No evidence of inflated mortality reporting from the Gaza Ministry of Health

Mortality reporting is a crucial indicator of the severity of a conflict setting, but it can also be inflated or under-reported for political purposes. Amidst the ongoing conflict in Gaza, some political parties have indicated scepticism about the reporting of fatalities by the Gaza Ministry of Health (MoH).[1,2] The Gaza MoH has historically reported accurate mortality data, with discrepancies between MoH reporting and independent United Nations analyses ranging from 1·5% to 3·8% in previous conflicts. A comparison between the Gaza MoH and Israeli Foreign Ministry mortality figures for the 2014 war yielded an 8·0% discrepancy.[2] Public scepticism of the current reports by the Gaza MoH might undermine the efforts to reduce civilian harm and provide life-saving assistance.

Using publicly available information,[3,4] we compared the Gaza MoH's mortality reports with a separate source of mortality reporting and found no evidence of inflated rates. We conducted a temporal analysis of cumulative-reported mortality within Gaza for deaths of Gazans as reported by the MoH and reported staff member deaths from the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA), from Oct 7 to Nov 10, 2023. These two data sources used independent methods of mortality verification, enabling assessment of reporting consistency.

We observed similar daily trends, indicating temporal consistency in response to bombing events until a spike of UNRWA staff deaths occurred on Oct 26, 2023, when 14 UNRWA staff members were killed, of whom 13 died in their homes due to bombings (figure). Subsequent attacks raised the UNRWA death rate while MoH hospital services diminished until MoH communications and mortality reporting collapsed on Nov 10, 2023. During this period, mortality might have been under-reported by the Gaza MoH due to decreased capacity. Cumulative reported deaths were 101 UNRWA staff members and 11 078 Gazans over 35 days (appendix p 3). By comparison, an average of 4884 registered deaths occurred per year in 2015–19 in Gaza.[5]

If MoH mortality figures were substantially inflated, the MoH mortality rates would be expected to be higher than the UNRWA mortality rates. Instead, the MoH mortality rates are lower than the rates reported for UNRWA staff (5·3 deaths per 1000 *vs* 7·8 deaths per 1000, as of Nov 10, 2023). Hypothetically, if MoH mortality data were inflated from, for example, an underlying value of 2–4 deaths per 1000, it would imply that UNRWA staff mortality risk is 2·0–3·9 times higher than that of the public. This scenario is unlikely as many UNRWA staff deaths occurred at home or in areas with high civilian populations, such as in schools or shelters.

Mortality reporting is difficult to conduct in ongoing conflicts. Initial news reports might be imprecise, and subsequent verified reports might undercount deaths that are not recorded by hospitals or morgues, such as persons buried under rubble (appendix pp 1–2). However, difficulties obtaining accurate mortality figures should not be interpreted as intentionally misreported data.

Although valid mortality counts are important, the situation in Gaza is severe, with high levels of civilian harm and extremely restricted access to aid. Efforts to dispute mortality reporting should not distract from the humanitarian imperative to save civilian lives by ensuring appropriate medical supplies, food, water, and fuel are provided immediately.

BQH and ETC conceived of the research plan, collected the data, carried out the analysis, and have directly accessed and verified the underlying data reported in the manuscript. BQH wrote the initial draft. ETC created the figures. PBS provided clinical and operational context. BQH and ETC contributed equally. All authors reviewed and contributed to the final version of the manuscript. Authors were not precluded from accessing data in the study and accept responsibility to submit for publication. The authors declare no competing interests. All data used in this Correspondence are publicly available from the Gaza Ministry of Health, UNRWA, and United Nations Office for the Coordination of Humanitarian Affairs. Further details of our data usage and an aggregate table of all data used are in the appendix.

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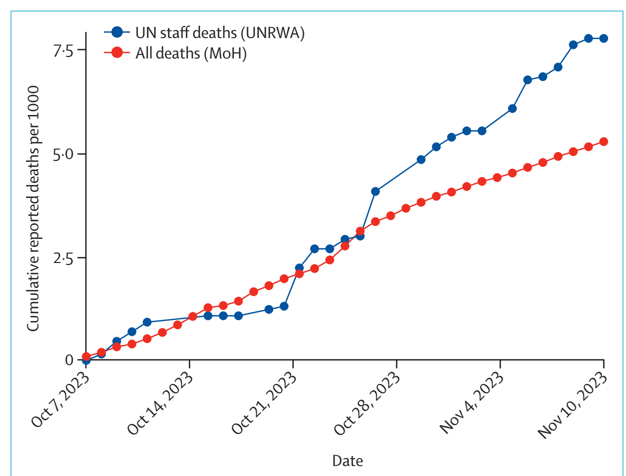

***Figure:* Cumulative reported mortality rates (Oct 7–Nov 10, 2023)**
Data are calculated by separate death reports from the Gaza Ministry of Health (MoH; red line) and the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA; blue line).

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See Online for appendix

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For more on the h**umanitarian crisis in Gaza** see https://www.ochaopt.org/

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End humanitarian catastrophe in conflict settings

The WHO Strategic and Technical Advisory Group of Experts (STAGE) on maternal, newborn, child, and adolescent health and nutrition is deeply grieved to see the suffering in many parts of the world impacted by conflict and humanitarian crisis, which includes Gaza, Ukraine, Sudan, and many other areas where conflict and displacement are occurring. Given our remit, our concern is especially for women, newborns, children, and adolescents who bear the physical and mental health burdens from the hostilities, as direct casualties and indirectly via reduced access to health care and other essential services.[1] For children and adolescents, these conflicts occur at sensitive periods of neurodevelopment, with substantial lifelong and intergenerational repercussions.[2]

See **Online** for appendix

The military actions causing civilian injury and death in Sudan, Ukraine, and, most recently, Gaza, over the past months are deeply shocking. Sudan is now suffering the world's largest displacement crisis, with 7·1 million people forced from their homes. By May, 2023, 24·7 million people were estimated to need humanitarian assistance, an increase from 15·8 million people in November, 2022. In Ukraine, more than 17 million people—half the population—now need humanitarian assistance and protection, which increased from more than 3 million people who needed aid at the start of 2022. In Gaza, at the time of writing, the reported number of deaths has surpassed 15 000 individuals and more than 41 000 people have been injured, 70% of whom are women and children. A large number of people, including health-care workers, are unaccounted for.

For more on the **humanitarian crisis in Sudan** see https://www.unocha.org/sudan

Basic necessities, including clean water, food, safe shelter, and sanitation, are scarce for those who cannot escape. With extreme crises, health-care systems are always affected. In Gaza, for example, health-care services are on the brink of collapse, with more than half of the health-care facilities inoperative, either because they have been attacked or there is no water, fuel, or electricity. Oxygen concentrators and ambulances have been destroyed, and there is a critical shortage of medical supplies, blood products, and medications. The remaining hospitals are significantly incapacitated and operating beyond their capacity; there are patients lying on the floor, and some patients are undergoing procedures without basic anaesthesia. Newborns in neonatal units and patients in critical care units have died because of insufficient electricity, oxygen, or medications. In war zones, civilians often seek shelter in hospitals, only to realise that these are not safe havens, in contradiction to international law.[3] Residential housing (eg, in refugee camps and schools) serving as shelters are also not safe, and the number of displaced individuals exceeds 1·6 million.[4] Displacement places young people—especially young women—at risk of violence and abuse.

Hostilities have serious long-term consequences on the development, health, and wellbeing of newborns, children, and adolescents and their parents and communities. Armed conflict is associated with substantial and persistent excess maternal and child deaths globally[5] due to direct (eg, violence) and indirect health effects.[6] Adverse childhood experiences negatively impact physical, mental, and emotional health across the life course, with their impact being multiplicative during crucial periods of developmental plasticity, such as early childhood and adolescence.[7] Many of the surviving children and adolescents have become orphaned, and some newborns are unidentifiable as their families have been killed. The inadequacy of food, clean water, and proper sanitation will result in malnutrition and its associated effects and increased risks of communicable diseases, including those previously eliminated. The UN's Survive, Thrive, and Transform agenda for women, children, and adolescents, along with the Sustainable Development Goals, are taking remarkable steps backward.

As we witness this humanitarian crisis, we support the statement from WHO calling for "collective efforts to bring an end to the hostilities and humanitarian catastrophe in Gaza and in other similar humanitarian settings".[8] Above all, we call for all civilians, and in particular, women, newborns, children, and adolescents, to be protected from further death or harm, have safe access to health care, and be able to live with dignity and respect. Health-care providers, health facilities, schools, shelters, and vital infrastructures must be protected. Only with peace can we achieve health for all, especially women, newborns, children, and adolescents.

We declare no competing interests.

This Correspondence is a statement by the Strategic and Technical Advisory Group of Experts (STAGE) on maternal, newborn, child, and adolescent health and nutrition (members are listed in the appendix).

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