innovations, including local procurement, multi-site pre-positioning, and collaboration with community networks.

From a systems perspective, Bogale *et al*.[21] assert that strengthening health systems in conflict-affected countries must go beyond technical interventions and incorporate improvements in governance, financing, and community engagement. Al-Nabit adds that the humanitarian space in Gaza faces extreme pressures, requiring EMT operations to navigate political dynamics carefully in order to maintain neutrality, impartiality, and independence. Barbar calls for decolonized humanitarian practices through recognition of local agency and equitable power relations.

In the specific domain of multidisciplinary pain management, Butska *et al.*[22] show that knowledge and attitude gaps among health workers regarding comprehensive rehabilitation approaches remain substantial, particularly in settings with limited exposure. These findings reinforce the importance of capacity-building components in the deployment of multidisciplinary pain clinics in Gaza, including knowledge transfer on multimodal pain management, nerve block techniques, and rehabilitative approaches that can contribute to long-term outcomes.

Against this complex backdrop, this study aims to comprehensively document the dynamics of establishment, humanitarian coordination challenges, collaboration strategies, and clinical outcomes

of the Multidisciplinary Pain Clinic initiated by the Bulan Sabit Merah Indonesia (BMSI)–Universitas Brawijaya Emergency Medical Team (EMT) in Gaza. This systematic documentation is expected to enrich the body of knowledge on EMT deployment in active conflict zones, best practices for coordinating with traumatized local health systems, ethical dilemmas in resource-limited settings, and sustainable capacity-transfer models for pain management in humanitarian contexts. This study also highlights the critical role of pain clinics for war victims and survivors of torture, positioning pain relief as an integral component of restoring dignity and fulfilling human rights within humanitarian crises.

Materials and Methods

This study is a descriptive observational investigation employing a mixed-methods approach aimed at characterizing the establishment process, operationalization, and clinical outcomes of the Multidisciplinary Pain Clinic implemented during the humanitarian mission of the BMSI–Universitas Brawijaya EMT in Gaza.

The study was conducted during the deployment period of July–August 2025 in an emergency tent-based medical facility located within the compound of one of the remaining functional hospitals in southern Gaza. The site was selected based on coordination with local health authorities, accessibility for the affected population, and security considerations within the active conflict zone. Operational conditions of the clinic unfolded under extreme constraints due to the total blockade, extensive damage to health infrastructure, patient surges exceeding more than twice the remaining hospitals' normal capacity, limited electricity (2–4 hours per day), shortages of clean water affecting sterilization standards, scarcity of strong analgesics including opioids, and persistent security threats. These circumstances influenced all stages of implementation, referral pathways, and the smooth delivery of pain-management interventions.

The study subjects consisted of all patients who received pain-management services during the clinic's operational period. Data were collected prospectively and included patient demographic characteristics, pain diagnoses (etiology, duration, characteristics), types of interventions provided, pre- and post-intervention pain assessments using the Numeric Rating Scale (NRS), functional changes, and adverse events. Interventions comprised pharmacological therapy, nerve blocks depending on the availability of equipment and medications, and non-pharmacological modalities such as physiotherapy and pain-management education. All interventions were delivered by anesthesiology–pain specialists, trauma surgeons, pain nurses, and physiotherapists within the EMT.

Process-related data were gathered through participatory observation, daily logbooks, clinical activity documentation, records of coordination with local medical personnel, and documentation of operational challenges encountered during routine service delivery. Semi-structured interviews were conducted with local healthcare workers and selected patients to explore experiences, barriers, and perceptions regarding the clinic's effectiveness. Interviews were conducted with the assistance of medical interpreters, recorded in narrative form, and thematically analyzed to identify key patterns. The study also incorporated team reflections documented through daily and weekly debriefing sessions to evaluate internal dynamics, decision-making processes in ethically challenging situations, and strategies for adapting to resource limitations and shifting security conditions. All data were synthesized descriptively using distribution tables, narrative summaries, and thematic analysis to provide a comprehensive depiction of clinic dynamics, humanitarian coordination processes, and patient clinical outcomes. Inferential statistical testing was not conducted because the study's objective was to describe the characteristics, processes, and contextual aspects of clinic implementation in a humanitarian disaster setting.

Result and Discussion

During the Bulan Sabit Merah Indonesia (BMSI)–Universitas Brawijaya humanitarian mission in Gaza in July 2025, the Multidisciplinary Pain Clinic (MPC) was successfully established despite the complex conditions of an active conflict zone, which posed multilayered humanitarian challenges. Field experiences demonstrated that establishing a pain clinic in a war setting requires dynamic navigation across three critical dimensions: coordination among international Emergency Medical Teams (EMTs), collaboration with local health workers experiencing prolonged psychological and physical trauma, and adaptation of clinical protocols to the extreme resource limitations caused by the total blockade imposed by Israel.

BSMI-Universitas Brawijaya Emergency Medical Team (EMT)

BSMI–Universitas Brawijaya Emergency Medical Team (EMT) is a non-profit humanitarian collaboration dedicated to promoting human health, particularly in emergency and disaster settings. The team was established through a partnership between the non-governmental organization BSMI and the academic institution Universitas Brawijaya, Indonesia. The team comprises six medical specialties, including anesthesiology and pain medicine, orthopedic surgery, ophthalmology,

dermatology and venereology, obstetrics and gynecology, and wound care. The activities of this EMT are funded through collaborative support from BSMI and Universitas Brawijaya.

Implementation of an adaptive multimodal pain-management protocol

The pain-management protocol adopted in the Gaza MPC utilized an adaptive multimodal approach adjusted to real-time resource availability. Unlike conventional pain-clinic settings, the team operated under conditions where hospital capacity increased significantly, most facilities were destroyed, essential medications were scarce, and local health workers were functioning under extreme exhaustion and food insecurity.[17] Within this context, nerve-block techniques via regional anesthesia emerged as the principal modality, aligning with the findings of Black and McManus[16], who emphasize that pain management in combat zones requires techniques that are efficient, rapid, and minimally dependent on complex infrastructure.

During the mission, the BSMI–Universitas Brawijaya Emergency Medical Team (EMT) worked in close collaboration with local medical personnel at Nasser Medical Complex, Khan Younis, Gaza Strip (Southern Gaza). Within the pain management division, the team collaborated with five local healthcare professionals, comprising one neurologist, three anesthesiologists with subspecialty training in pain medicine, and one nurse. Despite limited resources, this multidisciplinary team played a significant role in delivering pain management services.

We receive patients with pain who were referred from the emergency department, the neurology unit, and the orthopedics department. Over the course of the mission, more than 70 patients presenting with pain-related conditions were documented. The most frequently encountered pain syndromes were low back, knee, shoulder, and stump pain. The majority of these conditions were attributable to trauma and physical injury related to armed conflict. Several interventions were performed, including peripheral and regional nerve blocks and dextrose prolotherapy for regenerative therapy (Figure 1). Our team also performs structured pain management training for local physicians (Figure 2).

Training in nerve-block techniques for local medical personnel became a key strategy for sustainable capacity transfer. The team utilized two portable ultrasound machines and hundreds of spinal needles to conduct hands-on demonstrations of various peripheral nerve-block techniques, including axillary blocks for upper-extremity trauma, femoral nerve blocks for lower-limb injuries, and fascia iliaca compartment blocks for femur and pelvic fractures. This hands-on training approach proved effective in improving the confidence and technical skills of local physicians, consistent with the adaptive training principles described by D'Andrea et al[13]. in their work on strengthening health capacity in conflict settings through virtual emergency medical training. Although virtual modalities were not

used in the Gaza field environment, the expert-supervised practical learning approach demonstrated conceptual alignment with resource-limited knowledge-transfer models.

Protocol adaptations were performed in real-time based on the availability of local anesthetic agents. At Nasser Medical Complex, Khan Younis, Gaza Strip, the availability of anesthetic agents, particularly those used for pain management, was severely limited. The pharmacological resources were largely restricted to local anesthetics and morphine, while other analgesic and anesthetic medications were scarce and primarily dependent on supplies aligned with the World Health Organization (WHO) essential medicines framework. During critical shortages of lidocaine and bupivacaine, the team modified dosing strategies and drug combinations to maximize analgesic duration while using minimal volumes.[18,20] This strategy enabled continued delivery of effective pain management despite severe supply constraints, reflecting the high degree of operational flexibility characteristic of humanitarian responses in conflict zones, as highlighted by Malhouni and Mabrouki[18] in their analysis of logistical risk mitigation in conflict areas.

Humanitarian coordination challenges and EMT collaboration

EMT coordination in Gaza faced multilayered complexities far beyond technical clinical challenges. Logistical disruption caused by the total blockade created systemic bottlenecks in the medical supply chain, with humanitarian aid frequently held at borders for extended periods or denied entry altogether.[21,23] This forced teams to operate under a "make do with what's available" principle, where each clinical decision required balancing optimal standards with the realities of severely constrained resources. These experiences resonate with the findings of Migdad *et al*., who show that humanitarian aid delivery during the Gaza conflict is hindered by deliberate structural barriers rather than purely operational constraints.[20]

In terms of inter-EMT coordination, the BSMI–Universitas Brawijaya team adopted a horizontal collaboration model with other humanitarian organizations operating in Gaza, including Medical Aid for Palestinians (MAP), Médecins Sans Frontières (MSF), and medical teams from Arab countries. This coordination model enabled real-time sharing of information on medical supply availability, hospital bed capacity, and prevailing injury patterns, thereby enhancing resource allocation efficiency. This approach aligns with the recommendations of Gooding *et al*., who underscore the importance of strengthening partnerships and coordination to enhance health-system preparedness and emergency response.[19]

The ethical dilemmas of allocating extremely limited resources constituted daily moral challenges. With patient demand for pain interventions far exceeding team capacity, triage decisions had to be made based on utilitarian principles, providing the greatest benefit to the greatest number while still

respecting the dignity of each individual patient. Gross identifies that medical care for civilians during armed conflict presents fundamental ethical challenges related to resource allocation, informed consent in emergency contexts, and the protection of medical personnel.[24] The team implemented transparent triage protocols communicated clearly to local health workers and patient families to build collective understanding of the objective constraints faced.

Cross-language and cross-cultural communication barriers further complicated coordination. Although some team members had basic proficiency in Arabic, technical medical communication often required interpretation through local physicians fluent in English. This not only prolonged clinical consultations but also introduced risks of misinterpretation. The team addressed these challenges by developing visual protocols using anatomical diagrams, procedural demonstration videos, and illustrated checklists for informed consent, representing creative adaptations essential to multicultural humanitarian response environments.

Collaboration with local medical personnel and trust-building

Building trust with local medical personnel experiencing prolonged trauma represents the most sensitive and critical dimension of the entire mission. Physicians and nurses in Gaza have worked under extreme conditions for nearly two years of intense conflict, witnessing mass-casualty events, the deaths of patients, the loss of colleagues, and, in many cases, the deaths of their own family members. Many exhibit symptoms of emotional exhaustion, moral injury, and untreated Post-Traumatic Stress Disorder (PTSD). Within this context, the presence of an international EMT can be perceived ambivalently as urgently needed assistance, yet simultaneously as a reminder of the structural powerlessness they face.

The BSMI–Universitas Brawijaya team adopted a culturally empathic approach that respected the complex humanitarian landscape through several concrete strategies. First, the team consistently emphasized that they were not “foreign saviors” but solidarity partners who came to learn as well as share skills. This narrative was communicated in every interaction, fostering a horizontal rather than hierarchical dynamic. Second, local physicians were actively involved in all clinical decision-making, with explicit recognition of their expertise regarding the local context and dominant disease patterns. Third, the nerve block training program was designed not as a unidirectional knowledge transfer but as an interactive workshop where local physicians could ask questions, practice techniques under supervision, and provide feedback on necessary adaptations for Gaza’s unique constraints.

This collaborative approach resonates with the findings of Kwang *et al*.,[14] who highlight the urgency of collaboration between local health authorities and community leaders in responding to health

emergencies in low- and middle-income countries. Although Gaza is not an independent state, the principles of respecting local leadership and strengthening internal capacities remain highly relevant. Similarly, Stanski *et al*.[9] underscores that effective humanitarian health responses in urban conflict zones require a deep understanding of local power dynamics, existing social networks, and community trust structures.

The outcomes of this approach were evident in the high level of active participation of local physicians in the nerve block training, with more than 20 physicians joining intensive workshops and reporting improved confidence in performing the procedures independently. Some local physicians even began training colleagues who were unable to attend formal sessions, generating a sustainable cascade of knowledge transfer. This phenomenon illustrates that investing in relational trust-building is not only ethically imperative but also strategically essential for ensuring program sustainability.

Clinical benefits for war-injured patients and survivors of physical violence

Significant clinical benefits were observed among two primary patient populations: those with acute war-related injuries and survivors of physical violence during detention. In the first group, nerve block techniques enabled emergency orthopedic procedures to be conducted without general anesthesia, an essential adaptation given the scarcity of induction agents and the limited availability of ventilators. Patients with femur fractures from blasts, extremity tissue avulsions, and gunshot wounds underwent debridement, fracture reduction, and external fixation using combinations of femoral and sciatic nerve blocks, achieving adequate postoperative pain control with minimal systemic side effects.

In conflict-zone surgical settings, Ferreira and Correia emphasize that regional anesthesia offers major advantages, including better hemodynamic stability, faster recovery, and reduced risk of pulmonary complications, factors that are critical when postoperative intensive care capacity is severely limited.[11] The team's experience in Gaza aligns with these findings: patients who received nerve blocks for major orthopedic procedures demonstrated faster mobilization and reduced postoperative opioid requirements compared to historical records of patients treated with general anesthesia prior to the intensified blockade.

Among survivors of physical violence during detention, the Multidisciplinary Pain Clinic's services extended beyond physical pain management. Many patients in this group suffered from complex chronic pain syndromes involving intertwined neuropathic, musculoskeletal, and psychological components. Torture survivors frequently present with generalized hyperalgesia and allodynia where normally non-painful stimuli are perceived as intensely painful as manifestations of central sensitization. A multimodal approach combining nerve blocks for focal pain "hot spots," simple

physiotherapy techniques feasible for self-practice, and grounding techniques for PTSD symptom management proved effective in reducing pain intensity and improving daily functioning.
Butska *et al*.[22] highlight that medical professionals must recognize the importance of multidisciplinary rehabilitation approaches in managing chronic pain syndromes, integrating pharmacological modalities, interventional techniques, physiotherapy, and psychosocial support. In the Gaza context where access to formal psychological therapy is extremely limited the team trained local nurses in basic trauma-informed care techniques and educated patients about the relationship between psychological trauma and pain perception. This approach helped patients contextualize their pain within a broader biopsychosocial framework, reduce stigma surrounding chronic pain complaints, and empower them with self-management strategies that could continue after the EMT's departure.

Restoration of patient dignity and strengthening of the local health system

One of the most profound impacts of the Gaza Multidisciplinary Pain Clinic was the restoration of patient dignity amid systemic dehumanization caused by prolonged war. With the collapse of the health system and civilians often deprived of adequate pain treatment even for severe traumatic injuries, the provision of comprehensive pain management conveyed a powerful message: their suffering was seen, valued, and deserving of professional medical attention. Many patients shared that knowing physicians had travelled from afar specifically to help alleviate their pain had a meaningful psychological impact, not only reducing physical pain perception but also mitigating feelings of isolation and abandonment by the outside world.
Barbar argues that ethical humanitarian health responses in contemporary conflict settings must go beyond technical service provision and actively contribute to restoring the dignity and agency of affected communities.[25] The clinic's approach, engaging patients in decision-making regarding their pain management options, educating them about their medical conditions, and facilitating their active participation in the recovery process, embodied this principle.
Strengthening the local health system occurred through multiple pathways. First, nerve block training produced a cadre of local physicians competent in these techniques, ensuring continued practice after the international EMTs' departure. The team left behind two portable ultrasound units and supplies of needles to support this continuity. Second, bilingual (Arabic–English) protocol documentation, complete with anatomical diagrams and demonstration videos, provided ongoing references accessible to future generations of practitioners. Third, the establishment of pain management protocols within the Gaza context created a precedent that comprehensive pain management is an essential component of healthcare, not a luxury limited to peacetime settings.

Bogale *et al.*, in their systematic review of health system strengthening in fragile and conflict-affected states, note that the most effective interventions integrate direct service provision with capacity building emphasizing not only formal training but also on-the-job mentoring and the development of local support systems.[21] The Gaza Pain Clinic model reflects these principles: each patient consultation became a learning opportunity for local physicians, and each nerve block procedure was conducted with real-time educational narration explaining the clinical reasoning behind every technical decision.

The Gaza Multidisciplinary Pain Clinic (KNM) experience crystallized several critical lessons regarding the essential characteristics of an effective Emergency Medical Team (EMT) operating in an active conflict zone. First, a high degree of operational flexibility is not merely desirable but absolutely essential. Rigid protocols and assumptions about standard resource availability must be abandoned from the outset. Teams must be capable of rapid pivoting in response to shifting security dynamics, fluctuating availability of medical supplies, and emerging, unforeseen needs. Levi *et al*.,[12] in their evaluation of emergency responses in hospitals near the Gaza border during the first 24 hours of conflict escalation, found that the ability to rapidly adapt to surge capacity and reallocate resources was a decisive determinant of patient outcomes.

Second, humanitarian ethical sensitivity must serve as the guiding compass in all decision-making. This includes not only adherence to the classical bioethical principles of autonomy, beneficence, non-maleficence, and justice, but also a deep understanding of humanitarian ethics specific to conflict settings such as the principle of impartiality in providing care irrespective of patients' political affiliations or social status; the principle of independence from the agendas of external political actors; and a commitment to do no harm in its broader sense, which encompasses the social and political implications of medical interventions.

Third, trust-based collaboration with local medical personnel requires substantial investment of time and emotional labor, but it is a prerequisite for sustainable impact. EMT teams that enter with a "we know best" mindset and implement interventions without genuine consultation with local stakeholders not only fail to create long-term change but may also inadvertently disrupt existing healthcare structures and service networks. Satiadharmanto *et al*.,[15] in their study of BSMI's humanitarian medical missions in Gaza, emphasize that effective global health outreach must be rooted in genuine solidarity and a commitment to community empowerment rather than charity models that reinforce dependency.

Fourth, a commitment to sustainable capacity transfer must be established as an explicit objective from the earliest phases of mission planning, not treated as an afterthought. Every intervention must be designed around the central question: "How can this service continue once we depart?" The KNM

model, which emphasized intensive training, protocol documentation, and leaving behind essential equipment, reflects this commitment. Coyne *et al.*,[3] in their analysis of effective EMT deployment in Gaza for trauma care and rapid response, identify sustainability as a core principle in the design of humanitarian medical interventions.

The urgency of pain clinics as rehabilitative pathways in conflict zones

Findings from the Gaza KNM implementation underscore the pressing need to integrate pain clinics as a standard component of humanitarian health responses in conflict settings. Too often, pain management is treated as a secondary concern compared with life-saving interventions, creating a false dichotomy between saving lives and improving quality of life. Yet for survivors of conflict-related injuries whose numbers often far exceed fatalities, post-injury quality of life is profoundly shaped by whether they receive comprehensive pain management.

Hadlandsmyth *et al.*,[17] in their study of continuity of pain clinic care among veteran populations, demonstrated that sustained access to specialist pain management services significantly improves long-term functional outcomes, including return-to-work capacity, engagement in social activities, and overall quality of life. These findings are highly relevant to the Gaza context, where thousands of survivors with chronic pain conditions require access to pain services that are currently severely limited or entirely unavailable.

For survivors of violence and torture, pain clinics serve an additional rehabilitative dimension by restoring dignity and validating the suffering they have endured. Torture survivors frequently experience invalidation within medical systems that fail to grasp the complexity of their chronic pain syndromes or remain skeptical of their reports. Providing comprehensive pain care combining physical interventions with trauma-informed approaches conveys the message that their experiences are valid, their suffering is real, and they deserve respectful, dignified, and comprehensive care.

The Gaza KNM model demonstrates that establishing a pain clinic in a conflict zone is feasible even amid extreme constraints, and that the resulting clinical and humanitarian benefits justify the required investment. These findings have significant implications for the design of global humanitarian health responses in other conflict-affected regions, suggesting that pain management expertise should be a standard component of EMT composition, and that capacity-building protocols in pain management must be integrated into humanitarian medical missions from the earliest planning phases.

Conclusions

The experience of the Multidisciplinary Pain Clinic in Gaza demonstrates that effective Emergency Medical Team (EMT) coordination in active conflict zones relies on four fundamental pillars: high operational flexibility in the face of logistical disruptions and resource scarcity; humanitarian ethical sensitivity to navigate dilemmas surrounding limited resource allocation; trust-based collaboration with local medical personnel who have endured prolonged trauma; and an explicit commitment to sustainable capacity transfer through intensive training and detailed protocol documentation. This model affirms that pain clinics are not merely ancillary medical services but essential components of humanitarian response, functioning simultaneously as rehabilitative platforms and mechanisms for restoring dignity among war victims and survivors of violence in detention. The implementation of adaptive multimodal pain management protocols has proven effective in improving chronic pain control, functional mobility, and overall quality of life even under extreme conditions. These critical lessons carry strategic implications for the design of global humanitarian medical missions in other conflict-affected regions, underscoring the urgency of integrating pain management expertise as a standard element of EMT composition and empowering local capacity as a prerequisite for sustaining long-term humanitarian impact amid protracted crises.

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Figure 1. Several procedures during our humanitarian mission

Figure 2. Pain management training for local physicians

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AI-assisted technology disclosure: AI tools assisted with language enhancement

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