Debunking the Genocide Allegations: A Reexamination of the Israel-Hamas War (2023-2025)

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Appendix 1:Published and pre-published Sources of Injury Patterns in the 2023-2025 Gaza War and Forensic Analysis of PAMA Allegations on Children Shot by IDF Snipers

This appendix supplements our critical analysis in Chapter 3 (pp. 157–165), where we assess the reliability of testimony given by doctors affiliated with the Palestinian American Medical Association (PAMA) concerning alleged deliberate head and chest shots by IDF snipers targeting Palestinian children.

In the main text, we reviewed several quantitative studies on injury patterns during the Gaza War and demonstrated that the data strongly contradicts the PAMA doctors' claims of treating large numbers of children allegedly shot daily in the head or chest. Since that analysis was completed, additional studies have been published, and their findings likewise fail to support the PAMA narrative.

We also present here a professional assessment by Dr. T. Forcht Dagi, MD—Deputy Chair of the Surgical Specialty Board in Neurological Surgery at the Royal College of Surgeons of Edinburgh—regarding X-Ray images of head injuries publicized by the PAMA-affiliated doctors.

Part I: summary of the relevant findings on injury patterns during the Gaza War of 2023-2025

Study	Description	N	% gunshot head/chest wounds	% firearm injuries children	Area/ hospital	Period
El-Taji O et al[1]	Survey of 78 international healthcare workers	23 726 trauma related injuries 6960 injuries related to weapons	6.7% of total weapon injuries	No gender/ age breakdown	North Gaza 8 (10) Gaza City 11 (14) Middle Area 18 (23) Khan Younis 32 (41) Rafah7 (9)	most data reflected deployments that concluded between May 2024 and January 2025
MSF[2]	Routinely collected medical data from six of the MSF Operational Centre Brussels supported health facilities in Gaza	22 637 patients	11.3% Gunshot wounds Vs 83% bombs and shellings. No area of injury breakdown	Under 15 children make up 29.7% of all injured. No further breakdown based on injury type	Al Aqsa Hospital, Al Mawasi PHC, Al Najar Hospital, Deir el Balah PHC, Khan Younis PHC, and MSF Field Hospital	Jan 1 to Dec 31, 2024
Alasarr et al[3]	Avaliable Patient records in Al-Aqsa hospital	2,000, of which 500 traumatic injuries	No head injuries, no breakdown based on type of injury	No breakdown	Al Aqsa Martyr's Hospital	October 2023 to September 2024

1 El-Taji O ,Ali A ,Alser O ,Ghali A ,Jomaa A ,Sultan MJ ,Irfan B ,Jafar A ,Qandil M ,Jeelani A, Darwish A ,Mokhallalati A ,McMonagle M ,Rose V ,Mamode N ,Khan S ,Maynard N ,Nott D, Chai AS ;International Medical Responders for Gaza collaborators .Patterns of war related trauma in Gaza during armed conflict :survey study of international healthcare workers .BMJ 2025 .Sep 25;390:e087524. doi: 10.1136/bmj-2025-087524. Erratum in: BMJ. 2025 Oct 10;391:r2114. doi: 10.1136/bmj.r2114. PMID: 40998470; PMCID: PMC12462629.

2 Nicolai, Meinie et al. War wounds caused by explosive weapons in Gaza: data from a 2024 study by Médecins Sans Frontières. The Lancet, Volume 406, Issue 10504, 687 - 688

3 Alasarr M, Awad M, AbuZaida EAO, Cheema M, Chaudhry T, Youssef F, Bsaiso H. Patterns of surgical workload and trauma injuries in a Gaza hospital. East Mediterr Health J. 2025;31(2):68–72. https://doi.org/10.26719/2025.31.2.68.

Study	Description	N	% gunshot head/chest wounds	% firearm injuries children	Area/ hospital	Period
Alsalqawi & Villar[4]	Data from 110 consecutive in-patients who occupied one area of the Shuhada al-Aqsa Hospital and who had been admitted through the hospital's Emergency Department	110 patients	8.1% gunshot injuries Vs 86% explosive injuries 6/128 fractures to skull 2 injuries to head out of 187 injuries (1.08%).	No breakdown of gunshot injuried by age but all gunshot injuries male (65.45% of all injuries)	Al Aqsa Martyr's Hospital	October 2023- May 2024
WHO[5]	Daily reports from the Emergency Medical Teams (EMT)		Major head/ neck/spine injuries 3.2% of all EMT injuries	No age/ gender breakdown	All Gaza	October 2023- July 2024
Al Hseinat et al[6]	362 trauma patients treated at a major trauma center in Gaza	362	Gunshot 31.2% Vs 48.3% Blast **No head injuries**			

The El-Taji et al. study involving self-reporting by 78 international medical volunteers (based on dates, these were not the same volunteers as in the

4 Alsalqawi A. & Villar R; Patterns of Injury in a Gaza War Hospital. https://www.medrxiv.org/content/10.1101/2024.06.27.24309570v1

5 WHO; Estimating Trauma Rehabilitation Needs in Gaza using Injury Data from Emergency Medical Teams. 30 July 2024. https://www.emro.who.int/images/stories/palestine/Rehab-injury-estimate-Gaza.pdf

6 Al Hseinat, Laith and Othman, Ahmad Khaled and Abo Hashim, Marwan and Aolymate, Moha'dKheir and Atoom, Yousef Mohammad Eid and al Mistarihi, Obaidah and Aldweeri, Mohammad and Abo Odeh, Hamzeh and Al Badaineh, Ashraf Ahmad, Trauma Care in Gaza: A Retrospective Descriptive Analysis of Orthopedic Injuries and Management During Recent Conflict Events. Available at SSRN: https://ssrn.com/abstract=5346484 or http://dx.doi.org/10.2139/ssrn.5346484

PAMA group) indicated a much higher proportion of gunshot wounds than the other published studies. These volunteers also reported a much higher proportion of gunshot wounds to the head/chest as a portion of all gunshot wounds. This may be indicative of an observation bias (i.e., head/chest gunshot victims being directed to international volunteers by the GMOH, or else their specializations lending themselves to treating gunshot wounds rather than explosion wounds), or of recall bias. Nonetheless, these wounds still amounted to only 6.7% of all injuries. Between February and April 2024, the Gaza Ministry of Health recorded 11,755 injuries—an average of 130 per day. Applying the 6.7% ratio to this total suggests approximately 8.71 gunshot head/chest injuries per day across Gaza. Even assuming that 20% of these cases involved individuals under 13, that every single one was caused by a sniper bullet, and that all of them were directed for treatment by the 99 PAMA physicians, the total would still amount to only about 1.74 pediatric gunshot head/chest injuries per day across all PAMA physicians combined. The average stay of the PAMA physicians in Gaza was 18-days s (a combined 254 weeks among 99 volunteers), which means that on the average each could not have encountered more than 0.31 such injuries in children during their entire stay – let alone their claim that: *"Specifically,* ***every one*** *of us* ***on a daily basis*** *treated* ***pre-teen*** *children who were shot in the* ***head and chest"*** [7]

This remains true even if every improbable assumption listed above were correct — that all head-shot injuries were caused by snipers, that every shot was directed at PAMA volunteers, and that the proportion of pre-teen children among gunshot injuries matched their share in the mortality data.

7 https//:www.gazahealthcareletters.org/usa-letter-oct2-2024-

Part II: Forensic Assessment of the XRay Image Published by the New York Times

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To Whom It May Concern,

I have been invited to comment on X-rays presented in the New York Times in support of a statement that Israeli snipers expressly targeted children in Gaza and shot them in the head.

I am a professor of neurosurgery and a former combat neurosurgeon. I have taken care of scores of penetrating missile and shrapnel injuries. I have had special operations training that included sniper skills. I have edited one of the US editions of the NATO Handbook of War Surgery, and a textbook on penetrating missile injuries that has become a standard textbook on the subject.

I have studied the X-rays that were given to me to review. To a reasonable degree of medical certainty, here is what I believe can be said about plane X-ray images and computerized tomography images of penetrating missile injuries in general, and the images that I received:

(1) All penetrating missile injuries create an entrance wound and a wound tract. In transferring their energy to the brain, the wound tracts expand and then contract. The size of the wound tract is related to the energy imparted by the missile. That, in turn, is a function of the mass of the missile, its velocity, whether it yaws, and whether it disintegrates. When penetrating wounds exit or perforate the skull, they create an exit wound as well.

(2) High velocity missile injuries, which is the category into which military bullet wounds, including sniper injuries, generally fall, and often perforate the skull. They are characterized by small entrance and large exit wounds when they perforate. Whether or not they perforate or exit the skull depends on the energy with which they strike.

(3) Generally speaking, military ammunition will perforate the skull at the distances involved in urban warfare.

(4) The only wounds that penetrate without perforation tend to be relatively low energy shrapnel wounds, ricochets, or other bullets and missiles that have expended or dissipated much of their energy before reaching the patient.

(5) The size and shape of the bullet tract, how much tissue is damaged, and how much haemorrhage ensues is highly variable.

(6) Military sniper wounds generally involve high velocity, high energy military ammunition designed for accuracy and for long distance shooting on the order of several hundred meters.

(7) In modern Western warfare, only a small number of calibers is typically encountered in sniper wounds. These include the 7.62 NATO, the .338 Lapua, the .300 Winchester magnum, and sometimes the 5.56 round. While other military and civilian calibers may be also used, their characteristics, and the wounds they produce, are very similar.

(8) The bullets may be jacketed or not. Jacketed rounds (bullets) are less like to deform when they strike, but unjacketed bullets generally do deform, and are more likely to disintegrate.

(9) Examples of circumstances under which rounds would not necessarily deform include a round fired in the air, expending its energy, and then simply falling to earth after reaching the apogee of its parabolic trajectory. Under these circumstances, a projectile initially discharged with high energy might dissipate its energy and result in a low energy wound.

(10) One of the lateral scout images purporting to show an intracranial round in the X-rays I reviewed, for example, shows a bullet pointing downward without visible deformity. The entrance wound is not shown. Assuming that (a) the bullet is really in the cranium and that (b) the CT scan is authentic rather than falsified (it would be quite easy, for example, to incorporate an unfired bullet that is not in the skull at all within the CT scan image), the most likely explanation is a small entrance wound at the crown of the skull, parallel to the course of the Xray beam and therefore all but invisible on the X-ray view presented. This kind of wound could be explained by a bullet that struck with low velocity and low energy without deformation.

(11) A CT scan uses X-ray technology. A full set of CT images can generate an accurate representation of the location of a bullet in the brain. The New York Times report, however, produced a limited set of images. A partial set of images may be deceptive. In this instance, the images that were produced were insufficient to diagnose the location of the bullet. Under certain circumstances, a bullet that is outside the skull may appear or may be made to appear as if it were inside the skull. That is quite possibly the situation here.

(12) The only way to confirm the authenticity of the imaging that purports to show a sniper wound is examine the full set of CT images and X-rays obtained at the time of the patient's admission. These images would have to be verifiably linked to the patient at all times and authenticated to make sure they had not been tampered with (the chain of custody). It is equally important to carry out a forensic examination of the imaging metadata alongside a physical examination of the bullet itself.

(13) Without confirmation of the chain of custody and of authenticity no definitive or dispositive conclusion can be reached.

(14) It is practically impossible, in any case, to surmise the intent and the identity of the shooter from imaging studies alone.

(15) The images presented in the New York Times report are not adequate to reach a conclusion, within a reasonable degree of

medical certainty, regarding their source, the nature of the injuries they purport to document, the types of bullets involved, the source of the bullets, the distance from which they were fired, or the energy with which they impacted.

Yours respectfully,

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