

Challenges in ENT Data Collection in Conflict Zones: Insights from Gaza

Ear, Nose & Throat Journal

1–3

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DOI: 10.1177/01455613241309785

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Keywords

otolaryngology, surgery, laryngology, head and neck

Data collection is a cornerstone of effective healthcare delivery and research. This need is especially true in active conflict zones, where data collection is vital to informing responses on the ground, documenting civilian injury patterns, and guiding acute care interventions.¹ Nevertheless, the ability to effectively record this in the occupied Palestinian Territories is mired with challenges due to the fragility and complexity of maintaining health records amid the ongoing Israeli military assault. In drawing from the combined experiences of international medical staff working in tandem with local Palestinians, we aim to outline some of the obstacles that have arisen in ear-nose-throat (ENT) data collection, preservation, and classification.

In Gaza, a major challenge is the lack of standardized data recording across hospitals and even within departments of the same hospital. The lack of systematized active research bodies within Gaza or the Ministry of Health exacerbates the issue and prevents the identification and resolution of the data collection issues at hand. Different approaches to patient record-keeping result in fragmented data that complicate efforts to track patient outcomes and treatment patterns. The overwhelming number of cases with respect to the ratio of healthcare workers and bed capacity, underestimation of the importance of documentation, and the absence of independent auditing systems are all contributing factors, to varying degrees, to the current crisis. In many cases, emergency department cases that do not result in admission, including those who die as a consequence of injuries prior to receiving any formal care due to limited surgical supplies and bed shortages, are often left undocumented. For example, the high prevalence of infections and fracture-related infections may induce severe respiratory symptoms and complications, including obstruction of airways

or impact on auditory functions, requiring ENT oversight.^{2–4} In such situations, many patients may be unable even to reach the hospital grounds, let alone obtain an ENT referral, which may still be contingent on the acuity of their case compared to any mass-casualty event on a particular day filling up hospital beds. This creates a gap in understanding the full scope of the healthcare needs facing the population and hinders the ability of visiting medical non-governmental organizations to bring in the appropriate medical supplies in scope and size.⁵

The reliance on paper-based documentation has long been a limitation in Gaza's healthcare system. Physical

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Received: November 27, 2024; revised: December 5, 2024; accepted: December 6, 2024

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records are vulnerable to loss, damage, and destruction, particularly in the context of conflict where healthcare facilities have been routinely targeted.⁶⁻⁹ Prior to the current escalations, limited electronic health record systems were piloted throughout the Gaza Strip and in some parts of the West Bank, with scanned patient files being stored in a central database or uploaded in an E-cloud administered by the Ministry of Health. The system's fragility has been exposed given the constant loss of electricity, communications and WiFi blackouts, damage to computer systems, willful destruction of healthcare equipment, and a general inability to have any semblance of maintenance which has rendered the database effectively inaccessible. In some of the partially operational hospitals, only patient-held copies of medical records remain from the last few months, with hospital archives lost in evacuations or burnt in prior attacks. There is no institutional archiving or encoding into standardized formats like the *International Classification of Diseases, 10th Revision* (ICD-10).

ENT cases in Gaza are often intertwined with poly-trauma, including severe head and abdominal injuries. While patients may require care from multiple specialties, documentation practices prioritize the admitting specialty, such as neurosurgery or general surgery. This results in ENT evaluations and follow-ups being noted only informally or communicated verbally, with no consistent method for retrospective analysis. In many cases, physicians resort to recording data on personal platforms such as WhatsApp or personal notebooks, which only serves to further compound the issue of record loss and fragmentation. There is also fear of data loss to destruction or confiscation by the Israeli Defense Forces, or the potential use of patient records to identify and criminalize healthcare staff's provision of care to certain populations or individuals. Most of the hospitals of the Gaza Strip have faced bombardment or invasion, including major facilities like the Al-Shifa, Nasser, and Kamal Adwan. The Al-Aqsa Martyrs Hospital in Deir Al-Balah, which has faced aerial attacks even recently, is one of the few remaining institutions with intact archives, yet operates under constant fear of a similar fate. This looming threat has fostered a sense of futility among medical staff, many of whom prioritize immediate patient care over long-term documentation. As one physician remarked, "Nothing we do, like saving data and files, will be there forever."

Otolaryngological care in Gaza was already limited prior to October 2023, though the new conditions have put immense strain on the fragile system. ENT is an inherently interconnected specialty, with oral-maxillofacial, plastics, and other specialties handling many of the acute facial trauma cases that present amid armed hostilities.¹⁰ Initially offering limited outpatient services and scheduled operations, ENT departments like those at Al-Aqsa Hospital

expanded their services to accommodate overnight shifts and trauma cases during the past year. There has nevertheless been a scale back to return to a day-time-only schedule due to the exhaustion and workload faced by the medical staff, as well as the observations that many of the ENT cases are non-life-threatening and may be subject to routine clinic care and are thus not prioritized. Severe cases often fail to reach the hospital alive or arrive in an inoperable condition, and the absence of ENT-specific inpatient facilities in many hospitals compounds the issue of documentation.

Some of the challenges in data collection are not unique to Gaza but are emblematic of the broader difficulties faced in healthcare data collection within conflict zones. In the West Bank, internet disruptions and the simple surge of cases coming into a hospital can make it difficult to maintain effective data upkeep. We have encountered challenges in other specialties of data collection, but there is further research that needs to be done, as well as practical protocols to be developed, on how to address the inherent nature of ENT cases and injuries in active conflict zones which overlap with various specialties and may lead to under-classification of cases. Collaborative efforts between local and international teams, informed by the realities on the ground, are essential to bridge these gaps and ensure that the lessons learned from Gaza contribute to improving healthcare systems in conflict-affected regions globally.

Consent to Participate

Not applicable.

Consent for Publication

Not applicable.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Ethical Considerations

Not applicable.

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