

# Challenges and Opportunities in Reporting Trauma-Related Research: A Case Study from Syria

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## Abstract

**Background** Reporting war trauma research is an arduous mission because it needs accurate data collection and it is considered a tough task as a result of the emergent management nature of such injuries which implies neglecting the medical records. The conflict in Syria involved extreme numbers of war trauma injuries which might be implemented in creating a prototype for preparedness plans which might decrease the number of casualties or, at the very least, minimize the damage for future combat trauma injuries.

**Material and Methods** Data were sought from the Department of Surgery at Hama National Hospital on war injuries during 2017 to make a research paper on the experience of Hama National Hospital, Syria, a nonmilitary hospital that treats war injuries.

**Results** In 2017, 2,912 war injury patients were admitted to the Hama National Hospital, among which 683 (23.455%) were dead-on-arrival and the remaining 2,229 patients (76.545%) were treated in emergency room (ER). Among those treated in the ER, shrapnel was the first cause of injury reported in 1,165 patients (52.26%), followed by bullets in 585 (26.24%) and trauma in 316 (14.17%). There were no data on the age of patients, the initial investigations done, the Glasgow Coma Scale score on admission, the primary management, the follow-ups, or even the mortality rates among hospitalized patients. The data were insufficient to write a well-balanced research paper because of the scarcity of information extracted from the medical records.

**Conclusion** Doing a research in conflict settings requires more attention to detail and the medical staff should be trained to take care of the medical records because even if it seems inappropriate to spend time on recording in conflict atmospheres, making well-established recordings would contribute to the enhancement of the health care management of future war trauma injuries.

## Keywords

- ▶ injuries
- ▶ health services research
- ▶ armed conflicts
- ▶ retrospective studies
- ▶ Syria

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## Introduction

Managing trauma is an invaluable part of medical knowledge and initiating research in such a field requires precise data collection and well-established medical records. Each combat leads to new advancements in the field of trauma medicine. In World War II, the use of antimicrobial agents on a large scale took place. The Korean War witnessed the usage of grafting for vascular injuries. During the wars of Iraq and Afghanistan, many studies led by the Joint Combat Casualty Research Team were conducted, which revolutionized the management of trauma patients by applying a series of rapid interventions which saved the lives of many injured. Furthermore, the outcomes faced in military medicine make their way to the civil medical practice.<sup>1</sup> The messy environment of war atmosphere makes managing war trauma patients difficult, resulting in missing the data concerning physical examination, investigations, and treatment of the war injuries, which in turn results in missing the opportunity to benefit from the bitter experience of war.

## Material and Methods

In this article, a case study on the obstacles and opportunities of doing research on war trauma was done in which data were sought from the Department of Surgery at Hama National Hospital on war injuries during 2017 to prepare a research paper on the experience of Hama National Hospital, which is a nonmilitary hospital that treats war injuries. All available medical records on war injuries collected were in Arabic which was then translated to English. The data were collected by the hospital administration and presented in an Excel (Microsoft Corp.) file.

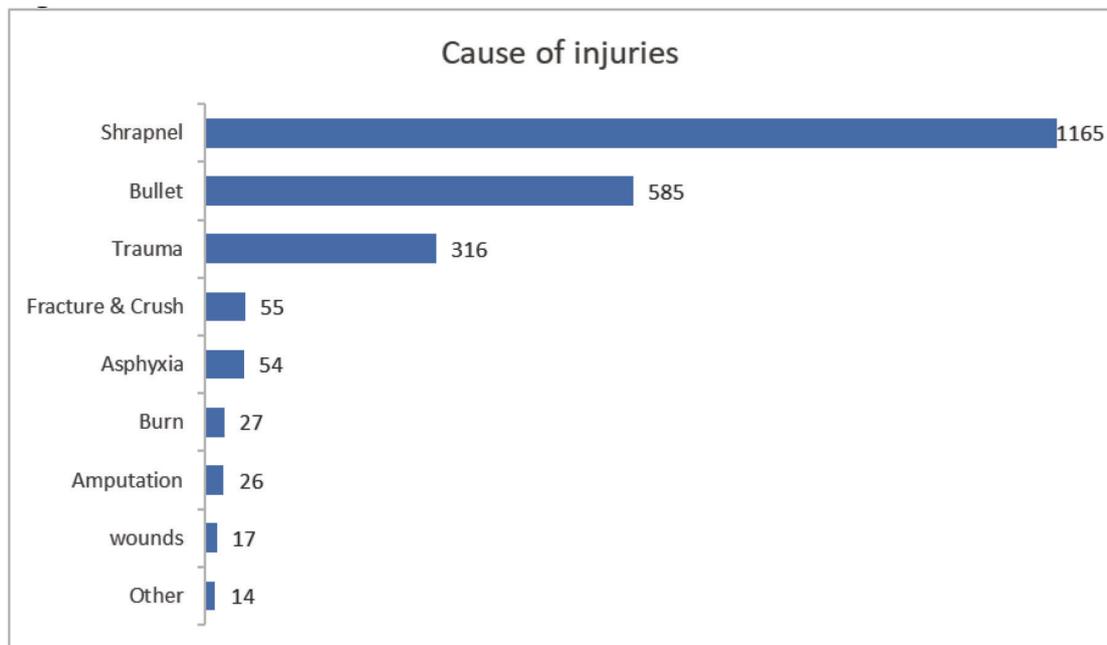
The only available data of war injuries in 2017 were: the date of injury by day and month; the region of injury in general, that is, face, the upper limb, etc.; the side of injury: right versus left; the cause of injury like shrapnel, bullet, etc.; and the type of injured patient, that is, civilian, supporting forces, or military patient. There were no data on the age of patients, the initial investigations done, the Glasgow Coma Scale score on admission, the primary management, the follow-ups, or even the mortality rates.

## Results

In 2017, 2,912 war injury patients were admitted to Hama National Hospital, among whom 683 patients (23.45%) were dead-on-arrival and the remaining 2,229 patients (76.545%) were treated in the emergency department (ED). The highest number of injuries reported was in April, 2017, with 750 injured people (25.75%). Among them 201 patients (26.80%) were dead-on-arrival and 549 patients (73.20%) were managed in the ED. Most of the living cases managed in the hospital were for the supporting forces numbering 1,357 (60.87%), followed by 813 (36.47%) military forces, 41 (1.83%) civilians, and 18 (0.80%) unknowns. With regard to the causes of injuries in alive patients, the causes in descending order were: shrapnel (1,165 [52.26%]), followed by bullets (585 [26.24%]) and trauma (316 [14.17%]). Detailed distribution of causes of war injuries are reported in ► Fig. 1.

## Discussion

Hama National Hospital is a civil hospital unprepared to receive mass war casualties. The medical staff suddenly faced a hard mission of treating mass war injuries without previous



**Fig. 1** The distribution of causes of war injuries in Hama National Hospital during 2017.

preparedness plans or even training on war surgery. The data collected from Hama National Hospital to write a research paper did not include sex of the patients, initial investigations, the primary and secondary management, or the mortality or nosocomial infection rates. There is no opportunity for any protocol to be implemented for initiating a retrospective research on the data of war injuries.

The high percentage of dead victims reaching the hospital (23.455%) might be due to either the severity of the injuries or bad transportation system of the patients from the conflict area. In the war of Afghanistan, the military trauma system supporting the International Security Assistance Force substituted the principle of time dedication to deliver injured patients to a health care facility by the assignment of time to locate and initiate advanced life support interventions on the way which resulted in less than 10% case fatality.<sup>2</sup> These recommendations were not restricted to military hospitals only, but it was also a lesson for civil health care facilities. The highest proportion of the injuries was caused by shrapnel (52.26%), which is a result of either missiles or improvised explosive devices, and the latter was the most common cause of death in Afghanistan and Iraq in 2009 and 2010.<sup>3</sup>

Injuries caused by shrapnel are polluted injuries and analysis of shrapnel injuries might give an opportunity to study the efficacy of antibiotics used in wound infection control and prophylaxis, especially because guidelines concerning the administration of antimicrobials for trauma infections were designed mostly based on studies in civilian settings.<sup>4</sup> The scarcity of the data constituted a barrier in extracting knowledge on the effect of antimicrobial drug use in the Syrian combat settings.

In the given data from Hama National Hospital, the distribution of vascular injuries was not mentioned and injuries of limbs which is usually the major source of vascular injuries did not contain details on the distribution of vascular injuries during the Syrian war where a parallel study was made by Beranger et al<sup>5</sup> to study the management of war-related vascular injuries in the Kabul French Military Hospital where the distribution of the vascular injuries was dominated by lower limbs vascular injuries (62%), followed by common upper and lower limbs (18%), and then the upper limbs injuries (13%), whereas the residual (7%) vascular injuries were on other parts of the body.

Extraction of more data on the Syrian war injuries required returning to the paper medical records which was kind of impossible because the patients' names were deleted for security reasons. Furthermore, in case of mass casualties, the initial management for injuries was done before transporting the injured to a military hospital where

a war surgery trained staff was ready for the definitive management. Additionally, there was no available time to write detailed medical records. These minor medical records on war trauma might be inferior to those of advanced trauma centers in the world, but that would be explained in the light of the war conditions and bearing in mind the difficulties related to the unstable environment plus the absence of previous training on war trauma or even to deal with such miserable events.

## Conclusion

Multiple medical lessons should be learned from the experience of the Syrian hospital in treating war injuries for the next generation of doctors, either civilian or war surgeons, because of the massive numbers of injuries with variant types of serious injuries. However, the lack of the culture of doing research on war injuries, in addition to the lack of complete electronic medical records and the persistent usage of unsorted paper medical records or even the absence of the whole records in case of emergent trauma without the presence of follow-ups for such war injuries resulted in the loss of the benefit from the bitter experiment of the Syrian war to make preparedness plans for hospitals throughout the hot regions in the world for managing war injuries. Even though the experience of the Syrian war is still available, but only in the minds of the managing doctors rather than in academic papers, this implies more efforts in trying to extract these data from those busy minds.

### Conflict of Interest

The authors declare that they have no competing interests.

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