

HAMAS CASUALTY REPORTS ARE A TANGLE OF TECHNICAL PROBLEMS

By LEWI STONE and GREGORY ROSE



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Cover image: An IDF Infantry Commando providing cover in front of a ruined building, Han Yunis, Gaza, February 2024, by Ran Zisovitchat at Shutterstock (<https://www.shutterstock.com/image-photo/han-yunis-feb-7th-2024-gaza-2426591937>).

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Key Findings

The Ministry of Health (MoH) under the Hamas government in Gaza has produced casualty data throughout the 2023–2025 Hamas–Israel war in Gaza. Our analysis of this data, which drills into records produced by Gaza hospitals, shows the following:

1. **LOCAL DATA PROVIDES A STRONG SIGNAL THAT ISRAELI MILITARY TRIED TO LIMIT GAZAN CIVILIAN HARM:** Empirical evidence across cross-sections of the data provided by the MoH itself showed that the Israel Defense Forces (IDF) took measures that tried to avoid harming women and children. To illustrate: in Khan Yunis across January–May 2024, MoH data showed that women and children combined (who comprise 75% of the Gazan population) comprised 34% of all deaths; that is, less than half of the 70% Hamas claimed.
2. **CUMULATIVE DATA FOR ENTIRE WAR SHOWED LESS CIVILIAN HARM THAN HAMAS ALLEGED:** The most recent (March 2025) cumulative list of 50,021 identified casualties showed that the proportion of women and children’s mortalities (W&C) over the whole war was 51% (25,401 / 50,021). (Across 2024, women and children comprised 40% to 43% of the injured.) Approximately 45% of all Gazan deaths were legal fighting-age males ($18 \leq M \leq 59$) but a significant additional component as child casualties were male underage combatants. These statistics signal that, over the whole war across all Gaza, the IDF sought to avoid civilians and that harm to civilians was far less than Hamas alleged publicly.
3. **RECENT PREPONDERANCE OF MALE CASUALTIES:** MoH March 2025 data showed that, among 11,224 new casualties in the seven months since 7 October 2024, there were 8,565 males (76.3%) and 2,659 females (23.7%). Among these new casualties, 58% were legal combat-age males and an additional unknown but significant proportion were underage combatant males. The reduced proportion of casualties that were women and children (down to 38%) over the most recent 7 months of data-reportage indicates improvement over time of Israeli efforts to avoid Gazan civilian harm. The new data raises questions about whether a large number of males previously went unreported, or whether Hamas had simply over-represented women and children casualties in the past.
4. **DOWNWARD TREND IN OVERALL CASUALTIES:** The highest rates of combatant and civilian casualties occurred in October 2023 to early January 2024, according to time-stamped MoH casualty data made available in 2025. The rate of overall casualties declined through 2024 down to an intensity of 10 to 20% of the initial rate in October 2023.
5. **CONTRADICTORY HAMAS WAR CASUALTY NARRATIVES:** Smoothly packaged and widely propagated Hamas Government Media Office (GMO) information press releases that claimed 70% women and children casualties were in contradiction with the more reliable Ministry of Health raw datasets. GMO data showed that children’s deaths were more numerous than adult women or men, while MoH data showed that men were most numerous. Nevertheless, MoH ‘dashboard’ infographics and public statements were demonstrably false when compared to its own datasets; for example, its repeated publishing of a 70% women and children casualty rate that was inconsistent with its detailed hospital-sourced datasets. These various contradictions enabled Hamas to argue various different narratives when convenient.
6. **OBSCURED CASUALTY DATA TRENDS:** The Ministry data did not describe the war chronologically nor provide a reliable picture of trends across time because date-stamped information was never published, despite being held. The dates of deaths of Gazans were not published with their identity details. The data contained so many inconsistencies,

major changes and large-scale corrections shuffled across different time periods that, in general, it was almost unusable for studying casualty trends. The changes also made it difficult to test even very simple hypotheses with the data.

7. **COMPROMISED INTEGRITY OF DATASETS DUE TO UNVERIFIED DATA:** Standard verification of identities of casualties was done in hospitals and morgues by verification of bodies and documents but there were 15,070 unidentified casualties reported by 31 March 2024. Almost 14,000 were later identified via online electronic forms by 7 October 2024. Verification processes for identification of many of these casualties were dubious. Due to their many anomalies, such as inclusions of living people on the list, doubts remain concerning both identities of casualties and actualities of deaths. This concern was recognised as serious even by the Hamas MoH Chief Data Scientist and Director of Information.
8. **SUPPRESSION OF DATA ON HAMAS CASUALTIES:** Many Hamas combatant casualties were not listed, as key Hamas leaders known to have been killed were not listed as casualties. For example, some of Hamas leader Sinwar's close family who were initially on the lists were taken off. If significant numbers of Hamas adult male combatants were not listed, then all estimates of the proportion of women and children casualties were actually lower.
9. **MISLEADING EXPLANATIONS OF DATA ANOMALIES:** The MoH Director of Information gave various contradictory explanations for data anomalies. For instance, repeated explanations that each non-standard identification went through a verification process of approval by a judicial committee and that no natural deaths were included proved false. The MoH's inability to explain its basic data-processing procedures hindered data analysis.
10. **ERRONEOUS FOREIGN ACADEMIC AND MEDICAL ACCOUNTS OF CIVILIAN DEATHS:** Academic epidemiological studies forecast exaggerated Gazan casualties, vastly greater than actual casualties later reported by the Hamas Ministry of Health, and were based on erroneous modelling. Their predictions can be proved to be false retroactively by MoH data. Similarly, foreign doctors visiting Gaza from Western countries to provide medical assistance published allegations that Israeli Defence Forces targeted women and children; these proved to be inconsistent with MoH's Gazan hospital datasets.
11. **DISINFORMATION SUCCESS:** The Hamas Ministry of Health provided disinformation that served Hamas's wartime narrative. For example, it presented all Gazan war casualties as civilians and none as combatants, falsely presented adult male casualties as women and children, and its datasets did not separately list deaths by natural causes nor disclose those killed by Hamas itself. Casualty data was deleted, shuffled across periods, recategorised across incomparable categories and included corrupting data. Yet the Ministry of Health civilian casualty numbers were widely accepted as having integrity and supporting allegations of genocide, thereby achieving a strategic victory for Hamas.

Executive Summary

The Hamas Ministry of Health in Gaza began releasing datasets in the first month of the Hamas war with Israel in October 2023, and the data analysed here covers all these datasets, including the most recently published dataset on 25 March 2025, which sets out a list of 50,021 claimed casualties. In this paper, we present some of the many technical problems with the data, shed light on the manner in which the data reflected the casualties of the war and contribute to the understanding of how the mechanics of disinformation operate in contemporary urban warfare.

The Hamas Ministry of Health (MoH) collected mortality data in a highly systematic manner, across a network of hospitals throughout Gaza, centralised in a sophisticated computerised database at Al Shifa Hospital in Gaza City, producing the most immediately published and highly detailed casualty datasets in military history, to this day. The Hamas Government Media Office (GMO) curated the data to spin media-ready versions that inflated women's and children's deaths to levels that gave the deceptive impression of indiscriminate Israeli attacks on women and children.

A dataset published in January 2025 by a London-based researcher, who had uniquely favoured access to MoH time-stamped data, allowed us to undertake a more in-depth analysis of statistics at different dates of the war across regions in Gaza. Our results provide empirical evidence that show that the Israel Defense Forces (IDF) generally sought to mitigate harm to civilians. Thus, in the battles of Khan Yunis through the first quarter of 2024, 34% of deaths were women and children, although they comprised 75% of the population. This MoH data showed the opposite picture to what one would expect from the narrative of Hamas and its allies who alleged indiscriminate killing. The percentage of women and children combatants could even be 10% less if Hamas combatants went unreported, as is likely.

The two Hamas casualty data offices, the MoH and the GMO, generated different narratives that regularly contradicted each other, as we show. In effect, they allowed Hamas to convey very different versions of the war, as needed. The GMO painted a lurid picture of indiscriminate killing of women and children by Israel, supposedly supported by the MoH but often inconsistent with its datasets.

Comparisons of MoH datasets with those published by foreign academic epidemiologists and foreign doctors visiting Gaza showed that the epidemiological forecasts and visiting doctors' impressions were hugely inconsistent with MoH-reported data for Gazan mortalities and injuries, greatly exaggerating their projections and accounts of impacts of civilian casualties.

In late March 2024, discrepancies and statistical impossibilities in both MoH and GMO data came to international public attention, revealing fraud in both organisations' exaggerations of women and children casualties. The MoH reacted by distancing itself from the GMO and asserting the integrity of its data system. We show the exaggerations of the GMO by analysing its data in comparison with the MoH datasets on which they were purportedly based.

However, the MoH datasets, reports and dashboards all exhibited their own major shortcomings. Since December 2023 and over the first quarter of 2024, the MoH modified its data collection scheme to insert 15,000 casualties that were unverified or unidentified. The Ministry's Director of Information claimed in August 2024 that judicial verification processes for identification of these deaths were implemented but, in April 2025, he admitted that this was not the case, at least until October 2024. Moreover, thousands of identifications were found to be erroneous when compared with hospital records or were withdrawn by the MoH for its own reasons. Across the war through to April 2025, the MoH removed almost 6,000 names from its lists of verified casualties. Thus, the dubious verification processes corrupted MoH data integrity.

A better understanding of the war could have been gained had the Ministry provided information on dates of deaths that would inform analysis of casualty trends over time. Instead, it made publicly available 50,000 data entries that did not disclose dates of death and were repeatedly shuffled out of chronological order. This might explain why, during the early months of the war, fewer male casualties were disclosed than actually occurred, so the reported proportion of women and children appeared higher in that period, but there is a possibility that those men might have been reported later.

Another fundamental shortcoming with the MoH datasets was that no Gazan casualties were identified as combatants. Instead, all were treated as civilians. The IDF claimed to have killed about 20,000 Hamas and allied combatants in Gaza by the date of the 25 March 2025 dataset and open-source information identifying some Hamas casualties was often available. Moreover, many Hamas combatants were not reported as casualties at all. Were such non-reporting of combatants factored in, the proportion of women and children casualties would be further reduced by a substantial factor.

The MoH datasets also included some natural deaths misidentified as caused by war trauma. Across the duration of the war, about 9,000 persons would have died natural deaths but they were not separately published as such. In April 2025, the Ministry's Director of Information admitted that "a lot of people" listed had died of natural causes. Additionally, cases of Hamas misfire, friendly fire, execution or suppression of insubordinate behaviour were evident from open sources of intelligence on Gazan casualties but not reported as such. The number of these Hamas-inflicted deaths is unknowable but it is likely a smaller proportion of total Gazan casualties than natural deaths. This misattribution to Israel of Gazan deaths is another flaw in the integrity of MoH datasets.

Finally, the Hamas Ministry of Health showed many signs of bending to the Hamas war narrative by manipulating public presentations of its data. It provided headline information in its dashboards, reports and statements that announced a 70% women and children casualty rate, although this was inconsistent with its own underlying hospital casualty datasets. It provided misleading statements on its casualty reporting and identification procedures and, in 2023, failed to report many males amongst casualties, thereby creating false statistics. This Gazan data doctoring was possible because the MoH and hospital systems were administered by many directors who were themselves controlled by Hamas.

The inevitability of Hamas's military defeat was hitched to a civilian sacrifice strategy to prosecute a narrative of Israeli war atrocities. The Ministry's messaging was definite and consistent in alleging genocide, and it was internationally persuasive. Although acceptance of the narrative was likely aided by hostility to the existence of Israel in significant parts of the world, Hamas's successful practices demonstrated how disinformation can seize strategic victory from military defeat in asymmetrical armed conflict. The Ministry of Health's highly detailed datasets were Hamas's main wartime achievement in the months after 7 October 2023.

Introduction

Any understanding of wars, their evolution over time and their damage to civilian populations is highly dependent on our ability to capture sufficient and reliable surveillance data on impacts. Estimating the number of casualties over time, including the disaggregation of combatants and civilians, and the ages and genders of casualties (children, women and men), as well as the number of injuries, has become central to assessing the nature of urban wars, such as the Hamas-Israel 2023-2025 war.

The Hamas casualty data in this war was the most immediately published and highly detailed data in military history. Various agencies and partners distributed the data, including the Gazan Ministry of Health (MoH)¹ and the Government Media Office of Hamas (GMO),² as well as partners, principally the UN Office for the Coordination of Humanitarian Affairs³ and the UN Relief and Works Agency for Palestine Refugees in the Near East (UNRWA),⁴ and generally more sympathetic to the Palestinians, news broadcast agencies such as Al Jazeera and the BBC.⁵ However, discerning the real civilian impacts of the war from the published MoH data remains difficult because it is obscure. Some analysts consider this obscurity to be the result of inevitably incomplete datasets that the Hamas administration constantly strove to improve.⁶ Others critique the datasets published by Hamas organisations as obscured and question whether they were manipulated.⁷ We may never know for sure how much incoherence and inconsistency in the casualty datasets was inadvertent error and how much was deliberately crafted.

This paper interrogates the MoH and GMO data by analysing Gaza hospital records disclosed in MoH reports and casualty lists, which were the best raw data available, up to March 2025. Its guided tour of the Hamas datasets shows the need for much caution when relying upon them to draw conclusions about the conduct of the war. Despite being the best-available data, they are deeply unreliable in many ways. Nevertheless, they have been widely accepted in parts of the world to support allegations of genocide by Israel, and thereby are a major strategic victory of Hamas's wartime information effort.

¹ Gaza Ministry of Health: website - <https://site.moh.ps/>; X - <https://x.com/mohenglish3?lang=en>; *Telegram* - <https://t.me/MOHMediaGaza>.

² Hamas Government Media Office: <https://t.me/mediagovps>.

³ United Nations Office for Coordination of Humanitarian Affairs: <https://www.ochaopt.org/>.

⁴ United Nations Relief and Works Agency for Palestine Refugees in the Near East: <https://www.unrwa.org/>.

⁵ *Al Jazeera*: <https://www.aljazeera.com/tag/israel-palestine-conflict/>; see also *BBC*: <https://www.bbc.com/news/topics/c2vndvdg6xxt>, and critiques of *BBC* performance at <https://david-collier.com/?s=bbc>; and <https://asserson.co.uk/assersonreport/>.

⁶ E.g., Mike Spagat, "Tracking Gaza's war death toll: Ministry of Health improves accuracy in latest casualty report", *Action on Armed Violence*, 24 September 2024, <https://aoav.org.uk/2024/tracking-gazas-war-death-toll-ministry-of-health-improves-accuracy-in-latest-casualty-report/>; Michael Spagat, X, https://x.com/Michael_Spagat?ref_src=twsrc%5Egoogle%7Ctwcamp%5Eserp%7Ctwgr%5Eauthor.

⁷ E.g., Gabriel Epstein, <https://www.washingtoninstitute.org/experts/gabriel-epstein>; especially Gabriel Epstein, "How Hamas Manipulates Gaza Fatality Numbers: Examining the Male Undercount and Other Problems", *The Washington Institute for Near East Policy*, 25 January 2024, <https://www.washingtoninstitute.org/policy-analysis/how-hamas-manipulates-gaza-fatality-numbers-examining-male-undercount-and-other>; Tom Simpson, Lewi Stone and Gregory Rose, "Statistically Impossible: A Critical Analysis of Hamas's Women and Children Casualty Figures", *Fathom Journal*, March 2024, <https://fathomjournal.org/statistically-impossible-a-critical-analysis-of-hamass-women-and-children-casualty-figures/>; Andrew Fox, "Questionable Counting: Analysing the Death Toll from the Hamas-Run Ministry of Health in Gaza", *Henry Jackson Society*, 13 December 2024, <https://henryjacksonsociety.org/publications/questionable-counting/>.

Part A: Using Data to Corroborate a Hamas War Narrative

The Hamas Ministry of Health (MoH) was the most reliable source of information on Gazan casualties. It provided the data upon which almost all the other information outlets relied during the Hamas-Israel 2023–2025 war. The MoH made use of a centralised and computerised database at Al Shifa Hospital in Gaza City (with a backup at Al Rantisi Hospital), in which all casualties who reached the hospitals or morgues were registered, providing they could be fully identified.

Based on this data, the MoH published numerous but sporadic epidemiological reports of civilian casualties in the period from October 2023, with data gathered across more than 38 hospitals and field stations.⁸ The reports provided detailed statistics of hospital patients, injuries and deaths, disaggregated by hospital, age and gender. A typical MoH casualty report page is reproduced in **Appendix 1**, with a translation from the Arabic. The database allowed the MoH to track the cumulative death toll, which it usually announced on a daily basis.

On 26 October 2023, US President Joe Biden publicly doubted the death toll numbers.⁹ In an attempt to show veracity, and within a matter of days, the MoH released a 52-page list containing the names, birth dates, genders and ID numbers of the 6,747 Gazans it claimed had perished.¹⁰ By 7 October 2024, after one year of war, the MoH had released, to its subscribers on social media channels, five other casualty lists containing the identities of all identified deceased, again set out in similar long cumulative lists, all mostly based on Gazan hospital data.¹¹ An additional list was released at the end of March 2025.¹²

Each Gazan hospital relayed its mortality statistics to the central database. However, there were periods where this became impossible because of wartime conditions. During much of November and December 2023, communication blackouts prevented hospitals in North Gaza from collecting and transmitting death tolls. At this time, the MoH stated that “reliable media reports” were used to compile death tolls. MoH chief data scientist Zaher Al-Wahaidi, a Hamas government appointee, explained that only handwritten headcount estimates of daily casualties were recorded by MoH public relations and media staff (not by nurses or secretaries), rather than registrations of individual deaths in the central database system.¹³ By 31 March 2024, these “headcounts” amounted to 15,000 mortalities that had been neither fully identified nor entered in the official database. The numbers and details of these “unidentified” were kept for later processing.

Not one of the published MoH epidemiological reports or names listings provided any information concerning the *dates* of deaths of the deceased, and it was unclear if the MoH even collected such information, although it was likely to have done so, as shown in the unpublished MoH data set out in **Figure 1**. Yet date-specific information is essential for determining the pace of the war in terms of casualties over time. Surprisingly, in January 2025, a research

⁸ MoH reports may be found at: <https://archive.org/details/moh-gaza-health-sector-emergency-reports/MOH%20-%20Gaza%20-%202012-11-24/page/n1/mode/2up>.

⁹ “Biden says he has ‘no confidence’ in Palestinian death count”, *Reuters*, 26 October 2023, <https://www.reuters.com/world/middle-east/biden-says-he-has-no-confidence-palestinian-death-count-2023-10-26/>.

¹⁰ See: <https://archive.org/details/moh-gaza-health-sector-emergency-reports/MOH%20-%20Gaza%20-%202012-11-24/page/n1/mode/2up>. See also the data set out in our Google Drive: <https://drive.google.com/drive/folders/1ZgdmOzKaCtiW8Ls247URnMaXDcX4bnA?usp=sharing>.

¹¹ Ibid, Google Drive.

¹² Ibid.

¹³ Zaher Al Wahaidi, published by Every Casualty Counts, 29 August 2024, <https://everycasualty.org/wp-content/uploads/2024/08/MoH-methodology-explanations-from-AlWahaidi-August-2024.pdf>.

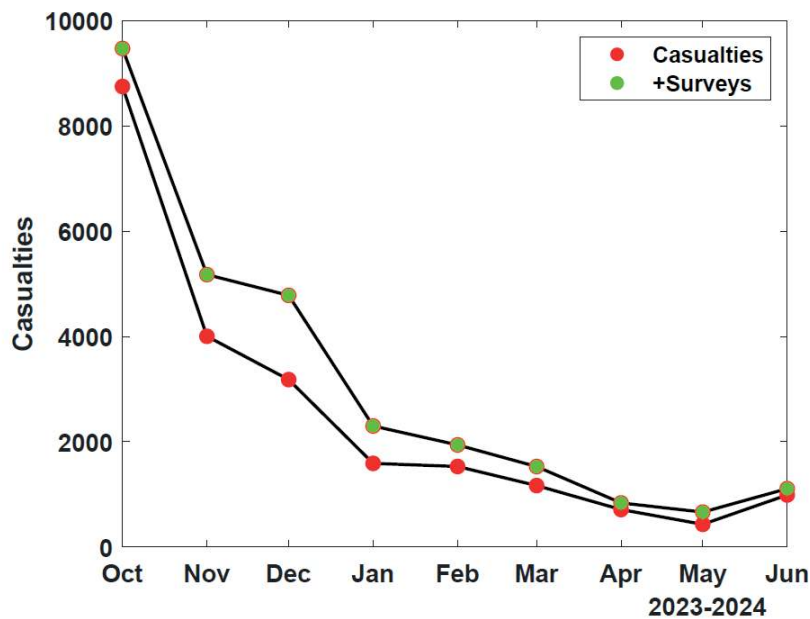
Figure 1. Casualty data of a Hamas family, published on Facebook by a family member who accessed unpublished MoH records and uploaded the below photo to the family page in October 2023. From left to right: Date and time of death, name, ID number. Note that dates and times of death were collected by the MoH, down to the last minute, but not released by MoH for analysis.¹⁴

م	ر. الوثيقة	اسم المريض	تاريخ الدخول	تار
1	903516425	نداء عبد الحميد سعيد الاسطل	18/10/2023 10:01	
2	402204119	حمزه ناصر سليمان الاسطل	22/10/2023 14:32	
3	800421190	صندفة سليمان عثمان الاسطل	10/10/2023 10:13	
4	429815103	فدوى حسين احمد الاسطل	10/10/2023 10:15	
5	424030948	احمد خالد ابراهيم الاسطل	09/10/2023 21:43	
			09/10/2023 21:46	

group at the London School of Hygiene and Tropical Medicine (LSHTM) published the dates of deaths of all 28,185 identified casualties in the war up until 30 June 2024 to support its research findings. This dataset, which the MoH had previously chosen not to publish and which no other researchers were privy to, was entrusted by the MoH to an LSHTM epidemiological research group, led by Dr Zeina Jamaluddine, that was constructing Gaza health projections in the war (see Jamaluddin, et. al., henceforth referred to as JEA).¹⁵

The new data made it possible to reconstruct the timeseries shown in **Figure 2** which plots the monthly number of casualties over time, thereby providing a picture of the casualty dynamics

Figure 2. Monthly Gazan *identified* casualty numbers plotted over the war until 30 June 2024, from MoH data. The number of all *hospital-identified* casualties each month reported by the MoH hospital system (red). The same number but combined with additional MoH *online survey-identified* casualties, or “family notifications” (green). The hospital data consists of 22,347 casualties while the online survey data consists of 5,104. As of 30 June 2024, the MoH reported 37,877 deceased, of whom 28,185 (66%) were identified either by hospital records or “family notifications”. Data from JEA.



¹⁴ Facebook source has been deleted.

¹⁵ Zeina Jamaluddine, et. al., “Traumatic injury mortality in the Gaza Strip from Oct 7, 2023, to June 30, 2024: a capture-recapture analysis”, *The Lancet* Vol 405, Issue 10477, pp.469-477, 8 February 2025, [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(24\)02678-3/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(24)02678-3/fulltext). Dr Jamaluddine has a social media presence: Jamaluddine, https://x.com/Z_Jamaluddine.

over the war. In contrast, the MoH published only cumulative graphs that masked the war's dynamics but tallied the total number of deaths, which was the MoH's chief interest. The data contained not just the number of deceased whose bodies were fully identified in MoH hospital data but also those collected through MoH online surveys ("family notifications", see Part E2, below) that were intended to uncover and disclose unidentified fatalities. The JEA dataset is an update from those found in MoH reports and takes into account the date of death for each casualty more precisely. To the best of our knowledge, as at our time of writing in March 2025, **Figure 2** is the only published depiction of the war's evolution in terms of monthly casualty numbers, from the beginning until June 2024 (although JEA presented a related graph in their online Appendix). The timeseries demonstrates how the rate of mortalities rapidly dwindled after October 2023, which was the deadliest month of the war. The journalist David Leonhardt was one of the first to notice and announce the reduction by some 50% in war mortality for December 2023.¹⁶ It is clear from the JEA MoH data that, by April and May 2024, the intensity of the war had dropped to 10-20% of the initial three weeks in October 2023.

Notwithstanding it being the best available source of data on Gazan casualties, the MOH data displayed many integrity problems, as set out in Part E, below. Finally, it should be pointed out that the conflict is ongoing and further data revisions are expected to be released by Hamas authorities.

¹⁶ David Leonhardt, "The Decline of Deaths in Gaza", *The New York Times*, 22 January 2024, <https://www.nytimes.com/2024/01/22/briefing/israel-gaza-war-death-toll.html>.

Part B: Women and Children Casualties

To ascertain whether nations are respecting the rules of war, it has become common practice to estimate the so-called combatant-to-civilian casualty ratio. The higher the ratio of combatants, the less relative impact there is on the civilian population from war's deadly toll. Both the IDF and Hamas are obligated by international law to minimise harm to all civilians, although Hamas has targeted Israeli civilians and declined to protect its own. The MoH data describes all casualties as civilians and, to this day, it is not known whether the MoH lists of casualty names include Hamas combatants or whether the combatant names were suppressed, as was Hamas policy in previous Gaza-Israel wars (see Part E3 below).

In 21st century urban conflicts, the civilian/combatant casualty ratio ranges from 3/1 up to 9/1. Given our reliance in this paper upon Hamas data that does not designate any casualties as combatants in the 2023-2025 Hamas-Israel war, we do not attempt to estimate the civilian/combatant casualty ratio. Instead, the proportion of women and children among known casualties in a war, which we refer to as the W&C index, is taken as a proxy indicator for the impact of the war on a civilian population.¹⁷

In Gaza, adult women comprise very close to 25% of the population, and children under the age of 18 very close to 50%, totalling 75%.¹⁸ If women and children are presumed to be mostly non-combatants, and if the W&C casualty rate was similar to their proportion in the population (i.e., W&C = 75%), then it might be argued that Israeli attacks were indiscriminate or caused excessive harm to civilians.

This is argued by Hamas and its propaganda allies. However, that argument is fallacious, as any circumstances of dense urban armed conflict, extensive use of human shields and participation of teenage males under the age of 18 as combatants would have the combined effect of greatly increasing any W&C index. Therefore, we simply use the W&C index as a measure of civilian harm. Concerning discrimination and alleged excessiveness, we say only that, if the W&C statistic sits at less than half of all casualties, it signals that the IDF took precautionary steps that limited civilian casualties. To appreciate this better note that WC=70% claimed by Hamas corresponds to 2.33 women and children for every adult male. However, for a scenario of W&C = 50%, the ratio is one to one. There is a dramatic difference, between the two scenarios with W&C=50% being 2.33 times better for civilians.

To appreciate this better note that WC=70% (70:30) claimed by Hamas corresponds to 2.33 women and children for every adult male. However, for a scenario of W&C = 50% (50:50), the ratio is one to one. There is a dramatic difference, between the two scenarios with W&C=70% being 2.33 times worse for civilians.

Statistical impossibility of W&C statistics in 2023: A key finding based on analysis of the 2023 casualty data was that the statistics on the proportion of women and children casualties reported by both the MoH and GMO were deceptively inflated. Although the MoH claimed that W&C = 70% of total casualties at the end of December 2023, the only way this could have been true was if 92% of the 6,629 unidentified deaths were women and children at that point in time, which was absurd. A vast number of male casualties were simply not included in the 2023 data. We have proved this elsewhere, as have other researchers.¹⁹

The erroneous casualty figures for women and children disseminated by the GMO for 2023 were echoed without critique by the United Nations Office for the Coordination of Humanitarian

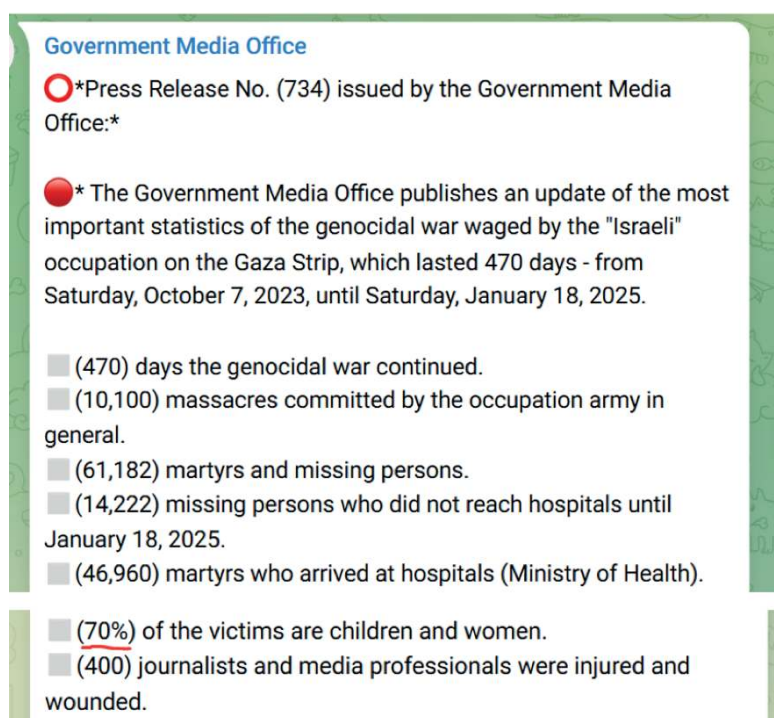
¹⁷ There are other potential proxies. For example, during various periods the MoH sometimes gave data for women, children, plus elderly that could be used as proxies for civilians, instead of W&C.

¹⁸ "Gaza Strip", *CIA Handbook*; <https://www.cia.gov/the-world-factbook/countries/gaza-strip/#people-and-society>.

¹⁹ Demonstrated in Epstein and in Simpson, et. al., see footnote 7, above.

Affairs (OCHA). Following the exposés of the statistical impossibility of W&C statistics alleged for 2023, OCHA revised its Gaza casualty figures for women and children downwards by almost 50%.²⁰ On 6 May 2024, the number of women casualties was listed by OCHA as >9,000, while on 8 May it downwardly revised the number to slightly less than 5,000, i.e. >45% lower. On 6 May, the number of children casualties was listed by OCHA as >14,500, while on 8 May, the number was revised down, by some 45%, to slightly less than 7,800. The UN had taken its Gaza war casualties statistics from the GMO, but after the exposé, it reported only data on identified deaths provided by the MoH. These changes in reporting of civilian casualties can be viewed as an implicit admission by the UN that the Hamas GMO misled the world with disinformation on casualties. Nevertheless, through the war, the GMO continued alleging W&C = 70% (see **Figure 3** evidence from January 2025), despite its contradicting MoH data (see Part D, below, for further analysis of GMO reporting.)

Figure 3. GMO January 2025 press release (734) alleging, inter alia, genocide and W&C = 70%. The release appears on the GMO telegram site.



B1. Empirical Evidence Shows Israeli Ground Operations Aimed to Limit Harm to Civilians

The first three weeks of the war after 7 October 2023 were characterised by Israeli air-attacks on Hamas, as significant Israeli ground forces did not enter Gaza until 26 October.²¹ Air-attacks were more limited in their accuracy than those of ground forces. Accordingly, collateral damage impacting the civilian population was higher in the first three weeks than any other period of the war. We have demonstrated in another paper that the air campaign was highly targeted by showing that an extraordinarily high proportion of Hamas leaders were impacted.²² Ground forces were able to confine their impacts more effectively.

²⁰ OCHA, "Hostilities in the Gaza Strip and Israel - reported impact". Compare Day 213, 6 May 2024, with Day 215, 8 May 2024: <https://www.ochaopt.org/content/hostilities-gaza-strip-and-israel-reported-impact-day-213> and <https://www.ochaopt.org/content/hostilities-gaza-strip-and-israel-reported-impact-day-215>.

²¹ Peter Beaumont, "Israeli forces enter new phase of war against Hamas with Gaza raid", *The Guardian*, 26 October 2023, <https://www.theguardian.com/world/2023/oct/26/joe-biden-west-bank-settlers-israel-prepares-gaza-ground-invasion>.

²² Lewi Stone and Gregory Rose, "When Military Targeting of Hamas Combatants was Misrepresented as Genocide: An Open-Source Data Analysis with a Focus on Israeli Airstrikes in the Gaza Urban Warfare, 2023-2024", *Journal of Contemporary Antisemitism* Vol 7, Issue 2, 2024, 1, <https://www.degruyter.com/document/doi/10.26613/jca/7.2.162/html?lang=en&srsltid=AfmBOoqduLj76ofUDGUX4kYZWdmwmmi59BnQAKssbk2swdX3SSBNdnhv>.

Here, we provide clear evidence that IDF ground operations were targeted at combatants and made serious efforts to mitigate civilian harm. The following case study of the IDF’s major ground operation in the southern Gaza region of Khan Yunis is an example that indicates active attempts to limit civilian casualties. The IDF’s ground troops entered Gaza after 26 October 2023 and were engaged in major operations in Khan Yunis in late December 2023 and over the first four months of 2024. The histogram in **Figure 4** shows the number of casualties (vertical axis) distributed as a function of their age²³ in years at death (horizontal axis) separately for males (blue) and females (red). The data is for Khan Yunis, from 1 January to 1 May 2024, subsequent to the aerial attack phase, and is derived from the MoH data given in JEA. The histogram highlights the unusually low mortality rates for women (red) and children (low age range; <18 years), relative to the mortality of adult males. Based on the histogram in **Figure 4**, it would be far-fetched to make claims in general that the IDF practiced indiscriminate attacks on civilians. Further evidence from MoH cumulative data, showing a very high proportion of adult male casualties, confirms indications that the IDF exercised precautions to limit harm to civilians (see Part B4, below).

Figure 4. Histogram of total casualty numbers as a function of age at death in Khan Yunis over the period 1 January to 1 May 2024, as obtained from data in JEA (including MoH “family notification” online survey data). Males (blue) and females (red). The blue area commences at 0 on the vertical axis but is overlaid. Women and children fatalities were found to be W&C = 34.5% of the total.

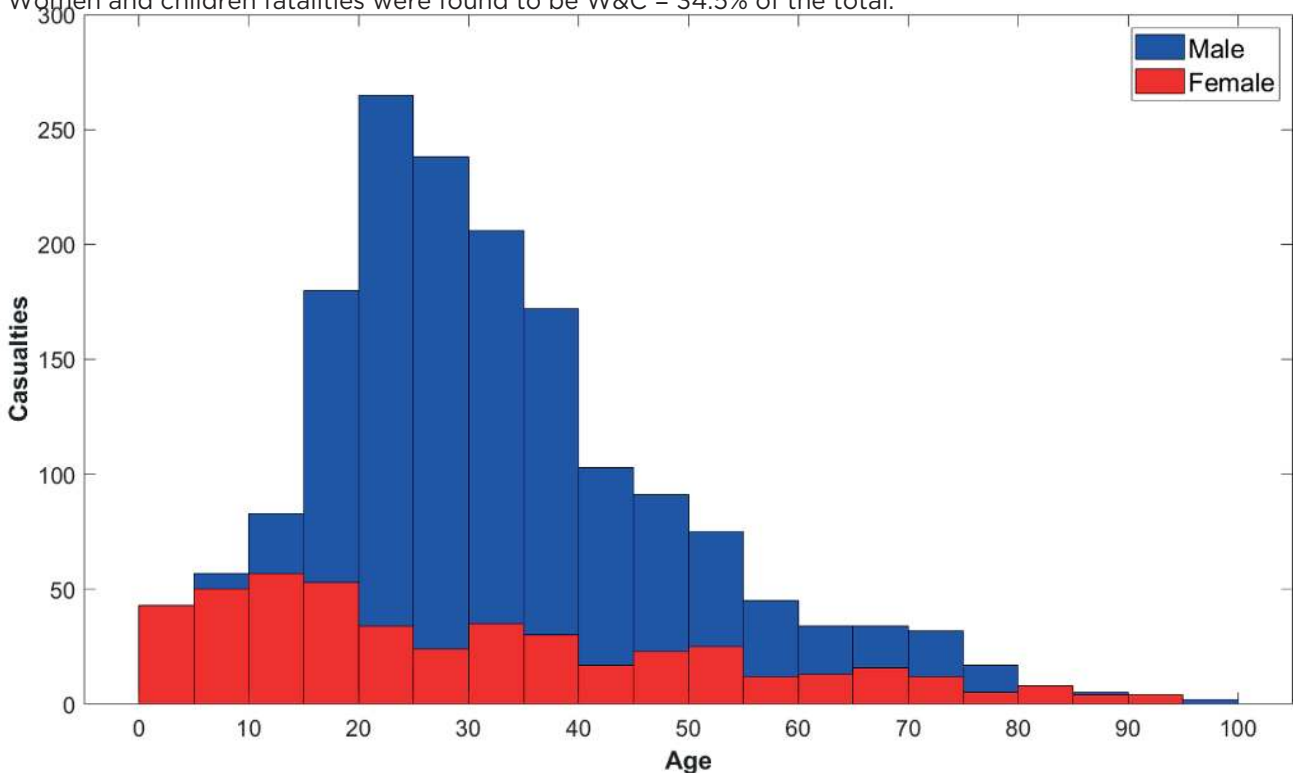


Table 1 summarises the Khan Yunis casualty statistics in more detail by dividing the age-gender classes into four blocks: men (≥ 18 years), women (≥ 18 years), boys and girls. If the IDF operations were causing indiscriminate deaths rather than targeting combatants, then one would expect the casualties to be distributed according to the population’s natural demography, which would result in the same number of people (25%) in each block. Here, though, among the two blocks of adult casualties, there were 277 adult women which should be contrasted with 1,411 men. The number of adult male casualties was more than five times higher than any of the other three blocks, suggesting that highly targeted attacks on combatants rather

²³ See also Fox, “Questionable Counting”. This report also draws important insights from the study of age-distributions.

than any form of indiscriminate killings were the reality. These are particularly low statistics, especially in urban warfare. (Combatants can be conservatively guesstimated by area of blue above red, in the age group 18 to 59 years, although very high casualties in the male age group 15 to 20 indicates active child combatants.)

Numerous warnings were given to the Gazan population to leave Khan Yunis local areas before the IDF began its search for Hamas combatants. This was true throughout the war, with the IDF stating in November 2024 that “since the start of the war over two million evacuation notifications have been distributed, more than 12 million flyers have been dropped, over 100,000 phone calls made and over 800,000 voice messages sent for evacuations” of endangered civilians.²⁴

Overall, in Khan Yunis, adult males comprised 65.5% of the 2,154 total identified casualties, and hence the W&C proportion was $W\&C = 34.5\%$ (far less than the 70% claimed by the MoH), implying that women and children experienced a much lower mortality rate. If one also factors in child combatants and the MoH’s suppression of Hamas combatant casualty numbers (see **Appendix 5** and E3 below), the W&C proportion could easily have been less (see **Appendix 5, Figures A5a, A5b**). Among child casualties, there were 188 girls and 278 boys. The higher death rates for late teenage boys than for girls shown in **Table 1** and **Figure 4** suggests that a substantial proportion of boys under the age of 18 were engaged in combat.

Table 1. Khan Yunis age group vs Gender. $W\&C = 34.5\%$. (Note: The number of adult male casualties is at least five times the number of any of the other three groups.)

Gender	< 18 years	≥ 18 years
Female	188	277
Male	278	1,411 (65.5%)

B2. Women and Children Casualty Rate was Far Lower than Claimed by Hamas (70%)

Statistics can be calculated in different ways. Statisticians might base calculations on new deaths reported each month and compare monthly rates to show how the estimated civilian deaths change over time. In contrast, MoH statistics were nearly always based on cumulative deaths, a method that captures dynamics in time poorly because cumulative numbers retain impacts or “ghosts” of previous months and smooths out the data in a way that suppresses fluctuations.

We consider it interesting to show the dynamics. One reason is that the W&C casualty dynamics changed dramatically across the major transition from the initial aerial attack phase of the war to the rest of the war after ground troops entered Gaza. The transition is seen in **Figure 5a** where the monthly W&C statistic is plotted. The graph reveals that the W&C casualty rate rapidly dropped from 62% in October 2023 to 45% in January 2024 and that it fluctuated around that level thereafter. This is a strong signal that IDF ground troops were attempting to target combatants despite the difficulties of conditions of urban warfare. The W&C fatality rate is certainly far below the 70% claimed by Hamas and pointing out that fact is not splitting

²⁴ Olive Enokido-Lineham and Ben van der Merwe, “Teenager describes forced separation from family as Israel evacuates 90% of North Gaza”, *Sky News*, 5 November 2024, <https://news.sky.com/story/teenager-describes-forced-separation-from-family-as-israel-evacuates-90-of-north-gaza-13246122>. The IDF’s distribution of warnings calling for evacuations have been reported from different perspectives by *The Times of Israel* and US *NPR*; see: Emanuel Fabian, “IDF using flyers, text messages and phone calls to instruct Gazans on evacuation of Rafah neighborhoods”, *The Times of Israel*, 6 May 2024, https://www.timesofisrael.com/liveblog_entry/idf-using-flyers-text-messages-and-phone-calls-to-instruct-gazans-on-evacuation-of-rafah-neighborhoods/; Kat Lonsdorf, et. al., “Israel’s map and evacuation messages for Gaza are adding to the chaos”, *NPR*, 7 December 2023, <https://www.npr.org/2023/12/06/1217548417/israel-hamas-war-gaza-evacuation-map-messages>.

hairs. As mentioned earlier, the W&C = 70% corresponds to 2.33 women and children for every adult male, whereas, for W&C = 45%, the ratio is less than one to one.

Figure 5b plots the percentage of casualties who were children (blue), women (yellow) and men (orange), calculated from 1 January 2024 through to 30 June in the period after the transition.²⁵ Plotted in black is the percentage of combined W&C casualties. For compatibility, following MoH practices, these calculations were based on the *cumulative* number of population subgroups as the total increased from month to month. (The percentages were even lower when taking independent monthly rates rather than cumulative, as seen in **Figure 5a**. Note how the data gets smoothed out as compared to **Figure 5a**.)

The graph shows that, after 1 January 2024, the W&C casualty rate was always less than 50% (see black line). On 1 April, for example, W&C = 47%. **Appendix 5** shows that, if a third of those adult males who died were combatants who went unreported, then this would correspond to the even smaller proportion of W&C = 37% (see equation 1, **Appendix 5, Figures A5**). All of these calculations contradict the impression asserted by Hamas that 70% of casualties killed by the IDF at any time were women and children.

Thus at different places (eg., in addition Khan Yunis) and times over the war, the W&C statistic sat between 30% and 50% of all casualties of all casualties. As such, the data sends a strong signal that the IDF took major steps in which it attempted to limit civilian casualties. This is especially visible in the data after the aerial phase that dominated in the first month or two of the war (**Figure 5a**).

Figure 5A. Monthly proportion of Gazan W&C casualties across the war (black line) as determined from Hamas dataset published by JEA. The graph shows a transition from IDF solely air operations during the first two months (W&C ≥ 60%), to inclusion of ground troops operations across remaining period (WC < 50%).

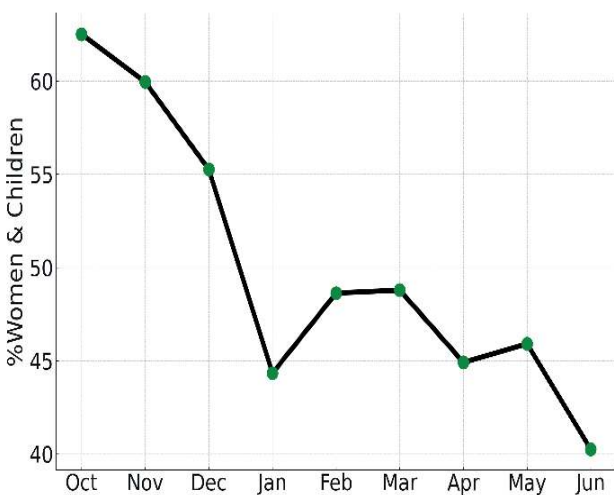
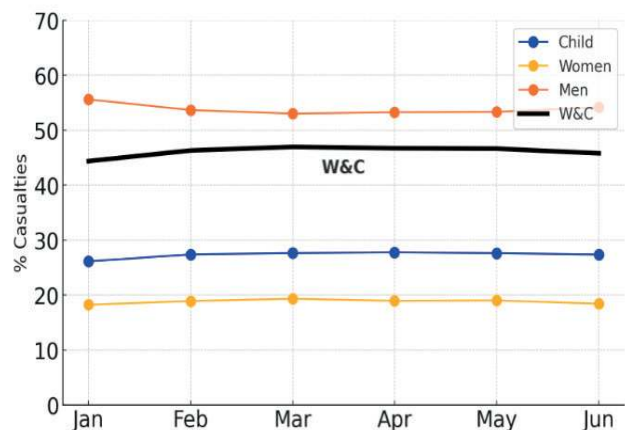


Figure 5B. Proportion of Gazan W&C casualties across the first half of 2024, following entry of IDF ground forces. Proportion of Gazan casualties that were children (<18 years of age; blue), adult women (≥ 18; yellow) and men (≥ 18; orange), as determined from Hamas dataset published by JEA, calculated as cumulative numbers over 2024. Combined W&C (black) sits below 50%. MoH data from JEA including “family notifications” data.



B3. Injury Data Provides a Guide on War’s Impact on Women and Children

We now turn to analyse and compare other diverse datasets. A key contribution of this section of the paper comes from its use of datasets in the Gazan MoH reports that have rarely, if at all, been studied to date.

²⁵ The calculation is for the period between January and June 2024 for several reasons. Since the statistics were cumulative, this step was needed to focus on the period that was post the transition identified in Figure5a. The JEA data ended on June 30.

Twelve detailed MoH hospital reports released between 11 December 2023 and 3 May 2024 were chosen ²⁶ and statistics were assembled from across Gazan hospitals over that period. The proportion of W&C mortalities in the period were found to be W&C = 47% of total casualties (see **Table 2**), similar to other related data sets (**Figure 4**, above). The same reports also listed the number of deaths occurring on 12 single days, namely the day before each report’s publication. **Table 2** shows that the average W&C = 41.6%. These results are close to that of an *Associated Press* analysis published in June 2024, which found that:

Women and children made up fewer than 40% of those killed in the Gaza Strip during April, down from more than 60% in October. The decline both coincides with Israel’s changing battlefield tactics and contradicts the ministry’s own public statements. ²⁷

Again, if a substantial number of adult males who died were combatants who went unreported, then the actual W&C could be considerably lower (see **Appendix 5**).

The same 12 MoH reports provided statistics on injured patients who were received by the hospitals within 24 hours before each MoH report was published, thereby giving 12 rare time snapshots of activities on a typical single day. They also provided statistics on the cumulative number of injured patients disaggregated by hospital, age and gender, which provided an excellent benchmark for comparing impacts on civilians. Data was unavailable for many of the northern Gaza hospitals over some of that period due to wartime communication blackouts experienced during intense combat. However, the available data gave a representative sample to show wartime impacts on central and southern Gaza populations.

Table 2 shows that the rate of W&C injuries recorded by the MoH was very similar to W&C fatalities. Thus, using different and multiple proxies in the MoH datasets, we repeatedly find W&C casualties sit between 39% and 46% in the months December 2023 to April 2024, for which data was available and analysed. Allowing for suppression of information on behalf of Hamas, combatant mortalities could easily reduce this W&C casualty rate by some 10% (see **Appendix 5**). This hospital data contradicts MoH assertions that the rate of women and children’s deaths was always W&C = 70% during that period.

Table 2. W&C injuries data, listed by MoH, 11 December 2023 to 3 May 2024. (Note: %W&C = proportion of W&C casualties (or injuries) listed by MoH. The 12 single-day datasets (rows (b) and (d)) were analysed for the dates from 11 December 2023 to 23 May 2024. The cumulative injuries data (row (a)) was also analysed between those dates. However, the cumulative deaths were analysed between 11 December and 29 March 2024 to diminish the errors created by retrospective non-chronological “family notifications” data introduced by the MoH after that period (and discussed in the main text, Part E2). The other datasets were not affected by this “family notifications” data and were analysed over the full period from 11 December 2023 to 3 May 2024. Details of calculations can be found in Appendix 2.

Gazan southern hospitals - 11 December 2023 to 3 May 2024	%W&C
a) Cumulative injuries	43.8%
b) Injuries on a single day (averaged)	39.2%
c) Cumulative deaths	47.0%
d) Deaths on a single day (averaged)	41.6%

²⁶ See the data set out in the Google Drive, above note 10. The analysis did not go beyond May 2024, since comprehensive MoH reports with disaggregated mortality data stopped then. Snapshots of the data that were issued erratically after May introduced an aggregated “elderly” casualties category making comparisons with earlier disaggregated gender data difficult.

²⁷ Josef Federman, “Takeaways from AP analysis of Gaza Health Ministry’s death toll data”, *Associated Press*, 7 June 2024, <https://apnews.com/article/israel-palestinians-gaza-deaths-women-children-e258a4c14641978a00dfb957ce348957>.

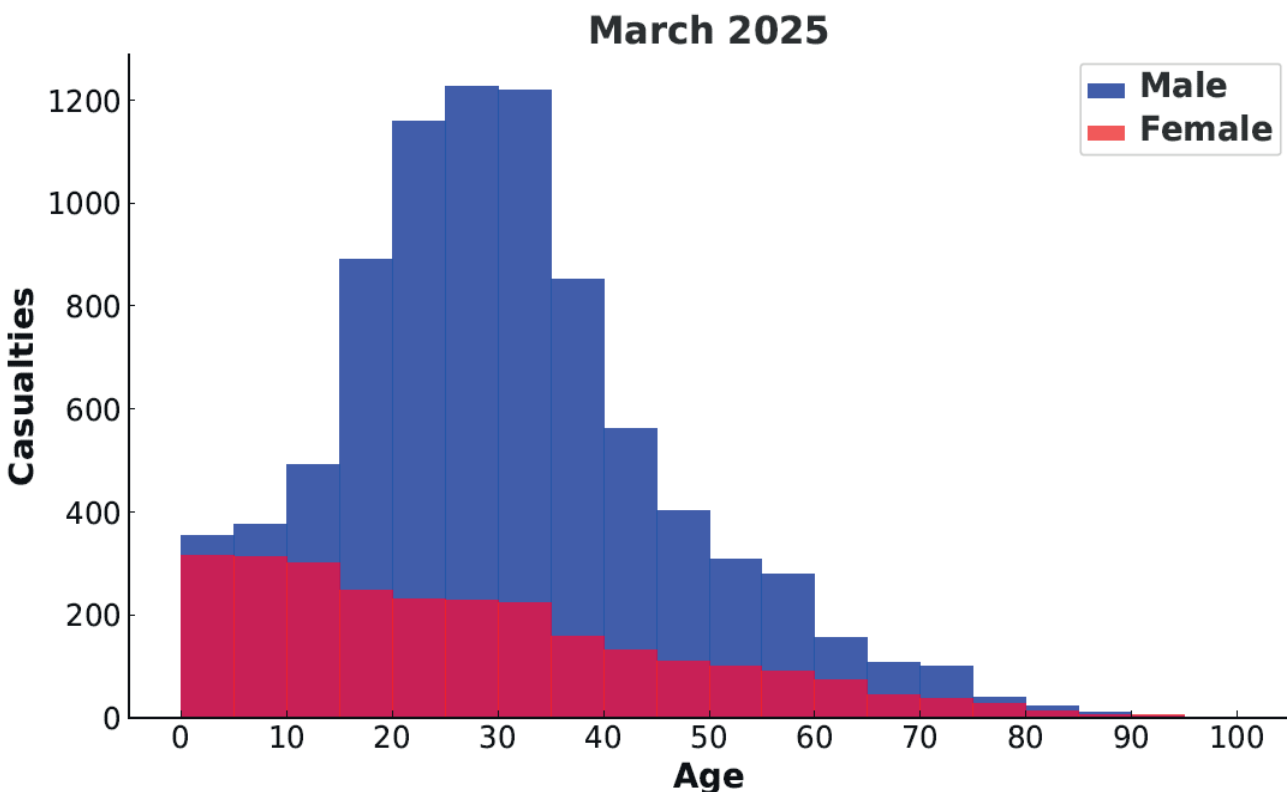
The single day injury data is shown in **Appendix 2**, where the average is W&C = 39.2%, whereas the index for cumulative injuries over the period is W&C = 43.8%. These figures are similar to and corroborate the W&C mortality calculations above.

B4. Women and Children Casualty Corroboration from March 2025 List

A March 2025 MoH casualty list was released at the time this paper was ready for submission. It is the sixth such list and is briefly analysed here. It named 50,021 total casualties identified since the war began and provided full identification details. Comparing it to the names list released in October 2024, we noted 11,224 new casualties that break down into: 8,565 males (76%) and 2,659 females (24%). Most new additions were males of legal combat-age (58% of additions were between $18 \leq M \leq 59$), as shown in **Figure 6**, who were heavily over-represented. The proportion of women and children (including child combatants) was 38%, indicating increased Israeli efforts to avoid Gazan civilian harm since 7 October 2023.

In short, the origin of most of these new casualties added in March 2025 is unknown and leaves many questions. It is puzzling that 76% of the new additions were males with 58% of the new additions of combat-age. Was Hamas admitting that its claims that the IDF targeted women and children were erroneous? Or was the MoH indicating that a large number of males previously went unreported? Or both?

Figure 6. Age distribution of *new* casualties that have been added to the October 2024 dataset that result in the March 2025 dataset. Male (blue) and female (red) casualties. The blue area commences at 0 on the vertical axis but is overlaid.



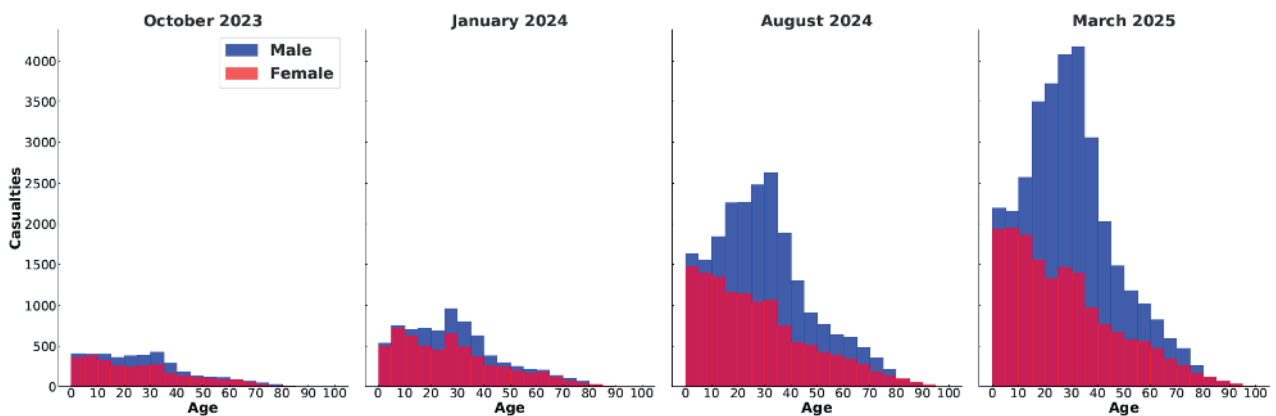
These new data prompt comparisons of age distributions in the four lists released across the war, on 26 October 2023, 5 January 2024, 31 August 2024 and 23 March 2025. Comparisons set out in **Figure 7** show that:

- i) During October 2023, in the legal combat-age class 18–60 years old, male casualties were almost 50% higher than female. But, by March 2025, adult males were approximately 100%

higher than adult females. This should partially be attributed to an influx of legal combat-age males between October 2024 and March 2025, as seen in **Figure 6**.

- ii) The number of identified casualties climbed dramatically after February 2024. However, as shown in section E2 below, this may be an illusion caused by delayed reporting and identification. The real picture should correspond to **Figure 2**, wherein casualties declined from January 2024 and continued to be relatively low compared to 2023.
- iii) According to the March 2025 names list, the cumulative numbers of women and children over the whole war showed that W&C = 51% (25,401 / 50,021), across the war since October 7, 2023. This proportion is inconsistent with the 70% figure that was claimed by the MoH for most of the first year of the war. For example, in June 2024, Dr Moatasem Salah, Director of the MoH Emergency Centre, still stated that 70% of those killed were women and children²⁸ and the GMO continued to claim 70% (see **Figure 3**).

Figure 7. Age distributions of male (blue) and female (red) identified casualties over the war, based on four large datasets of names provided by MoH. Specifically: 26 October 2023 containing 6,747 identified casualties; 5 January 2024 containing 14,122 identified casualties (of 22,600 total identified and unidentified casualties); 31 August 2024 containing 34,345 (of 40,738); 23 March 2025 containing 50,021 (all identified; no longer any unidentified). The blue area commences at 0 on the vertical axis but is overlaid.



²⁸ Josef Federman, "Takeaways from AP analysis of Gaza Health Ministry's death toll data".

Part C: MoH Hospital Records Contradict Epidemiological Modelling and Doctors' Anecdotal Accounts

Additional types of information on the Gazan death toll came from sources independent of Hamas agencies. These included foreign academics who work in the field of epidemiological and population modelling, and foreign medical doctors visiting Gaza on humanitarian missions who provided anecdotal accounts of casualties. Academic epidemiological models projected casualties across timeframes that could be compared to the actual casualty reports eventually released by Hamas agencies for those timeframes. Similarly, reports by visiting medical doctors could be compared with the Gaza hospital records. Both of these independent sources gave data that proved to be wildly inconsistent with the MoH source data and its hospital records.

C1. Epidemiological Modelling Contradicted by Outcomes Shown in Hospital Records

Epidemiological modellers have often been heavily involved and amongst the first to assess war data, and the same is true for the Hamas-Israel war. In February 2024, in a widely distributed study, Jamaluddine et al. attempted to project the civilian death toll from the start of the war up to 6 August 2024.²⁹ Their projections, based on data from MoH reports, suggested that over the six months from 6 February to 6 August 2024, either 53,450 deaths would occur (under a status quo scenario) or 74,290 (under an escalation scenario). But in retrospect, we now know that the MoH and GMO reported 12,038 deaths (combined identified and unidentified deaths [39,623 - 27,585 = 12,038]) for this six-month period, which would be best classified as "status-quo" among the possible scenarios. Hence, the JEA projections overestimated the death toll by over 440%. A closer examination of their model reveals that their study failed to take into account the decline in the death toll after the first aerial phase of the war (i.e., after 26 October 2023), a decline that was observed by others even in 2023.³⁰

In their 2025 study, published in *The Lancet*,³¹ the JEA team continued to try to prove that the MoH had significantly underestimated the death toll of the war. Paradoxically, they claimed that MoH data was accurate and reliable yet simultaneously claimed that the true death toll was some 70% higher. The MoH estimated 37,877 deaths by 1 June 2024, while JEA's three-list capture-recapture model estimated 64,260.³² Big differences are observed around the first three months of the war. JEA's modelling (in their Supplementary Information Appendix, Fig.3, p.9) concluded that there were approximately 50,000 casualties in these months, comprising 17,000 deaths in October, 13,000 in November and 20,000 in December. In contrast, the MoH's 31 December 2023 report claimed there were 21,978 deaths in total over the same time period. Of these deaths, 15,349 were identified while 6,629 were unidentified.³³ In short, the JEA estimate for deaths in the first three months was about 130% higher than the original MoH reports that had already allowed inclusion of many unknown unidentified deaths. While JEA didn't say this explicitly, they implicitly asserted that the MoH must be in error of 130%. There are very simple reasons for the JEA overestimates, which we explain elsewhere and which are also specifically addressed by statistician Prof Abraham Wyner, who detailed major errors in their data-analysis.³⁴

²⁹ Jamaluddine, et. al., "Crisis in Gaza: Scenario-Based Health Impact Projections", LSHTM and Johns Hopkins Centre for Humanitarian Health, <https://gaza-projections.org/>.

³⁰ Leonhardt, "The Decline of Deaths in Gaza".

³¹ JEA, see footnote 15, above.

³² The estimate had a 95% confidence interval, from 55,298 to 78,525.

³³ MoH, 31 December 2023 report, see: Google Drive, footnote 10, above.

³⁴ Abraham Wyner, "A Statistical Response to 'Traumatic Injury Mortality in the Gaza Strip from Oct 7, 2023, to June 30, 2024: A Capture-Recapture Analysis'", *SSRN*, 3 February 2025, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5115647.

In another epidemiological note, published in *The Lancet*, Huynh, et al., asserted verification of MoH casualty data by cross-reference to datasets on staff fatalities as recorded by UNRWA.³⁵ The authors found no evidence that the Hamas casualty estimates had been inflated, through comparison of records of UNRWA staff casualties. However, no UNRWA staff dataset is demographically comparable to the Gaza population (e.g., UNRWA staff do not include children, who are 50% of the Gazan population).

Moreover, an increasing body of evidence has shown that as high a proportion as 10% of UNRWA staff operated as Hamas members,³⁶ casting doubt over the wisdom of comparing the UNRWA staff casualty dataset with the general population casualty rate. Apart from that, it has been shown that the Huynh, et. al., method, applied to datasets with known inflation in casualty numbers, can too often fail to detect inflation, therefore rendering its conclusions as anything from suspect to flawed.³⁷

In their *The Lancet* note from April 2024, Khatib, et al., argued that the number of “indirect” deaths arising from disease and shortages of food and water (rather than direct war trauma) were expected to be huge.³⁸ They asserted that applying a “conservative estimate” of “4 indirect to 1 direct deaths to the 37,396 deaths reported, it is not implausible to estimate that up to 186,000 or even more deaths” could be expected in the Gazan war. Yet, for the period up to 1 April 2024, the official MoH report announced 32 indirect deaths in total through starvation and its complications, with a total of 38 in the September 2024 update (see **Figure 8**). It is possible that even 20–30 deaths may be no different to the normal figure for disease and malnutrition prior to 7 October 2023. There was no proper justification of the factor of 4 used by Khatib, et al., as several refutations in *The Lancet* have pointed out.³⁹

Similarly, there is a stark contradiction between the official MoH statistics and the evaluation of 99 American healthcare workers and doctors who volunteered service in Gazan hospitals over the war. In an appendix to their letter to President Joe Biden, dated 2 October 2024, they wrote: “In total it is likely that 62,413 people have died of starvation and its complications in Gaza from October 7, 2023 to September 30, 2024.”⁴⁰ Most of these will have been young children.” Given the official MoH report of 38 such deaths by 16 September (see **Figure 8b**), we are left questioning whether to believe the estimates of the visiting volunteer doctors or the official records of the MoH, which are orders of magnitude smaller.

³⁵ Benjamin Q. Huynh, Elizabeth T. Chin and Paul B. Spiegel, “No evidence of inflated mortality reporting from the Gaza Ministry of Health”, *The Lancet, Correspondence* Vol. 403, 6 January 2024, <https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736%2823%2902713-7.pdf>.

³⁶ “Evidence Of UNRWA Aid To Hamas On And After October 7th”, UN Watch, 12 July 2024, <https://unwatch.org/evidence-of-unrwa-aid-to-hamas-on-and-after-october-7th/>. UNRWA has published its self-defence: “UNRWA: Claims Versus Facts”, UNRWA, February 2025, <https://www.unrwa.org/unrwa-claims-versus-facts-2025>.

³⁷ The Huynh, et al., methodology would be triggered to recognise as highly inflated only extreme numbers, such as presented in the JEA estimates of Gaza casualties, as compared to the UNRWA data. Lewi Stone and Andrew Solow, “On Detecting Inflation in Gaza War Deaths”, *SSRN*, 6 November 2024, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4967019.

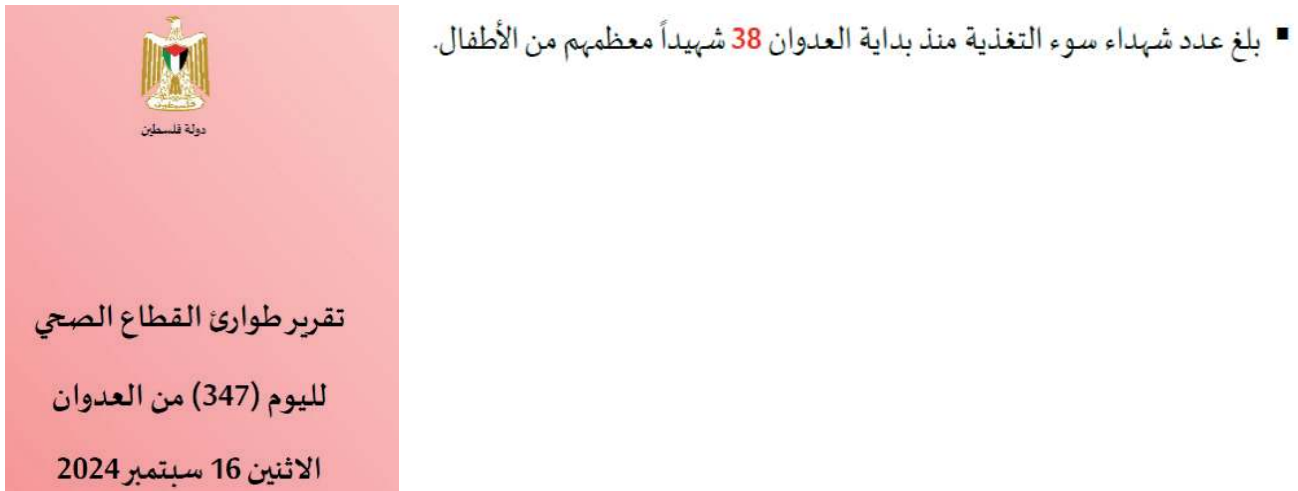
³⁸ Rasha Khatib, Martin McKee and Salim Yusuf, “Counting the dead in Gaza: difficult but essential”, *The Lancet, Correspondence* Vol 404, Issue 10449, 20 July 2024, pp.237–238, [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(24\)01169-3/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(24)01169-3/fulltext).

³⁹ Andrew Gilbert, “Concerns regarding Gaza mortality estimates”, *The Lancet, Correspondence* Vol 404, Issue 10466, 16 November 2024, pp.1927–1928, [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(24\)01682-9/fulltext?rss=yes](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(24)01682-9/fulltext?rss=yes); Rafael Beyar and Karl Skorecki, “Concerns regarding Gaza mortality estimates”, *The Lancet, Correspondence* Vol 404, Issue 10466, 16 November 2024, pp.1925–1927, [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(24\)01683-0/fulltext?rss=yes](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(24)01683-0/fulltext?rss=yes). Another critique is set out in Mike Spagat, “A critical analysis of The Lancet’s letter ‘Counting the Dead in Gaza’”, *Action on Armed Violence*, 10 July 2024, <https://aoav.org.uk/2024/a-critical-analysis-of-the-lancets-letter-counting-the-dead-in-gaza-difficult-but-essential-professor-mike-spagat-reviews-the-claim-the-total-gaza-death-toll-may-reach-upwards-of-186000/>.

⁴⁰ Feroze Sidhwa, et al., “Letter to President Biden and Vice President Harris”, 2 October 2024, <https://www.gazahealthcareletters.org/usa-letter-oct-2-2024>; “Appendix to letter of October 2, 2024 re: American physicians observations from the Gaza Strip since October 7, 2023”, <https://static1.squarespace.com/static/66e083452b3cbf4bbd719aa2/t/66fcd754b472610b6335d66f/1727846228615/Appendix+20241002.pdf>.

Figure 8. Excerpts from the 16 September 2024 MoH report. Translations: **Figure 8a** (left) “Health sector emergency report for day (347) of the aggression. Monday, 16 September 2024. State of Palestine. 2024 Health Emergency Operations Center. Prepared by Palestinian Ministry of Health – Gaza Strip.”

Figure 8b (below, p.2 of Report) “The number of malnutrition victims since the beginning of the aggression has reached 38, most of them children” (translated by Google).



The Jamaluddine, Huynh and Khatib epidemiological studies, the estimates of the visiting doctors and the associated erroneous UN-OCHA estimates led to false messaging about the war’s conduct. Narratives that do not accurately reflect the actual situation on the ground mislead the scientific community.

C2: Physicians’ Anecdotal Impressions Contradicted by Hospital Records

A *New York Times* opinion piece in May 2024 highlighted an international delegation of doctors who volunteered in Gaza’s hospitals, specifically in Gaza during April and May 2024.⁴¹ One of the more devoted, impassioned and articulate of the doctors in the delegation claimed that, at the Kamal Adwan hospital, “I did not see fighters... I had no idea anyway... Most people I treated were women and children.”⁴² This is a claim repeated by other foreign doctors volunteering in Gaza and helped fuel the perception that Israel targeted women and children. But when we examine MoH statistical reports, these claims are disproved. While foreign doctors claimed that women and children were disproportionately represented at hospitals, official statistics from major hospitals showed a different pattern.⁴³ Detailed MoH data, taken from MoH source reports, and used as the basis for our findings are to be found in **Appendix 6**.

According to the actual data in MoH reports,⁴⁴ men consistently dominated both the death and injury counts. For example, at Kamal Adwan Military Hospital (previously a children’s hospital), the MoH report showed that, up until 11 December 2023, the hospital had treated M=1,681 men as compared to W=840 women and C=770 children for injuries (data in **Appendix 6**). Between 14 April and 3 May 2024, the hospital recorded 1,383 deaths, with M=641 of those being adult males, i.e. 46% of the total. MoH reports for the first 100 days of 2024 consistently indicated

⁴¹ Samer Attar, “Two Weeks Inside Gaza’s Ruined Hospitals”, *The New York Times*, 21 May 2024, <https://www.nytimes.com/2024/05/21/opinion/gaza-hospital-collapse.html>. Nicholas Kristof, “One photo that captures the loss in Gaza”, *The New York Times*, 4 May 2024; <https://www.nytimes.com/2024/05/04/opinion/gaza-child-deaths.html>.

⁴² “The Brutality of War”, *MSNBC*, 24 May 2024, <https://www.msnbc.com/all-in/watch/-apocalyptic-american-surgeon-on-his-two-weeks-inside-gaza-s-ruined-hospitals-211566661657>.

⁴³ The MoH reports from the first months of 2024 provide official data for operational hospitals. The fact that not all hospitals were operational in this period does not interfere with the analysis, as sufficient samples are available from relevant hospitals as needed in the contexts presented here.

⁴⁴ Google Drive, footnote 10, above.

that adult male injuries outnumbered those of children and women during this period, as shown in **Figure 9a**, below. Given the prominence of adult male casualties and injuries, how could the foreign doctors have overlooked their presence? It seems that anecdotal impressions of events were partial, misleading or mistaken.

Dr Mark Perlmutter, a US surgeon who visited the European Hospital in March 2024, claimed: “Overwhelmingly, our victims were children. I would say 70-75% of the people we operated on were elementary school age or younger.”⁴⁵ Yet the MoH statistics for the European Hospital show a different picture: children were the group with least number of injuries (see **Appendix 6**). According to the official MoH dataset, up until 3 May, there were C=1,264, W=1,581 and M=3,797 injuries treated. Over the month of March alone, the hospital treated C=132 child injuries, W=161 women’s injuries and M=535 adult male injuries. These statistics from the MoH suggest that children accounted for 16% of the total, making it anomalous that Perlmutter encountered so many children while he was there. Of course, it is entirely possible that the hospital administrator, who might have been a Hamas appointee – as was the director of the main Gaza hospital, Al Shifa⁴⁶ – had directed that visiting physicians such as Dr Perlmutter work in a children’s ward. Or, it may have been that the Gazans themselves wanted their children treated by the best physicians they thought available: the foreign doctors. Or, with regard to various claims about treating proportionately fewer Hamas fighters, it is worth noting that most soldiers badly injured in combat would be stripped of their valuable weapons and kit on the battlefield. They would be unlikely to bring them back to a hospital. Therefore, given that many Hamas fighters are not depicted as fighting in uniform, a foreign doctor could have little or no idea whether the person they were treating was a fighter or a civilian.

Another doctor, Dr Deborah Harrington, who was at the Al Aqsa Hospital in January 2024, also claimed, “What I overwhelmingly saw was children.”⁴⁷ However, as an obstetrician, her experience may have been directed by the hospital director toward treating women and children. In contradiction, according to exact numbers for the Al Aqsa Hospital given in the official MoH reports, on 31 January there were C=1,294, W=1,608 and M=2,092 casualties, while the injuries were C=2,689, W=3,046, M=5,310. Over the month of January, there were C=104, W=140, M=278 deaths, and C=241, W=211, M=476 injuries (see **Appendix 6**). While there were many children and women, the amounts of male deaths and injuries were by far the greatest.

Contradicting some of the visiting doctors, Dr Baxtiyar Baram, part of the same delegation of foreign doctors visiting Gazan hospitals, confirmed in an interview: “I saw that hospitals had been used for hiding Hamas leaders”. He went on to say he had spoken to a founder of Hamas in one of the hospitals and sat with him for coffee and that the Gazans must accept that Hamas uses their hospitals as bases, because they cannot ask it to leave.⁴⁸ We are left questioning the anecdotal accounts of the partisan physicians visiting Gaza.

Numerical absurdity is evident in the “Letter to Biden”, signed by 44 physicians who visited Gazan hospitals in 2024 and also summarised in an opinion piece in *The New York Times*, titled “What We Saw in Gaza”, that outlined the experiences of 65 doctors, nurses and paramedics who volunteered in Gazan hospitals in early 2024. In July, they claimed that “it is likely that the death toll from this conflict is already greater than 92,000, an astonishing 4.2% of Gaza’s

⁴⁵ Feroze Sidhwa and Mark Perlmutter, “‘We’re Responsible for This’: American Surgeons Return from Gaza, Call for End of U.S. Culpability in Genocide”, *Democracy Now*, 11 April 2024, https://www.democracynow.org/2024/4/11/surgeons_in_gaza.

⁴⁶ David Collier, “International media and the Hamas supporting Doctors of Shifa”, *David-Collier.com*, 19 November 2023, <https://david-collier.com/doctors-shifa-hospital/>.

⁴⁷ Christiane Amanpour, “UK doctor back from Gaza: I’m ashamed that we’re doing this to fellow humans”, *CNN*, 18 January 2024, <https://edition.cnn.com/videos/world/2024/01/18/intv-amanpour-deborah-harrington-obstetrician-gaza.cnn>.

⁴⁸ Seth J. Frantzman, “Hamas denies patients treatment, Gazans don’t support them, foreign volunteer doctor reveals”, *The Jerusalem Post*, 29 May 2024, <https://www.jpost.com/israel-hamas-war/article-804116>.

population”.⁴⁹ In October 2024, 99 doctors signed a similar letter, increasing the toll to 118,908. All of the original 44 doctors then signed another letter, wherein they claimed that, at that time, “it is not implausible to estimate that up to 186,000 or even more deaths could be attributable to the current conflict in Gaza.” The official statistics of Gazan hospitals compiled by the MoH contradict the macabre narratives of those doctors. The datasets of Hamas’s own MoH listed around 42,000 purported dead at the time, including its estimated unidentified fatalities and unidentified combatants (see **Figure 11**).

An important final point concerning the anecdotal data from volunteer physicians is the deep complicity of Gaza hospital senior officials and doctors in the Hamas paramilitary and allied terrorist effort.⁵⁰ A pitched armed battle between Hamas and the IDF at Kamal Adwan Hospital that took place over the 2024/2025 new year resulted in the deaths of 19 identified terrorists and the arrests of 240 others.⁵¹ The previous Director of Kamal Adwan Hospital, Ahmed Kahlot,⁵² and subsequent director, Hossam Abu Saffia,⁵³ both hold the senior military ranks within Hamas of Lt Col and Col, respectively.⁵⁴ Even the Palestinian Authority Security Forces spokesman, Adnan Al-Damiri, criticised Hamas for using Gaza’s hospitals as military bases, such as for issuing public notices instructing named persons to report to Nasser Hospital for interrogation by Hamas military intelligence.⁵⁵ Gaza’s biggest hospital, Al-Shifa in Gaza City, was a major military base and the scene of other pitched battles, where Israeli hostages were held and where spaces were dedicated for military command, prisoners, interrogations, communications and military transport (by ambulance).⁵⁶ In 2014, the use of Al-Shifa Hospital as a command-and-control headquarters for Hamas commanders was also well known.⁵⁷ A controlling presence of Hamas military commands at the hospitals reflects the human-shield policy being used widely by Hamas, and which accounted for many of the civilian casualties.⁵⁸ It was confirmed by the IDF and by the account of Dr Baram, above.⁵⁹ The sophisticated administrative machinery controlling those visits, the stories they were told and the type of patient they were given to treat, coupled with the perhaps inevitable predisposition to naivety of some of the visitors, probably predetermined the inevitable outcomes of some of their observations.

⁴⁹ Feroze Sidhwa “65 Doctors, Nurses and Paramedics: What We Saw in Gaza”, *The New York Times*, 9 October 2024, <https://www.nytimes.com/interactive/2024/10/09/opinion/gaza-doctor-interviews.html>. Dr Sidhwa led political outcomes from medical missions, see footnotes 40 and 45, above.

⁵⁰ Collusion by medical personnel with terrorists was sometimes by coercion, see: <https://x.com/cogatonline/status/1911848684796473669>.

⁵¹ Oved Lobel, “The latest IDF raid on the Kamal Adwan Hospital debunks absurd UN report”, AIJAC, 9 January 2025, <https://aijac.org.au/fresh-air/the-latest-idf-raid-on-the-kamal-adwan-hospital-debunks-absurd-un-report/>.

⁵² Emmanuel Fabian, “Gaza hospital director admits Hamas used medical complex as operational hub”, *The Times of Israel*, 19 December 2023, <https://www.timesofisrael.com/gaza-hospital-director-admits-hamas-used-medical-complex-as-operational-hub/>.

⁵³ Maayan Hoffman, “Who is ‘Hamas Doctor’ Hussam Abu Safiya?”, *You Tube* video, posted by *ILTV Israel News*, 31 December 2024, <https://www.youtube.com/watch?v=7t4qKIQ-XiA>.

⁵⁴ Emanuel Fabian, “Hamas member tells IDF interrogators that gunmen operated in Kamal Adwan Hospital”, *The Times of Israel*, 7 January 2025, <https://www.timesofisrael.com/hamas-member-tells-idf-interrogators-that-gunmen-operated-in-kamal-adwan-hospital/>.

⁵⁵ Ephraim D. Tepler and Itamar Marcus, “Palestinian Authority: Hamas is using hospitals for military purposes”, *Palestinian Media Watch*, 30 December 2024, <https://palwatch.org/page/36787>.

⁵⁶ Nidal Al-Mughrabi, “Hamas command centre, weapons found at Gaza hospital, Israeli military says”, *Reuters*, 15 November 2023, <https://www.reuters.com/world/middle-east/israel-raids-gazas-al-shifa-hospital-2023-11-15/>.

⁵⁷ William Booth, “While Israel held its fire, the militant group Hamas did not”, *The Washington Post*, 15 July 2014, http://www.washingtonpost.com/world/middle_east/while-israel-held-its-fire-the-militant-group-hamas-did-not/2014/07/15/116fd3d7-3c0f-4413-94a9-2ab16af1445d_story.html.

⁵⁸ James Pamment, et al., “Hamas’ use of human shields in Gaza”, NATO Strategic Communications Centre of Excellence, 6 June 2019, https://stratcomcoe.org/cuploads/pfiles/hamas_human_shields.pdf.

⁵⁹ E.g., IDF, “Hamas’ Exploitation of Hospitals”, *You Tube* video, 25 February 2024, https://www.youtube.com/watch?v=zX_Gh6UcWSg. Baram, quoted at footnote 48, above.

Part D: Contradictions Between Hamas Media Announcements and Hospital Records

The Hamas GMO has interpreted casualty data differently from the MoH, putting its spin on the communication of total casualties. It served a vital function for Hamas in the information war, being used to characterise Israeli military operations as genocidal attacks on civilians, for consumption by global media, non-governmental organisations, foreign governments and intergovernmental authorities and academics. During key periods in the war, the UN's OCHA relied on GMO data and, perhaps unintentionally, played a key Hamas support role by relaying GMO announcements globally.

However, the GMO did not itself collect data from original sources but curated MOH data, reformulating that data into a digestible form fit for its purpose. In that process, the GMO falsified data to serve as Hamas disinformation.⁶⁰ The first demonstration of its falsification was that GMO data was frequently inconsistent with MoH data. Even a prominent academic advocate for the integrity of Gazan casualty datasets, professor of economics and activist Mike Spagat, has noted this inconsistency.⁶¹ Zaher al-Wahaidi, MoH Director of Information, stated in an August 2024 interview with Sky News that differences between MoH and GMO casualty data announcements arose from their different counting methodologies.⁶² Here, we show that GMO was often fabricating statistics and should be disregarded.

D1. Women and Children Mortality Trends: GMO Contradicts MoH

Timeseries plots of casualties over the period from 1 January to 1 April 2024 that compare GMO and MoH datasets are given in **Figures 9b** and **9c**, the two right-hand panels. **Figure 9b** indicates that the cumulative number of Gazan adult male casualties (green) reported in the MoH hospital system is increasing substantially over time and at a greater rate than the numbers of women and children (blue and red). In contradiction, the GMO was instead reporting at the same time that the cumulative number of children casualties (red) dominated and was increasing at the greatest rate (**Figure 9c**), not adult males. The GMO used its reformulated data to suggest that the IDF targeted women and children. As would be expected in periods of war, there should be a strong correlation between casualties and injuries. The timeseries of admissions of injured people into hospitals as shown in MoH datasets (**Figure 9a**) correlates with the data for mortalities (**Figure 9b**) in the MoH dataset, with both showing that adult males dominated and increased the most. Thus, the MoH mortalities and injuries datasets corroborate each other, whereas the GMO dataset showed opposite trends to both the MoH casualty and injuries datasets.

In summary, the Hamas data gave us two mutually contradicting answers to the question concerning whether the IDF was targeting combatants (represented as a portion of adult males) or was instead indiscriminately killing the civilian population. The GMO claimed that the deaths of children far outpaced the deaths of women and men, while the MoH claimed that deaths of adult men dominated.⁶³

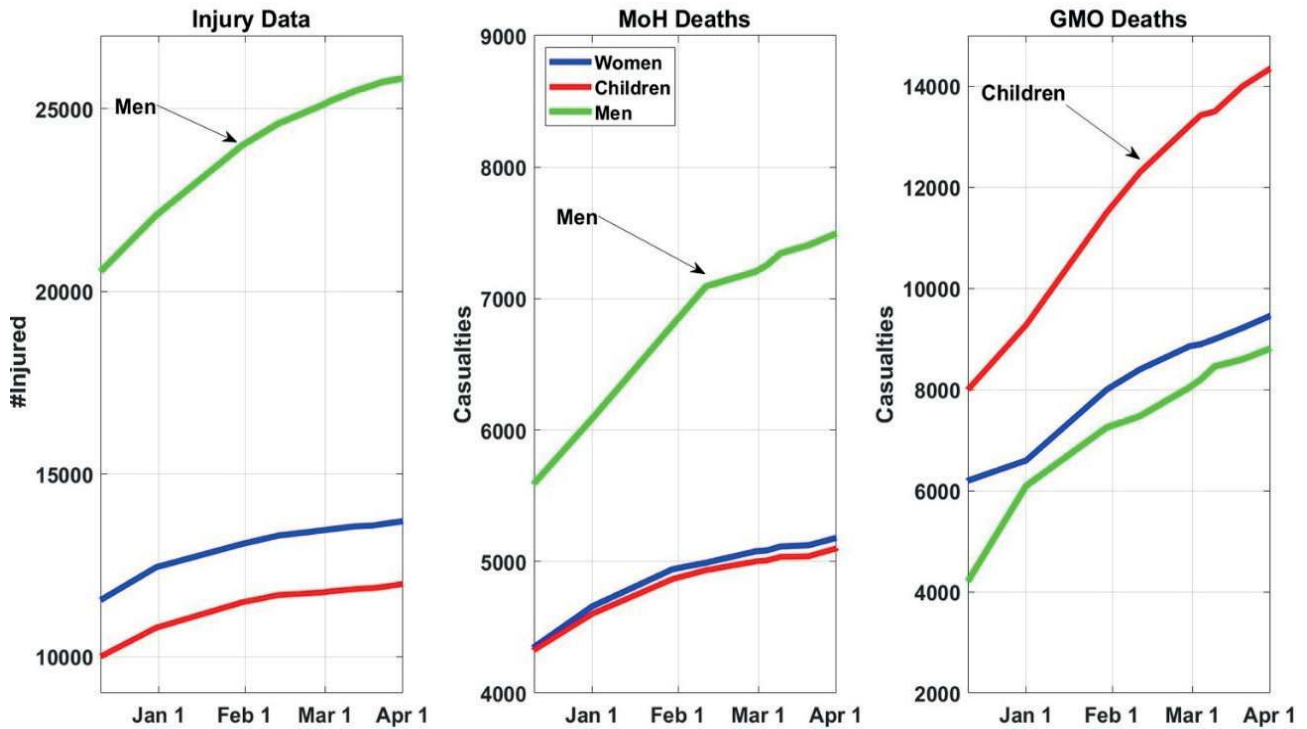
⁶⁰ Simpson, et al., footnote 7, above.

⁶¹ Mike Spagat, "Evaluation of war-related deaths in Gaza: discrepancies and data quality decline after October 26 evident", *Action on Armed Violence*, 21 March 2024, <https://aoav.org.uk/2024/evaluation-of-war-related-deaths-in-gaza-discrepancies-and-data-quality-decline-after-october-26-evident/>. Re MoH 7 October 2024 report, see also: Michael Spagat, "The Death Toll in the Gaza War", Royal Holloway, University of London, <https://pure.royalholloway.ac.uk/en/projects/the-death-toll-in-the-gaza-war>.

⁶² Al Wahaidi, footnote 13, above. See also: "Opening the Black Box: Fresh Insights into the Casualty Recording System of the Gaza Ministry of Health", *Every Casualty Counts*, 29 August 2024, <https://everycasualty.org/opening-the-black-box-fresh-insights-into-the-casualty-recording-system-of-the-gaza-ministry-of-health/>.

⁶³ Note that the lack of any pattern in the MoH data showing that Gazan women and children were targeted was unaffected by whether all Gazan hospitals were fully operational.

Figure 9. a) Cumulative number of the injured treated in the hospitals of Gaza (MoH data) broken down into children (<18; red), adult males (green), adult females (blue). **b)** Cumulative identified casualties in Gazan hospitals as published in official MoH reports. **c)** Cumulative casualty numbers published by the GMO. Graphs begin on 1 January and end on 4 April 2024. In the MoH data, injuries and casualties of men dominate and increase the most with time as compared to women and children. In contrast, the GMO reports that children casualties dominate and increase the most in time.



D2. Long-term Mortality Trends: GMO Contradicts MoH

Some of the differences between the MoH and GMO interpretations of statistics in the Hamas-Israel war are a result of the different methods they each use to present the data. To illustrate this, we asked the simple question: Did the war’s impact on children⁶⁴ in Gaza ease off over its first year? To assist in answering this, we divided the year 7 October 2023 to 7 October 2024 into two periods:

P₁, the first six months, from 7 October 2023 to 29 March 2024; and

P₂, the following six months, from 30 March to 7 October 2024.

We then asked: For which period of the war was the death toll for children the greatest: **P**₁ or **P**₂?

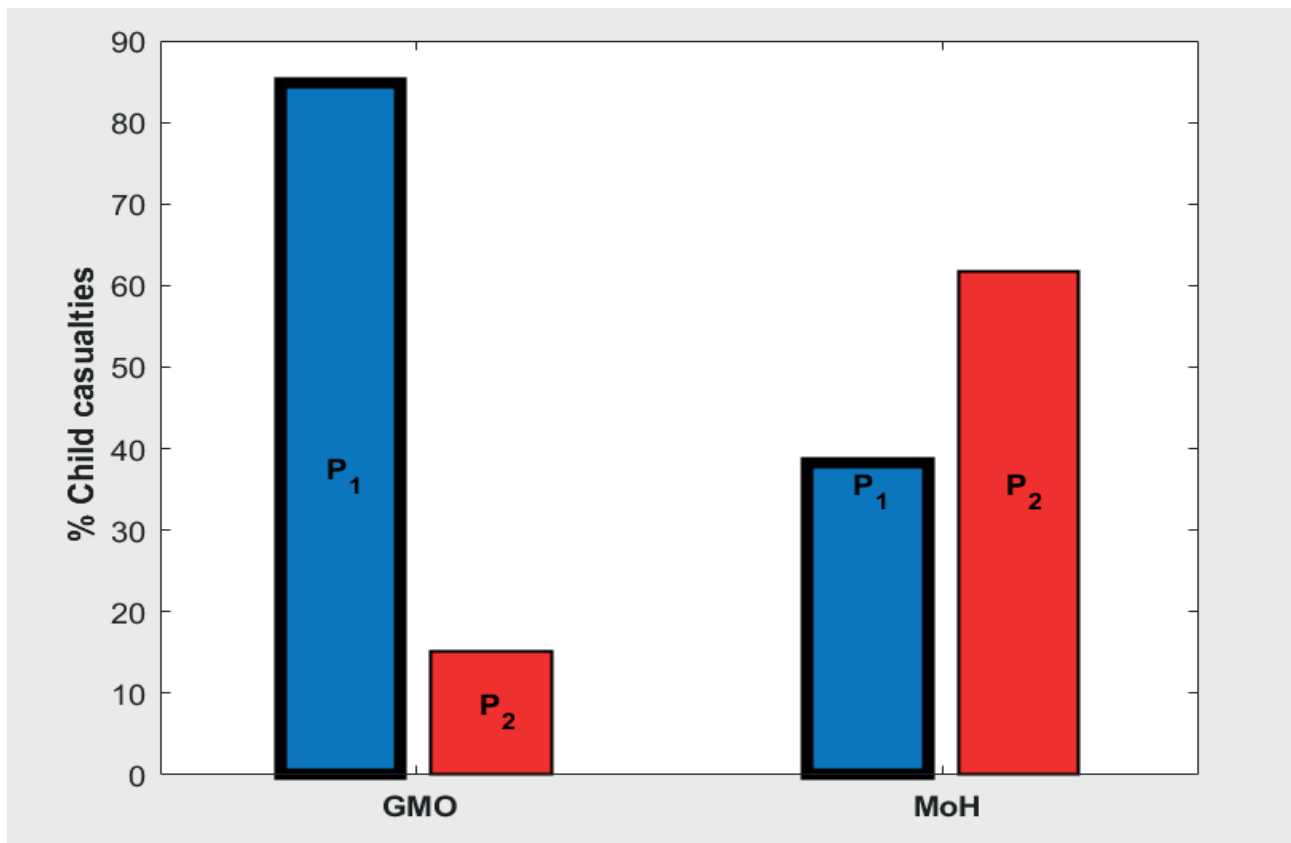
Figure 10 shows that, according to the GMO, most child fatalities occurred in **P**₁, when 85% of child mortalities (blue) occurred, with relatively few, 15%, (red), occurring in **P**₂. In contrast, the MoH data showed that 38% of all child mortalities occurred in **P**₁ and that the death rate was worse for children in **P**₂ as the war proceeded. **Appendix 4** provides source data for constructing the bar chart.

In short, even the most basic death toll statistics provided by these Gazan offices to the scientific community and public are unsuitable for answering the most fundamental of questions without contradiction.

⁶⁴ The focus is on the death toll of children in many examples that follow because of difficulties in obtaining comparable data for the two periods for men and women given the appearance of an elderly category.

The differences between the GMO and MoH interpretations are outcomes of the delayed inclusion of “family notification” data into the MoH system, and the manner in which the MoH jumbled the data. Our understanding is that the MoH will rectify the data jumbling eventually. Nevertheless, this was the uninterpretable data it provided to the world over 2024.

Figure 10. Cumulative number of Gazan child fatalities published in official reports of GMO and MoH showing contradictory trends. GMO (left side) and MoH (right side). **P₁** (blue) represents the first six months from 7 October 2023 to 29 March 2024; **P₂** (red) represents the following six months from 30 March to 7 October 2024. The GMO asserted that most child fatalities occurred in **P₁**, comprising 14,350 (85%) of all 16,927 total child fatalities up until 7 October 2024, so that the remaining 15% of child fatalities occurred in **P₂**. In contradiction, the MoH reports gave the impression that more children died in **P₂**. Source data is provided in **Appendix 4**.



D3. GMO Numbers Often Don't Add Up and are False

In a heated exchange on the Piers Morgan program in September 2024, Israeli journalist Gideon Levy argued with conviction that 17,000 children had been killed in Gaza over the war.⁶⁵ His source appeared to be the statistical reports of the GMO⁶⁶ which gave an identical number. In contrast, the MoH number of identified child casualties stands at 11,355⁶⁷ and even this figure may be problematical. How can official MoH and GMO numbers differ by a factor of 50%?

The GMO functioned as a propaganda agency disseminating data on the war death toll that diverged dramatically from verifiable datasets collected by the MoH. The GMO appeared to add thousands of unidentified deaths to the child casualty count, even though it was impossible for the GMO to evaluate the number of these extra deaths.

⁶⁵ Piers Morgan, “‘All-out war’ Israel attacks Lebanon”, *YouTube* video, 23 September 2024, https://www.youtube.com/watch?v=5TwY_AJFjJQ&ab_channel=PiersMorganUncensored.

⁶⁶ Google Drive, footnote 10, above.

⁶⁷ See Figure 11a.

To show this in the simplest possible way, we note that the GMO and MoH datasets were always in close agreement with regard to the cumulative total death toll. Thus, on 31 August 2024, the number of casualties was close to 40,738 according to both the GMO and MoH (Figure 11, below). For the MoH, 34,344 of these casualties were fully identified, while 6,347 ($40,738 - 34,344 = 6,347$) remained unidentified. The fully identified casualties were grouped into 11,355 children, 7,377 women and 15,612 men.⁶⁸

In contrast, GMO would have used these MoH numbers as a benchmark but introduced a further 6,347 casualties to acknowledge the 6,347 unidentified casualties that the MoH did not. Because they were unidentified, the GMO provided a guestimate as to how these 6,347 casualties might have been divided between women, children and men, although the actual numbers were unknown. According to the GMO, on 31 August 2024, these casualties were 16,673 children, 11,269 women and 12,749 men.⁶⁹ Thus, the GMO increased child casualties from 11,355 (i.e. MoH count) to 16,673. The only way for the GMO to make these number boosts of ~5,000 children, and a similar boost of ~4,000 women, given there were only 6,347 unidentified (available to use for the boosting), was to *reduce* cumulative male casualties by 2,863. The MoH hospital data indicated 15,612 adult male deaths, yet the GMO somehow reduced this figure down to 12,749. How can the total number of adult male casualties proclaimed by the GMO be less than the number of hospital-identified male casualties? This is where the numbers fail to add up. **Appendix 3** gives further technical details of the absurd Hamas GMO casualty accounting.

The problems we have reported here have been going on for a long time. In the first months of 2024, analyses by our own group⁷⁰ and Epstein⁷¹ brought to light the GMO misrepresentations and statistical impossibilities.

⁶⁸ These numbers can be calculated from Figure 11 after suitable gender allocations from the entries in the non-gendered combined elderly category.

⁶⁹ Google Drive, footnote 10, above.

⁷⁰ Simpson, et al., footnote 7, above.

⁷¹ Gabriel Epstein, "How Hamas Manipulates Gaza Fatality Numbers: Examining the Male Undercount and Other Problems", The Washington Institute for Near East Policy, 25 January 2024, <https://www.washingtoninstitute.org/policy-analysis/how-hamas-manipulates-gaza-fatality-numbers-examining-male-undercount-and-other>.

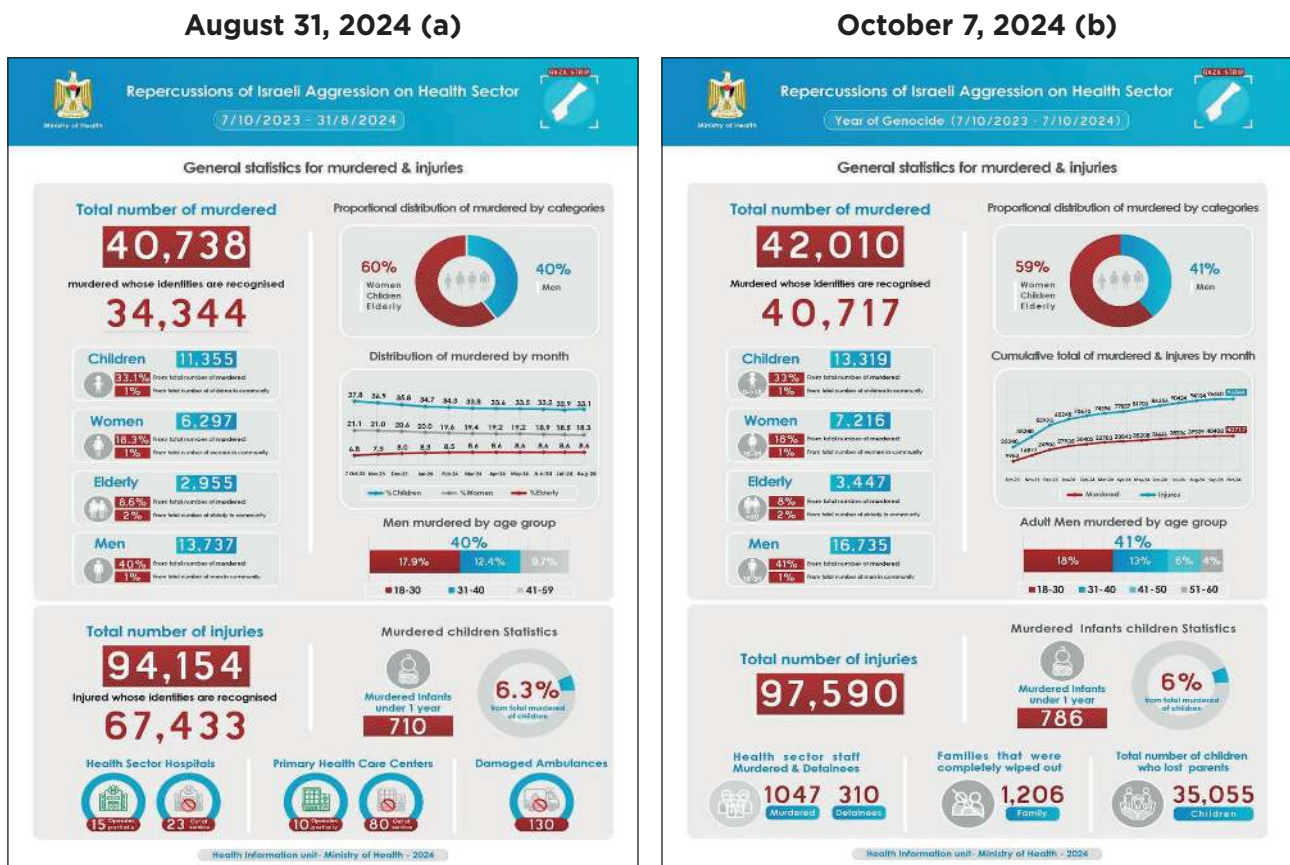
Part E: Integrity Problems with the Hamas Ministry of Health Data

As discussed here in Part E1, updates that the MoH published from Gazan hospital records were a jumbled collection of results from different surveillance methods shuffled in time across different periods that made instantaneous snapshots of the war situation at any given time, and analysis of mortality trends, meaningless for various periods of the war. Thousands were counted as casualties of war by the MoH despite lack of information concerning causes of their deaths or the verification procedures were repeatedly described in contradictory ways, as discussed in Part E2.

Astonishingly, despite these problems, there appeared to be broad public acceptance in the UN, global media and academia that MoH statistics were largely reliable. Nevertheless, some media and political controversy persisted. On 6 February 2025, the United States House of Representatives barred the State Department from citing MoH casualty counts.⁷²

E1. Mortality Data was Shuffled and Disordered

Figure 11. Key MoH charts summarising cumulative death tolls for 31 August (left) and 7 October 2024 (right).



Summary charts of cumulative casualty numbers published and distributed by the MoH on 31 August and 7 October 2024⁷³ are reproduced in **Figure 11**. We now focus on the difference between these two reports concerning cumulative total death tolls and subtotals for children’s deaths during “September 2024”. The emphasis is on children as it is impossible to disentangle

⁷² Nick Robertson, “House votes to ban State Department from citing Gaza Health Ministry death toll statistics”, *The Hill*, 27 June 2024; <https://thehill.com/homenews/house/4744241-house-amendment-gaza-death-toll/>.

⁷³ Note that the 7 October 2024 MoH report indicates that the number of “unidentified” mortalities was 3% of all casualties, while on 31 August it was 16% and in April it was 44% of all casualties.

the other categories separately due to the introduction by the MoH in May 2024 of an “elderly class” (>60 years of age) in which it merged adult genders.

A comparison of panels **(a)** and **(b)** in **Figure 11** shows that over September 2024, the MoH number of identified child casualties was 1,964, (13,319 – 11,355) which was paradoxically far larger than the 1,272 total of *all* casualties (42,010–40,738). Nonsensical as it might appear, this is because casualty numbers that were not included earlier in the year were belatedly inserted into the dataset for September 2024, mostly as “family notifications”. The impression that, during the five-week period, the IDF was responsible for 1,964 identified deaths of children is completely wrong. It is impossible to determine the true number of child casualties in this five-week period, since the MoH did not release any further information or dates of deaths, although, from the most recent MoH ‘Dashboard’ infographic report made available in March 2025,⁷⁴ it can be inferred that there were approximately 300 deaths of children, not 1,964. The data in the charts were not the timeseries snapshots for the nominated dates that they appeared to be. Instead, they reflected the MoH’s stage of processing of their surveillance material at that date. Similar discrepancies can be observed in all MoH reports after April 2024.

The reshuffling of the data between different time periods in the ongoing casualty identification process makes interpretation difficult. Two surveillance systems were superimposed – the actual deaths and the belated verifications. If the dates indicated on the original MoH datasets are accepted at face value, then this superimposition and jumbling of the datasets leads to erroneous analysis. It must be concluded that the data in these charts cannot provide a reliable representation of the pace of events in the war as time progresses. This contrasts with the expectations we may have had from the earlier MoH reports and GMO and UN announcements, where the date stamp had actual meaning.

The MoH chart to the left, for 31 August 2024, states that there were 34,344 identified casualties while the chart to the right shows that, by 7 October 2024, the identified casualties had increased to 40,717. This sharp increase of 6,373 occurred in the course of five weeks. However, according to the MoH names lists, 1,792 names were removed from the 31 August records – in parallel – without mention or explanation, so it was in fact a greater increase of approximately 8,000 verified named casualties added to the 7 October 2024 list. This sudden 20% total increase in identified casualties, about which we know almost nothing, raises many questions.

The number of casualties that actually lost their lives specifically during those five weeks can be found by deducting the total casualty figure in panel **(a)** from that in panel **(b)** in **Figure 11**. That is 1,272 (42,010 – 40,738) lives lost. Thus, the remaining ~6,700 increase in total identified casualties came from verifications of deaths reported to have occurred earlier in the year (mostly “family notifications”) that were more than fivefold the number of deaths reported to have occurred in September 2024. It is largely for this reason that the timeseries of casualties across the war shown in **Figure 2** differs so substantially from the picture that emerges from statistics analysed from successive names lists up to March 2025, seen in **Figure 7**.

E2. Dubious Verification for 15,000 Unidentified Casualties

Mortality data in the 31 March 2024 MoH report (copied in **Appendix 1**) showed 17,775 identified casualties and 15,070 unidentified casualties, totalling 32,845. This meant that nearly 50% of the death toll could not be properly identified by 31 March 2024. It is not possible to assess with confidence from where the 15,070 unidentified casualties originated and whether they were ultimately truly identified, as the MoH subsequently claimed. Presumably most of the 15,070 unidentified deaths occurred during the period of intense fighting in North Gaza, amid

⁷⁴ MoH, <https://sehatty.ps/public/> (with thanks to assistance provided by Gabriel Epstein).

hospital communication blackout periods (November 2023 – March 2024), when the IDF's ground forces entered and became operational in North Gaza.

The Director of the MoH Information Centre, Zaher al-Wahaidi, claimed that a large number of the 15,070 unidentified casualties were documented by hand (pen and paper) rather than being entered into the central computer system, and that details were kept at individual hospitals intended for later processing; that is, their registration was merely delayed. But in contradiction to this, al-Wahaidi also stated that mostly only aggregated "head counts" were recorded so that individual identification details were not kept, which seems the more likely scenario.

These staff members, affiliated with the Ministry of Health and spokespersons for the hospital, count the number of martyrs through emergency departments, washing facilities, or the morgue. Due to these circumstances, the Ministry of Health did not obtain complete or even dual names but instead sufficed with counting the number of bodies after November 10.⁷⁵

As an analyst of the Hamas data, Prof Mike Spagat, added: "Conversions of head-counted numbers into individualised deaths... cannot, unfortunately, attach names and identities to specific unidentified bodies."⁷⁶

Hence, we can know little about the unidentified headcounts amongst the 15,070. Yet, on 7 October 2024, the MoH announced that almost 14,000 of the 15,070 had been identified. This can be seen in **Figure 11b** which indicates that only 1,293 casualties remained unidentified (15,070 – 13,777 = 1,293) by this time.

According to the 31 August 2024 MoH list of names, 6,897 of these 15,070 unidentified casualties were identified through online electronic submissions to the MoH via GoogleDoc forms. These are the aforementioned "family notifications". The MoH took the view that the group of 6,897 unidentified bodies obtained from headcounts could be considered as identical to the group of 6,897 submitted as family notifications. But they aren't exactly the same groups. The MoH filled in the missing identities of 6,897 people by switching them with identities of those who appeared on the lists of electronic notifications. An analysis of the 31 August 2024 MoH named casualties list showed a separate subset of 1,103 "family notifications" that were "approved by a judicial committee decision". The existence of this smaller subset indicated that the vast majority (85%) of "family notifications" did not in fact gain "judicial committee" approval. Moreover, al-Wahaidi's assertion that all named casualties from "family notification" submissions were judicially approved⁷⁷ was found to be untrue again in April 2025, when he admitted that judicial verification processes began only in October 2024.⁷⁸ The end of March 2025 statistics revealed that merely 554 out of 15,648 "family notifications" were decided by a judge.

These misrepresentations cast doubt on the integrity of the online "family notifications" data and MoH endeavour. In summary, by 31 August 2024, of the 15,070 unidentified casualties, 6,897 were listed through "family notifications" and some other thousands were identified somehow but registered only later. Hence, at the start of September 2024, details of the identities of about half of the 15,070 were still lacking and only vaguely understood.

On 7 October 2024, the MoH announced (**Figure 11**) that, of the 15,070 originally unidentified deaths, almost 14,000 had been identified. The MoH 7 October 2024 list of names indicated

⁷⁵ Al Wahaidi interview, *Every Casualty Counts*, footnote 13 above.

⁷⁶ "Opening the Black Box", see footnote 62, above.

⁷⁷ Al Wahaidi, see footnote 13, above.

⁷⁸ Ben van der Merwe, "Hundreds of names removed from official Gaza war death list", *Sky News UK*, 5 April 2025, <https://news.sky.com/story/thousands-of-names-removed-from-official-gaza-death-list-13341928>.

that 10,434 of these 14,000 were family notifications and some other thousands (according to al-Wahaidi) were identified but directly registered only later. Therefore, during September 2024 alone, there were approximately 6,890 new identifications.

The large number of new identifications registered without the body of the deceased being verified made it possible for online “family notifications” to open the door for thousands of previously unreported deaths to enter the MoH system, whether they were from war trauma or natural causes or still alive, to gain martyr status for the reporting families. Gazans were incentivised to list relatives as martyrs as permanent family salaries or opportunities for future compensation were offered for the martyrdom of their family members.⁷⁹ Indeed this was all admitted to be true by al-Wahaidi.

We realised that a lot of people [submitted via the form] died a natural death,” Mr Wahidi said. “Maybe they were near an explosion and they had a heart attack, or [living in destroyed] houses caused them pneumonia or hypothermia. All these cases we don’t [attribute to] the war.⁸⁰

Other casualty identifications submitted via the online notification form were found to be people who were imprisoned or missing with insufficient evidence that they had died. “Some families submitting false claims, Mr Wahidi said, may have been motivated by the promise of government financial assistance.”⁸¹ Given the relatively small number of judicial checks, it is unclear whether the family notification procedure entailed rigorous verification of the death’s authenticity. In its March 2025 casualties list, the MoH had removed 1,852 who were named in its October 2024 list. Among them, 97% had initially been notified through “family notifications” online.⁸²

E3. Suppression of Hamas Member Mortalities

In this section we observe that known combatants, Hamas senior members and members of powerful Hamas families were deliberately removed by the MoH from its published list of names.



Figure 12. Hamas Ministry of Interior’s warning not to disclose fallen combatants. Published on its Facebook page as published in the Meir Amit Intelligence and Terrorist Information Center reports (2014). See main text for translation.

⁷⁹ Ibid.

⁸⁰ Ibid.

⁸¹ Ibid.

⁸² Ibid.

In the 2014 Gazan War, the Meir Amit Intelligence Agency pointed out that “the Interior Ministry in Gaza posted a message on its Facebook page warning the Palestinians not to disclose details about terrorist operatives (those killed in the ‘Resistance’) killed during Operation Protective Edge”.⁸³ The Agency also noted that “Hamás’s policy is designed to create an image of a large number of civilians who were killed, to strengthen the image that Israel is carrying out a ‘massacre’ of civilians and to create an ostensibly factual infrastructure for a political, propaganda and legal campaign against Israel.”⁸⁴

Figure 12 shows an image, from 5 August 2014 at 22:54, of the Hamas Interior Ministry’s Facebook page. The post states that it is forbidden to post images of soldiers because Israel “collects all the information and the reports [about the fallen] and uses them as evidence to justify its crimes against [the Palestinian] civilians” (translated from **Figure 12**).

The degree to which this policy was upheld in the 2023–2024 Hamas–Israel war is not known. The MoH provided no data on Hamas and allied forces combatant casualties. Every Gazan mortality was referred to as a “martyr” and as “murdered” (see **Figure 11** and **Appendix 1**). The MoH thereby represented all Gazan deaths as crimes against civilians committed by Israel. To the best of our knowledge, there were many Hamas combatants who were known to have been killed but did not appear in the MoH list of names of “martyrs”. For example, a random selection of those who did not appear in the MoH lists of named casualties, indicating that their identities were suppressed in MoH datasets, were Imad Abbas, Ahmed Webbe, Hussain Fayyad, Rafat abu Halal and Subhi Ferwana. Yet senior Hamas leader Jawad Shamala and combatant Hamdan Mahmoud al Astal were listed. The latter name appeared in the 30 June and August 2024 lists but was then removed and did not appear on the 7 October 2024 list.

The Gazan population’s fear during the war of breaching the Hamas prohibition on release of the names of its fallen combatants was pervasive and was described in strong terms by Sheren Falah Saab, who wrote:

“There is fear of speaking in public about Hamas members, even ones who were killed, for many reasons,” said Assam (a pseudonym...)... His main reason was the “fear of being seen as collaborators” and a fear of harassment by Hamas, he said. Assam confirms that the unofficial code of silence has grown much more powerful since the war broke out. Hamas expects a total lack of criticism from locals, considering it to be “treason” that would serve the Israeli security forces. People pass on information about the deaths mostly by word of mouth. “Hamás releases the names of the organization’s dead” only in rarest of cases, he said. “The population doesn’t post them, not even the families.”⁸⁵

Funerals of Hamas combatants were often secret and many of the names of the deceased were not listed as casualties.⁸⁶ There are deceased listed in the funeral for Hamas combatants indicated in **Figure 13**, for example, who to the best of our knowledge, are not in the March 2025 casualty list.

Analysis of the data shows that, after the 31 August 2024 list of names was published, the MoH removed 1,792 entries from among those fully identified and failed to point this out. Those removed comprised 786 children, 453 women, 366 men and 187 elderly. Those people

⁸³ “Examination of the names of Palestinians killed in Operation Protective Edge – Part Three”, Meir Amit Intelligence Agency, 19 August 2014, <https://www.terrorism-info.org.il/en/20704/>.

⁸⁴ “Preliminary, partial examination of the names of Palestinians killed in Operation Protective Edge and analysis of the ratio between terrorist operatives and non-involved civilians killed in error (full version)”, Meir Amit Intelligence Agency, 28 July 2014, <https://www.terrorism-info.org.il/en/20687/>.

⁸⁵ Sheren Falah Saab, “Why Hamas Tries to Hide the Number of Its Militants Killed by Israel”, *Haaretz*, 4 September 2024, <https://www.haaretz.com/middle-east-news/palestinians/2024-09-04/ty-article-magazine/.premium/why-hamas-tries-to-hide-the-number-of-its-members-killed/00000191-bd7b-d13c-a39b-bfff809b0000>.

⁸⁶ MiddleEastBuka (@MiddleEastBuka), Xpost, 10 April 2025, 11:16am, <https://x.com/MiddleEastBuka/status/1910275651380060498>.

remained on the 31 August cumulative casualty list but their entries and ID numbers were no longer found in the 7 October 2024 cumulative list, at least for almost all of them. Who were these 1,792 Gazan casualties and why were they removed?

Many of those removed appeared to have all the correct identification and some were Hamas combatants or Hamas members and their families. For example, removed from the records were the family of Yahya Sinwar, the Hamas supreme leader. They included:

- **Naim Ibrahim Khalil Sinwar**, age 62, ID: 960218345.
 - First-cousin of Yahya Sinwar.
- **Maryam Hassan Mahmoud Al-Sinwar**, age 85, ID: 960218329.
 - Aunt of Yahya Sinwar.
- **Reem Hussein Sinwar**, age 13, ID: 429915119.
 - Daughter of Hassan Ibrahim Khalil Sinwar, age 47, first cousin of Yahya Sinwar, brother of Naim.
- **Maryam Hassan Ibrahim Al-Sinwar**, age 4, ID: 442398806.
 - Sister of Reem.

Another among the 1,792 was Hamdan Mahmoud Hamdan al Astal, who appears to have been a Hamas combatant who attacked Israel on 7 October. A number of those delisted included identified health workers and medical doctors, such as Zaki Ahmed Zaki Darwish, who appeared in the February cumulative list but was not found in the 31 August dataset. Similarly, Dr Ziad al-Tatar, Dr Ahmad al Sahar and Dr Mohammed al-Shami were delisted after 31 August. Various journalists, especially known or suspected active Hamas members,⁸⁷ were also delisted (e.g. Ismail al-Ghoul). Their delisting did not appear to be to correct the record. We can speculate that the narrative of over 1,000 medical⁸⁸ and 175 journalist casualties as innocent victims⁸⁹ would have been undermined by listing casualties for whom there is explicit and public evidence of their status as Hamas operatives.

The same might be true for high-profile terrorist family members who were therefore delisted.⁹⁰ Moreover, inclusion of medium- to high-ranking Hamas leaders in the lists would have indicated that the war was being lost and would have brought humiliation to Hamas and were therefore suppressed. Finally, it should be mentioned that members of the medical community have said that some of the doctors perished under the rubble and their bodies were never found and they argued that, for this reason, the doctors were not mentioned on the lists. However, some of the same doctors (e.g. Médecins sans Frontières doctors Tatari and Sahar) were reportedly “killed next to hospital beds”⁹¹ and others were

⁸⁷ “Hamas Documents Reveal the Depth of the Collaboration Between Al Jazeera and the Hamas Terrorist Organization”, IDF, 29 October 2024, <https://www.idf.il/en/mini-sites/idf-press-releases-israel-at-war/october-24-pr/hamas-documents-reveal-the-depth-of-the-collaboration-between-al-jazeera-and-the-hamas-terrorist-organization/>.

⁸⁸ The MoH claimed in September 2024 that 1,151 health care workers were killed: Huthifa Fayyad, “Nearly 1,000 Palestinian health workers killed by Israeli forces in Gaza named”, *Middle East Eye*, 17 September 2024, <https://www.middleeasteye.net/news/nearly-1000-palestinian-health-workers-killed-israeli-forces-gaza-named>. See also: “The Killing, Detention, and Torture of HCWs in Gaza”, Healthcare Workers Watch, <https://healthcareworkerswatch.org/>.

⁸⁹ “Journalist casualties in the Israel-Gaza war”, Committee to Protect Journalists, 4 February 2025, <https://cpj.org/2025/02/journalist-casualties-in-the-israel-gaza-conflict/#:~:text=170%20journalists%20and%20media%20workers%20were%20confirmed%20killed%3A%20162%20Palestinian,75%20journalists%20were%20reported%20arrested>. In contrast, various reports have exposed journalists as Hamas operatives, e.g. David Collier, “Special Report: The ‘Journalists’ of Gaza”, January 2024, https://david-collier.com/wp-content/uploads/2024/01/240109_final_gaza_journos_1.pdf.

⁹⁰ Israeli journalist Ohad Hemo claimed that his Gazan sources, with whom he had worked for years inside Gaza, reported that 80% of the war deaths were Hamas members and their families, which would suggest an even higher proportion of combatants have gone unreported. See: *Keshet 12 News*, “Hamas admits that 80% of the fatalities are members of Hamas and their families”, *YouTube* video, posted by StandWithUs, 7 October 2024, <https://www.youtube.com/watch?v=-ROFbcmODWM>.

⁹¹ “MSF doctors killed in strike on Al-Awda Hospital in northern Gaza”, Medecins Sans Frontieres, 22 November 2023, <https://msf.org.au/article/statements-opinion/msf-doctors-killed-strike-al-awda-hospital-northern-gaza>.

allegedly shot by snipers,⁹² making this argument dubious. Similar ambiguities exist for other delisted casualties.

Finally, it should be mentioned that the purge of 1,792 names from the August MoH list was but one of several large-scale purges that occurred in the MoH lists during the war. For example, 2,682 names on the April 2024 list of fatalities no longer appeared on the August 2024 list. A large proportion of them had ID numbers. Puzzlingly, huge quantities of names with ID numbers appeared and disappeared at a rapid rate. For example, in the March 2025 list, 1,920 names from the October 2024 list were no longer to be found, making the sum total removed 6,394.

Figure 13. Invitation to “the funeral of the Qassam martyrs”. “On Monday 27/1/2025 at 11:00am in Mawasi Al-Qarara, opposite Al-Qarara Port. Your presence supports the path of the jihad and martyrdom.” The listed Hamas “martyrs” were known members of its Izz al-Din al-Qassam brigades.⁹³



E4. Inclusion of Misattributed Disease, Natural and Misfire Deaths

On 1 April 2024, the MoH stated in its epidemiological report that natural deaths were not included in its registry, in defence against critiques concerning the lack of transparency on inclusion/exclusion. In his August 2024 interview with Sky News, MoH Information Director al-Wahaidi also claimed that natural deaths were excluded. However, in April 2025, he admitted that: “We realised that a lot of people [submitted via the form] died a natural death.”⁹⁴ The end of March 2025 MoH data indicated removal from the MoH cumulative list of some 375 casualties identified through “family notifications” (see Part E2, above) who were found to have actually been natural deaths. This might indicate that the listed names did not include any natural deaths, or it may have been an MoH public relations exercise to argue for the integrity of its dataset.

Approximately 9,000 Gazans would have died of natural deaths across the duration of the war up to April 2025. The possibility that the total war casualty figures might have included such deaths arose particularly because there was no apparent MoH reporting elsewhere of any natural deaths outside of war trauma.⁹⁵

⁹² E.g., Dr Samir Abdul Latif Al-Sheikh, who co-founded the International Pharmacy Group in the Gaza Strip, was allegedly shot by an “Israeli occupation sniper... on Al-Nasr Street in Gaza City, leading to his martyrdom”, <https://gigaza.org/en/martyrs/samir-abdul-latif-al-sheikh/>.

⁹³ Invitation posted by Mazen007, posted at <https://x.com/mazen00711/status/1883678246619009324>. See also commentary: Adin, posted at <https://x.com/AdinHaykin1/status/1890814143713722392>.

⁹⁴ Ben van der Merwe, footnote 78, above.

⁹⁵ “Dr Ola Awad, President of the Palestinian Central Bureau of Statistics, speaks to AOAV about casualty counting and the death figures coming from Gaza”, *Action on Armed Violence*, 20 November 2023, <https://aoav.org.uk/2023/ola-awad-president-of-the-palestinian-central-bureau-of-statistics-speaks-to-aoav-about-casualty-counting-and-the-death-figures-coming-from-gaza/>.

Andrew Fox has provided examples of deaths included in the the MoH casualties data that were caused by medical conditions unrelated to the war.⁹⁶ Fox studied lists compiled by the MoH of patients who had been approved to travel outside Gaza for medical treatment. He argued that extremely ill cancer patients were on travel lists issued weeks after they had already been published as dead on the MoH's lists of war casualties. Alive but seriously ill cancer patients cannot, by unintentional error, have been listed as dead in the MoH centralised database, and certainly not several of them. Epstein and Spagat found 12 such examples.⁹⁷ The lack of an MoH category of deaths by causes other than war trauma also suggests sleight of hand on the part of MoH as to whether the total figures include unrelated medical causes.

Moreover, Hamas itself is likely to be directly responsible for over 20% of Gazan casualties reported by the MoH, whether from misfire, friendly fire or domestic suppression, calculated cumulatively. About 20% of Hamas rockets directed at Israel misfire within Gaza.⁹⁸ Additional close-range friendly fire casualties would certainly exceed 10% in the Hamas operating environment of Gazan cities using civilian shields (where better-trained IDF casualties from friendly fire caused 25% of its mortalities).⁹⁹ Furthermore, Gazan victims were shot by Hamas gunmen controlling access to humanitarian assistance¹⁰⁰ and an unquantified number of civilians died in instances where Hamas violently suppressed a desperate populace.¹⁰¹

⁹⁶ Fox, "Questionable Counting".

⁹⁷ Gabriel Epstein and Michael Spagat, "Flawed critique: how Andrew Fox's report on Gaza death toll for the Henry Jackson Society lacks evidence for key claim", *Action on Armed Violence*, 22 December 2024, <https://aoav.org.uk/2024/flawed-critique-how-andrew-foxs-report-for-the-henry-jackson-society-on-gaza-death-toll-lacks-evidence-for-key-claims/>.

⁹⁸ Maayan Jaffe-Hoffman, "IDF: One in five Gaza rockets misfires, kills Palestinian", *Jerusalem Post*, 21 October 2023, <https://www.jpost.com/middle-east/article-769509>. Evidence from the misfire on the Al-Ahli Hospital, suggests that the MoH deliberately told the world a false story. Indeed, US officials believe that the MoH also inflated the toll when it announced 500 deaths; the actual number appears to be closer to 100; see: David Leonhardt, "Revisiting the Gaza Hospital Explosion", *The New York Times*, 3 November 2023, <https://www.nytimes.com/2023/11/03/briefing/gaza-hospital-explosion.html>.

⁹⁹ Fatma Tanis, "Friendly fire and accidents have killed a lot of Israeli soldiers in Gaza", *NPR*, 26 January 2024, <https://www.npr.org/2024/01/26/1226977365/israel-idf-gaza-middle-east-deaths>.

¹⁰⁰ For example, 13-year-old Ahmed Shaddad Halmy Brikeh appeared on the 31 August 2024 MoH list as a victim of "Israeli aggression" but nine months earlier, Brikeh's cousin had reported online that the 13-year-old was shot dead by Hamas gunmen while trying to obtain food from a humanitarian aid shipment. "He was killed by a shot in the head", the cousin wrote on 24 December 2023.

¹⁰¹ "Hamas begins brutal crackdown and executes Gazan protesters", *Sky News Australia*, 31 March 2025; <https://www.skynews.com.au/world-news/global-affairs/hamas-begins-brutal-crackdown-and-executes-gazan-protesters/video/c8f8a519de9c95281d856042a243fa28>; "Hamas threatening journalists in Gaza who expose abuse of civilians", *The Times of Israel*, 28 July 2014, <http://www.timesofisrael.com/hamas-threatening-journalists-in-gaza-who-expose-abuse-of-civilians/>.

Conclusion

We do not doubt that a large number of civilians have tragically lost their lives in this conflict, and it is deeply concerning to us. Each loss is a profound tragedy for their families and communities. Amidst the chaos of war, determining the true extent of civilians among the dead is a difficult but necessary statistical exercise. For this reason, Hamas's concerted governmental effort to record civilian casualties has been regarded with admiration by supportive or sympathetic epidemiologists and data-scientists.

We found evidence, published in our analysis in March 2024, of serious fraud in Hamas's presentation of 2023 data on Gazan "unidentified" casualties, following which the UN Office for Coordination of Humanitarian Affairs halved its estimated number of casualties.¹⁰²

In this paper, we found that the Hamas Government Media Office and Ministry of Health delivered different narratives that were often contradictory. The Media Office war data showed numerous flaws and inconsistencies at all levels of analysis. The figures it released didn't add up and its announcements were inconsistent with the mortality trends revealed in the Ministry of Health's own datasets. It was clearly engaged in disinformation to prosecute the Hamas wartime narrative, the central theme of which is that the IDF deliberately commits war atrocities.

The Hamas Ministry of Health was more reliable, as shown by internal consistency across many elements of its datasets, but showed many signs of also bending to the Hamas war narrative by manipulating the public presentation of its data. It provided headline information, such as announcing a 70% women and children casualty rate, that was inconsistent with its own datasets. Our analysis of diverse datasets showed that the proportion of women and children casualties over 2024 was less than 50%.

Across the major military battle in Kfar Yunis, it was at 34%, a particularly low impact on women and children in urban warfare.¹⁰³ Moreover, the MoH data was also corrupted to an unknown degree when at least 15,000 casualties were proclaimed as identified, often without their bodies being verified, causing doubt as to their identities. The narrative of identity verifications presented by the MoH chief data scientist, Zaher Al-Wahaidi, was contradicted by the hospital records and his own descriptions were self-contradictory in major ways a number of times. The datasets might have included deaths by natural causes or diseases, did not distinguish casualties who were killed by Hamas itself, and did not recognise any casualties as combatants. Moreover, data was shuffled around across incomparable categories in different dataset periods, so that external forensic analysis and critique of the datasets were confounded.

The Ministry's messaging was nevertheless definite and consistent in alleging genocide (e.g., see MoH screenshot RH panel at top in **Figure 11**). This doctoring was possible because the Gazan Ministry of Health and hospital system was administered by medical directors many of whom were themselves controlled by Hamas and who accordingly designed its sophisticated wartime disinformation operations.¹⁰⁴ Sadly, when Hamas's narratives were accepted and amplified without any forensic critique, to be broadcast enthusiastically by agenda-driven activists, much of the world public was deceived. The extraordinarily detailed, contemporaneous and prolific Hamas datasets depicted a lurid scene, where the inevitability of Hamas's military defeat was

¹⁰² Simpson, et al., footnote 7, above.

¹⁰³ John Spencer, "Israel Has Created a New Standard for Urban Warfare. Why Will No One Admit It? | Opinion", *Newsweek*, 25 March 2024, <https://www.newsweek.com/israel-has-created-new-standard-urban-warfare-why-will-no-one-admit-it-opinion-1883286>.

¹⁰⁴ Fabian, "Gaza hospital director admits Hamas used medical complex as operational hub", footnote 52, above.

hitched to its willingness to sacrifice the Gazan civilian population, whose martyrdom served its longer war to delegitimise Israel by means of accusations of atrocities. This disinformation was Hamas's main wartime achievement in the months after 7 October 2023.

APPENDICES


Appendix 1.

Translation of a page in a typical Ministry of Health epidemiological report, issued on 31 March 2024.

State of Palestine

Health of Ministry

Public Health Emergency Operation Center



Palestine is a st

Ministry of Health

Health Emergency Operations Cen

Cumulative report of martyrs

The cumulative number of martyrs since the beginning of the aggression has reached **32,845**, of whom **17,775** are registered, while monitored according to reliable media sources due to the interruption of communication **Martyr** more than **15,070** have been

Gaza, North and Central Hospitals and Nasser Medical Complex

Sort by Category			Sort by gender		Cumulative martyrs	The hospital
children	women	men	Females	Males		
452	620	710	832	950	1782	Indonesia
152	207	345	304	400	704	Kamal Adwan*
1541	1150	1425	2014	2102	4116	Healing*
1294	1608	2092	2335	2659	4994	Al-Aqsa Martyrs
656	711	1233	1022	1580	2602	supporter*
261	255	713	383	845	1227	European
694	600	948	913	1328	2242	The carpenter
50	29	29	59	49	108	Emirati
5100	5180	7495	7862	9913	17775	Total

Note that, on 31 March 2024, the report points out that 17,775 of the 32,845 deaths were registered by the MoH, while 15,070 were unidentified. The numbers refer to cumulative deaths in the individual hospitals indicated.

Appendix 2.

Data for Table 2 in the main text: Disaggregated injuries list and cumulative injuries on day of MoH publication (in reverse date order).

Injuries on the day					Cumulative injuries				
	#C	#W	#M	W&C%		#C	#W	#M	W&C%
May-03 2024	12	6	23	43.9%	May-03 2024	12332	13996	26691	
Apr-14 2024	30	16	33	58.2%	Apr-14 2024	12104	13798	26133	
Apr-01 2024	10	7	19	47.2%	Apr-01 2024	12019	13736	25878	
Mar-21 2024	3	8	29	27.5%	Mar-21 2024	11897	13619	25721	
Mar-18 2024	5	4	20	31.0%	Mar-18 2024	11874	13586	25636	
Mar-12 2024	2	6	12	40.0%	Mar-12 2024	11847	13567	25493	
Mar-03 2024	11	17	35	44.4%	Mar-03 2024	11785	13484	25220	
Feb-29 2024	8	9	38	30.9%	Feb-29 2024	11756	13455	25102	
Feb-13 2024	6	8	33	29.8%	Feb-13 2024	11682	13311	24592	
Jan-31 2024	6	2	34	19.0%	Jan-31 2024	11482	13083	23996	
Dec-31 2023	29	33	84	42.5%	Dec-31 2023	10787	12444	22082	
Dec-11 2023	81	58	111	55.6%	Dec-11 2023	10000	11545	20545	
Average				39.2%	Average				43.8%

Table A2. Data from MoH reports issued on the given dates. **LH table:** The number of injured people presenting at southern Gazan hospitals over a *single day* on given dates, disaggregated into children (**C**), women (**W**) and men (**M**). **W&C** is the percentage of women and children amongst all those injured on the given date. The average of these percentages is $\langle WC \rangle = 39.2\%$ as given in **Table 2**. **RH table:** For the cumulative injuries the proportion over the study period is $W\&C = 43.8\%$.

Summary and sources for other data in Table 2

- Cumulative injuries: Increase in total injuries = $(2,332 + 2,451 + 6,146) = 10,249$ (from **Table A2** above).
- $W\&C = 43.8\%$ $(2,332 + 2,451) / 10,249$ (from **Table A2** above).
- Injuries on a single day: $W\&C = 39.2\%$ (from **Table A2** above).
- Cumulative deaths: Men = 54.3% $(7,495 - 5,593) / (17,775 - 14,269)$ for dates between 11 December 2023 and 29 March 2024, so $W\&C = 45.7\%$.
- Injuries on a single day: See Injured1.xls.¹⁰⁵
- Deaths on a single day: See GMO_Deaths1.xls.¹⁰⁶

¹⁰⁵ See Google Drive, footnote 10, above.

¹⁰⁶ Ibid.

Appendix 3. Problems with GMO Data.

The MoH provided an official count of 11,355 identified child fatalities on 31 August 2024. To this, the GMO added an additional 5,318 child fatalities from the pool of unidentified casualties, bringing the total cumulative child casualty figure to that date to 16,673 – a number 50% higher than the MoH’s verified count. Thus, the GMO categorised 5,318 of the total 6,347 unidentified casualties as children, even though there was no information that would indicate this.

A similar procedure was used by the GMO for its assertions of the cumulative totals for adult women fatalities. The GMO reported W=11,269, some 50% higher than the MoH’s figure of 7,377 (**Figure 10**, main text), by adding 3,892 unidentified deaths to the women’s total although there was no information to confirm that these unidentified casualties were indeed women. AFTER MAKING AN ADDITION FOR ELDERLY WOMEN.

The next problem becomes apparent: the numbers simply “don’t add up”. As can be seen in **Figure A3** below, the GMO splits 5,318 unidentified casualties as children and 3,892 unidentified casualties as women, which sum up as 9,210 unidentified casualties. But there were only 6,347 total unidentified casualties listed by the MoH available to split.

Figure A3. GMO and MoH versions of Gazan cumulative and disaggregated total death toll on 3 August 2024.

	Children	Women	Men (implied)	Total
GMO	16,673	11,269	12,749	= 40,691
Unidentified Pool (6,347)	+5,318	+3,892	-2,863	+ 6,347
MoH	11,355	7,377	15,612	= 34,344

Since all the 6,347 casualties listed by the MoH as unidentified were assigned by the GMO as either children or women, there can’t be a single male in the pool of 6,347 unidentified deaths. This is an implausible claim, given that the unidentified casualties derived mostly from northern Gaza, where intense military warfare involving largely adult male combatants took place through 2024.

Consider further the implied number of adult male deaths (**Figure A3**, column 3). The only way that the total cumulative casualty numbers for 31 August as reported by both MoH and GMO can remain consistent is for the MoH and GMO to respectively report 15,612 and 12,749 adult male deaths. This resulted in the GMO reporting 2,863 fewer adult male deaths than the MoH. However, the GMO cannot have fewer casualties than the verified hospital data of the MoH that the GMO data is built on.

Evidently, the GMO distorted the 31 August 2024 MoH casualty statistics by reporting a disproportionately high number of women and children casualties. At the same time, to maintain the overall total casualty figure of 40,700, it reduced the adult male casualties by 2,863. To maintain this total implied that 2,863 men, previously reported by the MoH as dead, have somehow come back to life. Alternatively, the GMO mortality statistics are erroneous.

Appendix 4.
Data for Figure 10.

<i>Cumulative child casualties</i>	<i>MoH</i>	<i>GMO</i>
7 October 2023 to 7 October 2024	13,319	16,927
P ₁ : 7 October to 29 March 2024	5,106 (38%)	14,350 (85%)
P ₂ : 30 March to 7 October 2024	8,213 (62%)	2,577 (15%)

Note: Cumulative number of Gazan child fatalities provided in official MoH and GMO reports in given periods **P**₁ and **P**₂. End date is 7 October 2024. In the case of the GMO, there were 14,350 child fatalities identified from 7 October 2023 to 30 March 2024 (**P**₁), which is 85% of all the 16,581 total children casualties (up until 7 October 2024).

Appendix 5. Unreported Combatants Inflate Civilian Casualty Rates.

The $W&C$ proportion of casualties over 2024, shown in **Figure 5** (black line, main text) would be far lower if allowance were made for the suppression of information on combatant deaths as we have discussed in section E3. We demonstrate this by refining the $W&C$ index as follows:

Suppose that the raw observed data has C children, W adult women and M adult men, so that the total population is $T = W + C + M$. The proportion of women and children casualties is defined as: $WC = \frac{W + C}{T}$

Suppose also that Hamas reported only a proportion p of adult male deaths, to exclude information on combatant casualties. In such a situation the reported number of adult men is M , but the actual number of adult men is $\frac{M}{p}$.

Thus, the true WC ratio is represented as WC' :

$$WC' = \frac{W + C}{W + C + \frac{M}{p}} \text{ for } 0 < p \leq 1.$$

Note that the more combatants who were unreported, then the smaller is p , as is also WC' . The usual naïve calculation for $W&C$ assumes that $p = 1$ but that misrepresents the actual $W&C$ by inflating it (since in reality $p < 1$).

We first plot the monthly cumulative data provided in the JEA dataset on fatalities each month in **Figure A5a** below in blue (as in **Figure 5** in the main text.) The Figure then gives plots of WC' (eqn.1) for various values of p . As an example, in the original graph for $W&C$ in green, when $W&C = 45\%$ was calculated using $p = 1$, this reduces to $WC' = 28\%$, for a calculation based upon $p = 0.5$. The $p = 0.5$ values are given by the red line (bottom) and presume that, for every identified man, there is one combatant suppressed (1:1; i.e. $p = 0.5$). If for every two men reported killed there is one combatant unreported, this corresponds to a 2:1 ratio, or $p = 0.67$, as indicated by the blue line.

There is evidence that the Gazan population could not release the names of fallen combatants, and it is therefore reasonable to assume that a considerable number of combatants went unreported, as described in E3. We know that, although many Hamas combatant mortalities appeared on the MoH lists, many others did not. In our view, a reasonable choice of p might be $p = 0.67$, indicated by the blue line in **Figure A5a**, where for every two men reported dead there was one combatant mortality suppressed (2:1).

In summary, unreported combatants inflate the $W&C$ statistic and give a misleading picture unless carefully allowed for.

Figure A5a. Reductions in $W&C$ as a proportion of casualties, relative to suppressed combatant casualties. Green line (top) presumes no suppression of information on Hamas combatant casualties (0:1, $p = 1$), as published by MoH. Blue line (middle) presumes that for every two men there is one combatant suppressed (2:1, $p = 0.67$). Red line (bottom) presumes that for every one man killed there is one combatant suppressed (1:1, $p = 0.5$). This graph shows cumulative data.

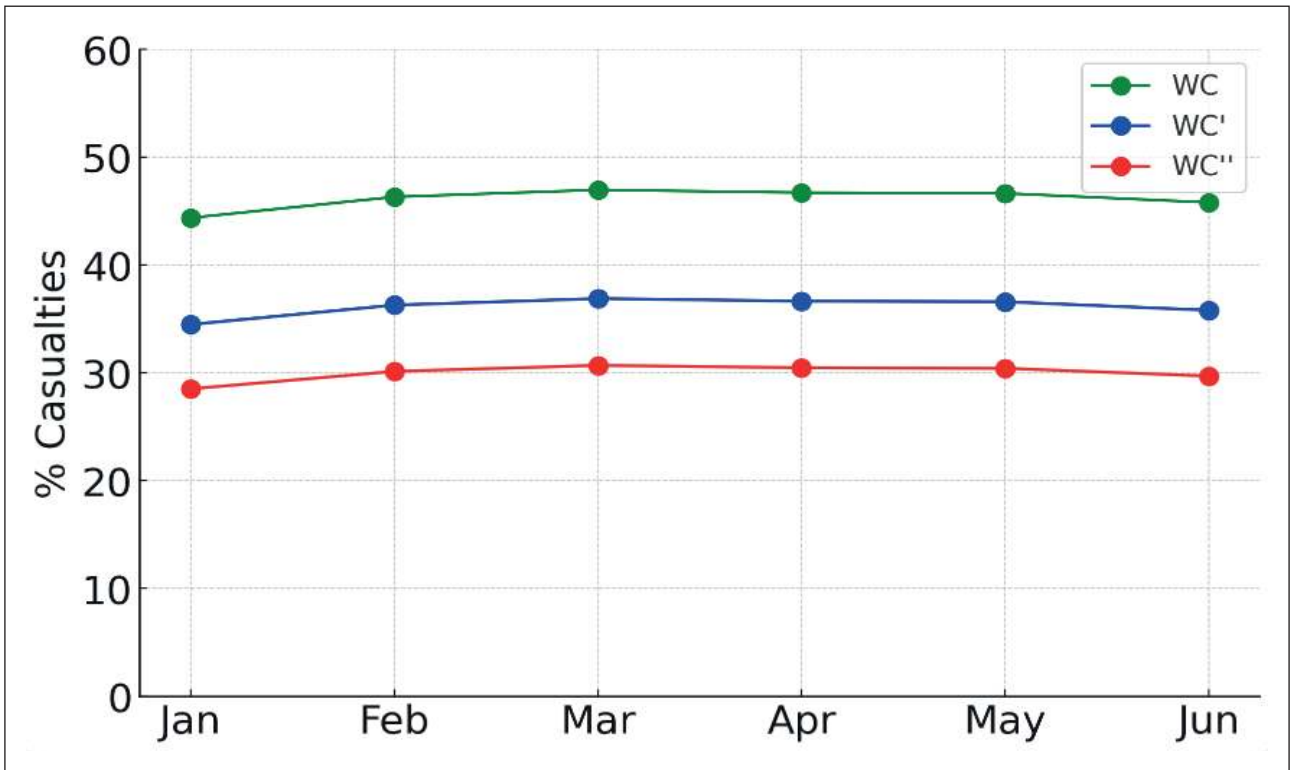
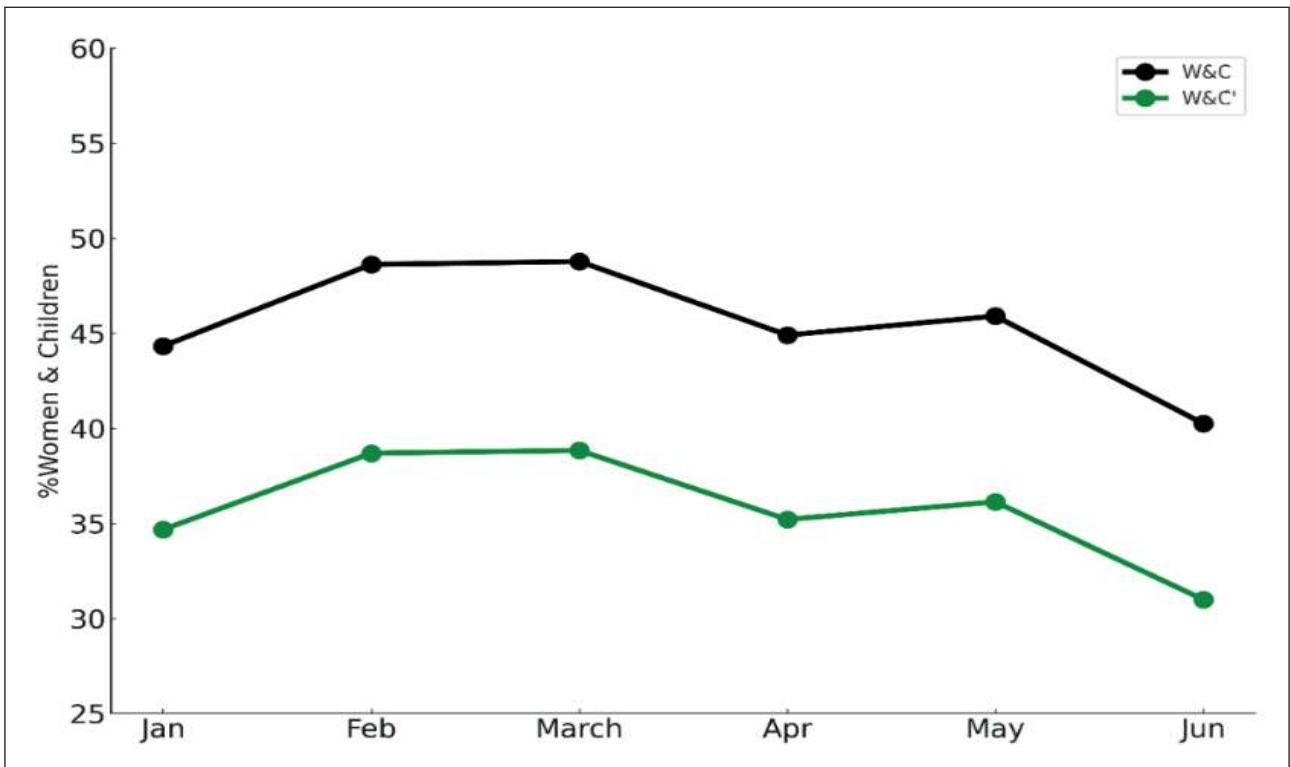


Figure A5b. Reductions in $W&C$ as a proportion of casualties, relative to suppressed combatant casualties. Black line (top) presumes no suppression of information on Hamas combatant casualties (0:1, $p = 1$), as published by MoH. Green line (middle) presumes that for every 2 men there is one combatant suppressed (2:1, $p = 0.67$). This graph shows monthly data (rather than cumulative data).



Appendix 6. MoH Source Data for Part C2.

In Part C2 findings that contradict foreign physicians’ anecdotal impressions of injuries and casualties in Gaza Hospitals where they were visiting were based the following MoH datasets.

1. European Hospital

The paper claims that “up until 3 May 2024, there were C=1,264, W=1,581 and M=3,797 injuries treated at the European Hospital.” The MoH 3 May 2024 report confirming these details is as follows (note highlighted rows):

3 May 2024 European Hospital Injuries

who have not been wounded with complete data, Ministry of Health, in addition to **44,000**

classifications by			Classification by gender		Accumulation of wounded	The hospital
category : Children	women	men	Females	Males		
1390	1202	2254	2306	2540	4846	Indonesian
770	840	1681	1571	1720	3291	Kamal Adwan*
1970	3250	4786	4306	5700	10006	Healing*
2878	3159	5610	6282	5365	11647	maximum*
2243	2127	4897	3060	6207	9267	Nasser*
1264	1581	3797	2226	4416	6642	European
1777	1806	3629	2741	4471	7212	The carpenter
40	31	37	47	61	108	Emirati
12332	13996	26691	22539	30480	53019	total

The paper claims that “Over the month of March alone, the European Hospital treated C=131 child injuries, W=161 women’s injuries and M=535 adult male injuries.” Here we show the details from the MoH report (note highlighted rows):

31 March 2024 European Hospital Injuries

according to reliable media sources due to the interruption of communication with hospitals, Martyr More than **23,695**

Sort by Category	Cumulative Children Wounded		Sort by gender			The hospital
	women	men	Females	Males		
1390	1202	2254	2306	2540	4846	Indonesian *
770	840	1681	1571	1720	3291	Kamal Adwan *
1970	3250	4786	4306	5700	10006	Healing*
2689	3046	5310	6111	4934	11045	Al-Aqsa*
2243	2127	4897	3060	6207	9267	Nasser*
1213	1501	3566	2134	4146	6280	European
1694	1732	3428	2631	4223	6854	The carpenter
40	31	37	47	61	108	Total
12009	13729	25959	22166	29531	51697	Emirati

29 February 2024 European Hospital Injuries

Cumulative report of the wounded

The cumulative number of wounded since the beginning of the aggression reached **71,377** wounded (**50,313** of them registered, while it was monitored according to reliable media sources, due to a breakdown in communication with hospitals. A martyr **More than 21,064**, Gaza and the North)

Classification by category			Classification by gender		Accumulation of wounded	The hospital
children	women	men	Females	Males		
1390	1202	2254	2306	2540	4846	Indonesian
770	840	1681	1571	1720	3291	Kamal Adwan*
1970	3250	4786	4306	5700	10006	Healing*
2689	3046	5310	6111	4934	11045	Yes Maximum
2243	2127	4897	3060	6207	9267	Nasser
1081	1340	3031	1929	3523	5452	Al-Urbi
1573	1619	3106	2474	3824	6298	Al-Najjar
40	31	37	47	61	108	Emirati
11756	13455	25102	21804	28509	50313	total

Over the month of March, the European Hospital treated C = 132 (1,213-1,081) child injuries, W=161 (1,501 -1,340) women’s injuries and M = 535 (=3686-3031) adult male injuries, as claimed in the paper.

2. Al-Aqsa Hospital

The paper finds that “by 31 January 2024, the cumulative injuries at Al Aqsa hospital were C=2,689, W=3,046, M=5,310.” This is confirmed in the 31 January 2024 MoH report Table of wounded (note highlighted rows).

31 January 2024 Al-Aqsa Hospital Injuries


Cumulative report of wounded

) **48,561** martyrs , including registered ones, while y The cumulative number of wounded since the beginning of the aggression has than **17,578** according to reliable media sources, due to the interruption of communication with hospitals. Martyr reached **66,139**, more Gaza and the North

Sort by category			Classification by gender		(cumulative wounded)	The hospital
children	women	men	females	Males		
1390	1202	2254	2306	2540	4846	Indonesian
770	840	1681	1571	1720	3291	* Kamal Adwan *
1970	3250	4786	4306	5700	10006	Healing*
2689	3046	5310	6111	4934	11045	Al-Aqsa

The paper claims that “Over the month of January, there were C=104, W=140, M=278 deaths, and C=241, W=211, M=476 injuries.” The tables above confirm this and show that over the month of January, Al-Aqsa Hospital treated C = 241 (2689-2448) child injuries, W = 211 (3046 - 2835) women’s injuries and M = 476 (5310-4834) adult male injuries.

31 December 2023 Al Aqsa Hospital Injuries

Public Health Emergency Operation Center  Health emergency operation center

̣ Cumulative report of the wounded

45,313 martyrs, of whom were registered, while monitored ̣ The cumulative number of wounded since the beginning of the aggression than 11,384, according to reliable media sources, due to the interruption of communication with hospitals, martyr reached 56,697, more (Gaza and the North)

Classification by category			Classification by gender		Accumulation of wounded	The hospital
children	women	men	Females	Males		
1390	1202	2254	2306	2540	4846	Indonesian
770	840	1681	1571	1720	3291	Kamal Adwan*
1970	3250	4786	4306	5700	10006	Healing*
2448	2835	4834	5787	4330	10117	Yes Maximum

Al Aqsa Hospital Casualties

The paper finds that “on 31 January there were C=1,294, W=1,608 and M=2,092 cumulative casualties”. The MoH report shows the following table for Al-Aqsa on that day (note highlighted rows):

31 January 2024 Al-Aqsa Hospital Casualties

̣ Cumulative report of the martyrs

̣ The cumulative number of martyrs since the beginning of the aggression reached 30,228 . More than 12,943 to reliable media sources due to the interruption of communication with A martyr were monitored according Hospitals in Gaza and the North

Classification by category			Classification by gender		Cumulative martyrs	The hospital
children	women	men	Females	Males		
452	620	710	832	950	1782	* Indonesia
152	207	345	304	400	704	Kamal Adwan*
1541	1150	1425	2014	2102	4116	Healing*
1294	1608	2092	2335	2659	4994	Yes Martyrs of Al-Aqsa
656	714	1222	1022	1580	2602	

31 December 2023 Al-Aqsa Hospital Casualties

̄ Cumulative report of the martyrs

15,349 martyrs, of whom were registered, while monitored̄ The cumulative number of martyrs since the beginning of the aggression reached **21,978** according to reliable media sources, due to a breakdown in communication with her hospital!A martyr More than **6,929** ,

Gaza and the North)

Classification by category			Classification by gender:		Cumulative martyrs	The hospital
children	women	men	female	Males		
452	620	710	832	950	1782	Indonesian*
152	207	345	304	400	704	Kamal Adwan*
1541	1150	1425	2014	2102	4116	Healing*
1190	1468	1814	2155	2317	4472	̄ Martyrs of Al-Aqsa

The MoH report shows that, over the month of March 2024, Al-Aqsa Hospital reported C= 104 (1294-1190) child deaths, W=140 (1608-1468) women’s deaths, and M= 278 (2092-1814) adult male deaths. This confirms the numbers given in Part C2.

3. Kamal Adwan Hospital

The text finds that “at Kamal Adwan Military Hospital, the MoH report showed that, up until 11 December 2023, the hospital had treated M=1,681 men as compared to W=840 women and C=770 children for injuries.” Below is the relevant Table from the MoH 11 December 2023 report:

11 December 2023 Kamal Adwan Injuries

Cumulative report of wounded

Classification according to severity			Classification by category			Classification by gender		Accumulation of wounded	The hospital
Minor	Medium	Serious	children	women	men	Females	Males		
2374	1802	670	1390	1202	2254	2306	2540	4846	*Y Indonesia
1940	849	502	770	840	1681	1571	1720	3291	Kamal Adwan*
4824	3204	1978	1970	3250	4786	4306	5700	10006	Healing*
3483	3372	1942	2067	2409	4282	5140	3390	9051	̄ Martyrs of Al-Aqsa
4176	2103	871	1869	1706	3546	2463	4658	7121	supporter
632	1556	1590	730	979	2069	1387	2391	3778	European
1106	2509	567	1164	1128	1890	1655	2527	4354	The carpenter
52	19	32	40	31	37	47	61	108	Emirati
18587	15414	8152	10000	11545	20545	18875	22987	42555	Total

Kamal Adwan Hospital Casualties

The text finds that: “Between 14 April and 3 May 2024, the hospital recorded 1,383 deaths, with M=641 of those being adult males”.

3 May 2024 Kamal Adwan Hospital Casualties

̣ Cumulative report of the martyrs

̣ The cumulative number of martyrs since the beginning of the aggression has reached **34,654** martyrs, of whom **24,691** have complete data with the Ministry of Health (**20,976** are listed in the Ministry of Health’s records and **3,715** have been reported by their families), in addition to **9,963** martyrs who do not have complete data.

Classification by category				Classification by gender		Cumulative martyrs	The hospital
old people	children	women	men	Females	Males		
95	666	364	542	715	952	1667	Indonesian*
178	485	315	768	591	1155	1746	Kamal Adwan*
2	7	1	16	4	22	26	Beit Hanoun
307	1506	824	1311	1626	2322	3948	Healing*
452	2198	1692	2495	2954	3883	6837	Al-Aqsa Martyrs*
168	756	617	1162	1016	1687	2703	supporter*
115	391	191	733	398	1032	1430	European
186	920	517	886	1021	1488	2509	The carpenter
12	51	23	24	60	50	110	Emirati
1515	6980	4544	7937	8385	12591	20976	total of those included in Records Hospitals

14 April 2024 Kamal Adwan Hospital Casualties

̣ Cumulative report of the martyrs

̣ The cumulative number of martyrs since the beginning of the aggression has reached **33,797** martyrs, of whom **22,397** have complete data with the Ministry of Health (**19,298** are listed in the Ministry of Health’s records and **3,099** have been reported by their families), in addition to **11,400** martyrs who do not have complete data.

Classification by category				Classification by gender		Cumulative martyrs	The hospital
old people	women	men	children	Females	Males		
95	364	542	666	715	952	1667	Indonesian*
25	91	127	120	160	203	363	Kamal Adwan*
2	1	16	7	4	22	26	Beit Hanoun

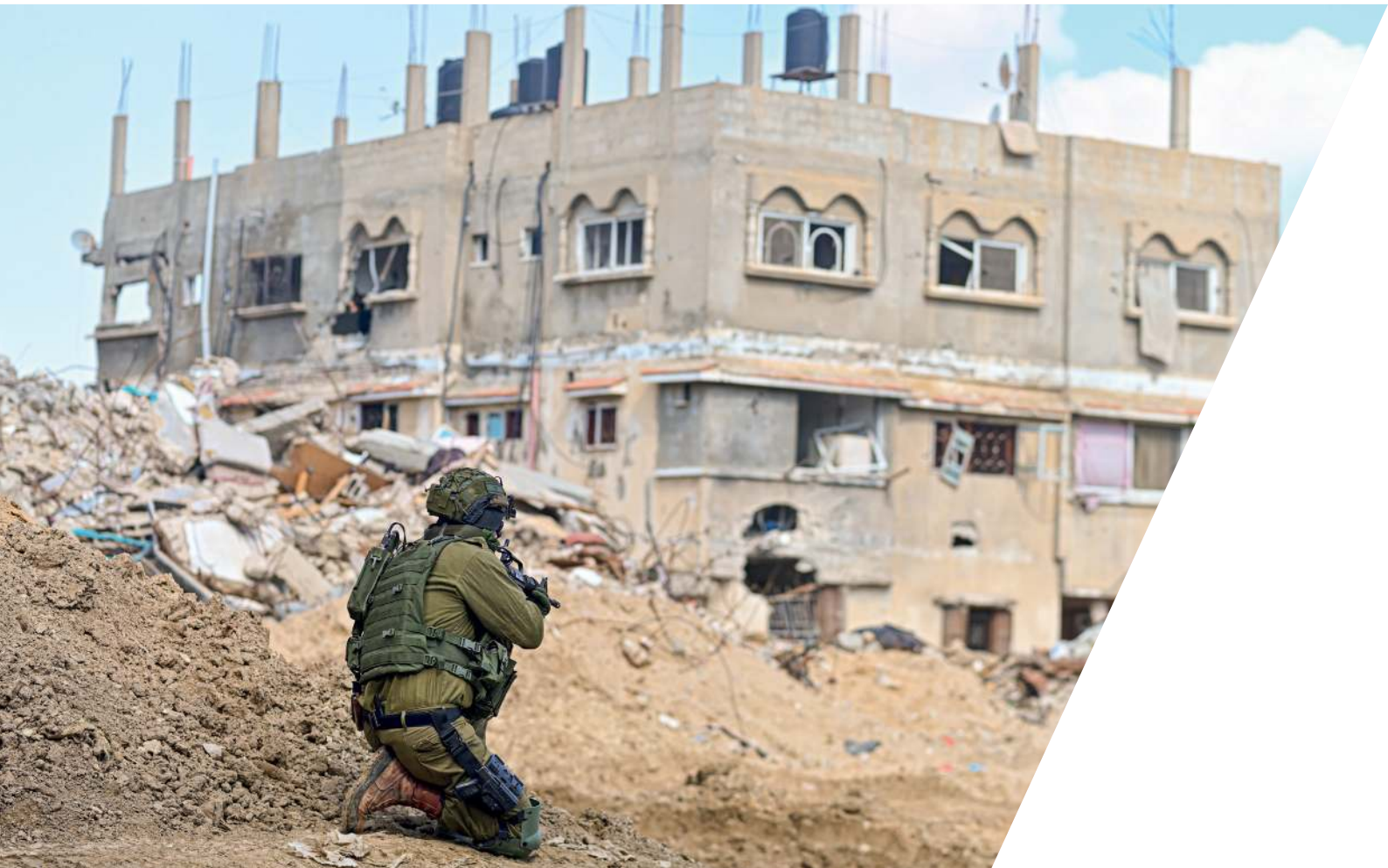
Thus, according to MoH data “between 14 April and 3 May 2024, the Kamal Adwan hospital recorded 1,383 deaths (1746-363), with M=641 (768-127) of those being adult males”.

Title: "HAMAS CASUALTY REPORTS
ARE A TANGLE OF TECHNICAL PROBLEMS"
By Lewi Stone and Gregory Rose

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