

Critically Injured Combat Casualties Survival: Two Decades of Change Across Three Military Conflicts in Israel

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introduction

Survival after critical combat injury has improved across modern conflicts. This study aimed to describe temporal trends in mortality, injury characteristics, and prehospital interventions among critically injured Israeli military casualties across three Israeli military conflicts spanning more than two decades of evolving combat casualty care.

Methods

This retrospective cohort study used data from the Israeli National Trauma Registry (INTR) and the Israel Defense Forces Trauma Registry (IDFTR). Critically injured Israeli military casualties (Injury Severity Score ≥ 25) from the Second Lebanon War (SLW, 2006), Operation Protective Edge (OPE, 2014), and the Swords of Iron War (SOI, 2023–2025) were included. The primary outcome was overall mortality.

Results

The analysis included 993 critically injured Israeli military casualties: 128 (13%) from SLW, 76 (8%) from OPE, and 789 (79%) from SOI. Overall mortality declined across conflicts (Figure 1A), from 91% to 80% and 71%, respectively ($p<0.001$), primarily driven by reduced prehospital mortality and accompanied by increased in-hospital mortality (87.8%, 75.0%, and 62.9% vs. 3.9%, 3.9%, and 8.2%, respectively; $p<0.001$). Anatomic injury distribution differed across conflicts. SLW was associated with higher rates of head, torso, and extremity injuries ($p\leq 0.006$). Compared with OPE, SOI demonstrated more back/spinal and fewer thoracic injuries ($p<0.001$). Prehospital management evolved across conflicts. Blood products and tranexamic acid (TXA) were not used in SLW. During OPE, prehospital transfusion relied on freeze-dried plasma (9.2%), whereas SOI introduced prehospital low titer whole blood transfusion (22%), alongside continued use of freeze-dried plasma (10%) ($p<0.001$).

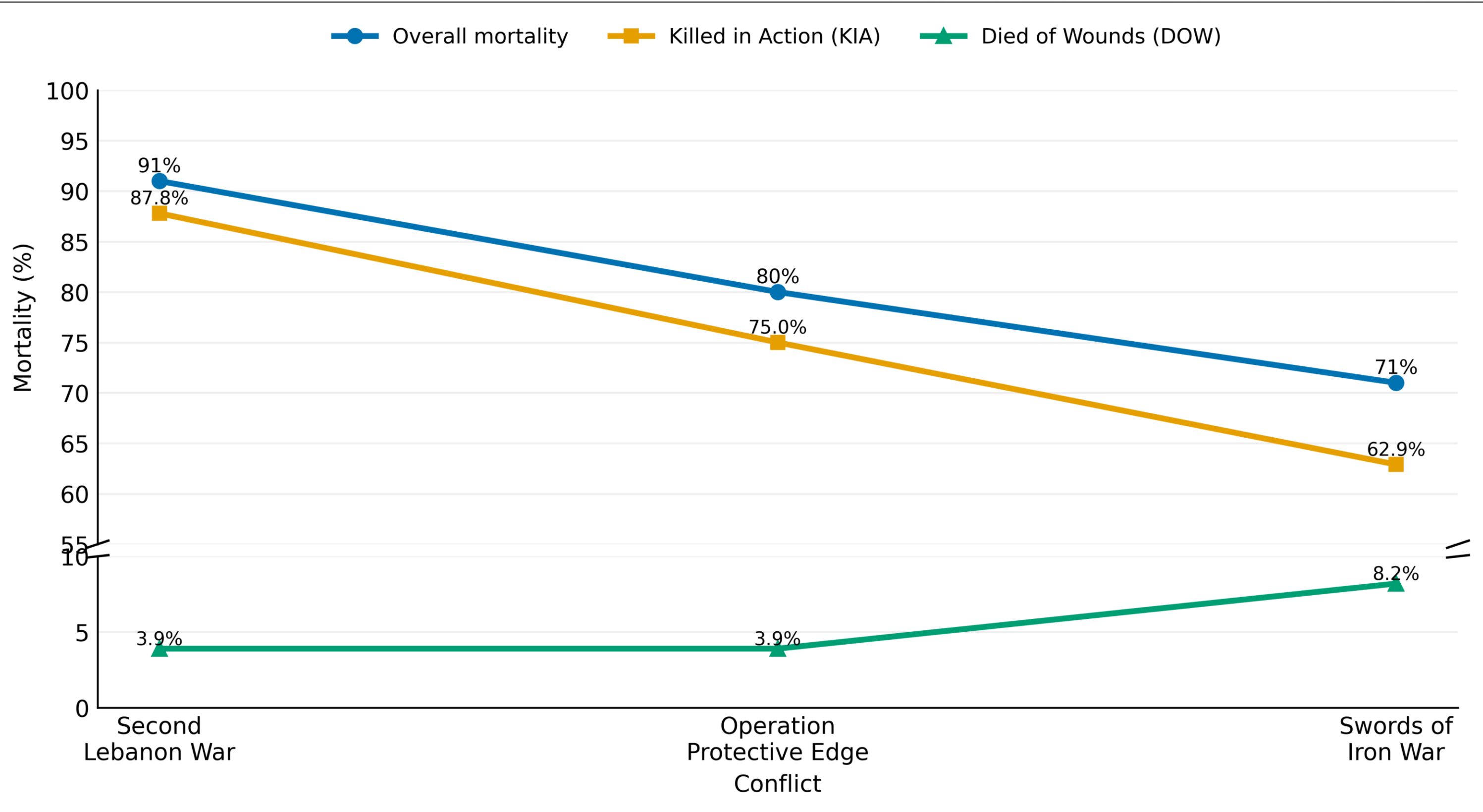


Figure 1. Mortality trends of critically injured casualties across major Israeli conflicts.

CPT Ori Yosef Silvester, MD, the first author of this study, battalion physician of the Shaked Battalion, Givati Brigade, was killed in action in Lebanon during the Swords of Iron War on June 1, 2026. His compassion and unwavering dedication to his wounded soldiers and patients continue to inspire us.



Crystalloid administration declined markedly from 25% in OPE to 2.7% in SOI ($p<0.001$). TXA was administered in 20% and 17% of casualties during OPE and SOI, respectively ($p<0.001$). Helicopter evacuation increased (33%, 25%, and 40% for SLW, OPE, and SOI, respectively; $p=0.013$).

Conclusions

Survival of critically injured Israeli military casualties improved markedly over two decades, driven primarily by reduced prehospital mortality. Marked differences in injury patterns and prehospital management were also observed across conflicts. Further research is needed to determine which changes contributed most to improved survival.



Abstract disclaimer: The authors declare that they have no conflicts of interest or disclosures relevant to the content of this abstract. All research procedures were conducted in accordance with established ethical guidelines and with the approval of the appropriate institutional review board. The findings presented are based on the data available at the time of submission and may be subject to further analysis or refinement.

