

# Analysis of Injury Impact among Peshmerga Forces during ISIS war in Duhok, Kurdistan Region, Iraq

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## Abstract

**Background:** War with ISIS (Daesh) is plaguing the Middle East region since 2014. It had a major regional and global impact on the lives of many. Peshmerga forces are the most active and effective ground force against ISIS. The major western forces and the international communities including the United Nations back up these forces. Although the war started 4 years, till now, little is known about the injuries these forces suffer from the explosive materials on the battlefield, and even less is known about the first aid and paramedic activities on the frontlines. **Material And Methods:** Reports estimate that 8,610 peshmerga were injured and 1,466 have died since the war with ISIS started. In this study, we randomly sampled the Medical records of 100 peshmerga injuries during the 3 years ISIS war( 2014 o 2017) from Duhok Emergency Hospital. **Objectives:** This study aims to provide the descriptive analyses for the injuries suffered by Peshmerga forces in Duhok region, near Mosul, ISIS's largest captured city in Iraq where the heart of the Battlefield was located. **Results:** This study also provides the information about the management lines and the outcome of these injuries. The main focus of this study is on blast and explosion injuries. It sheds the light on the line of the medical management on the battlefield and also highlights the availability of medical staff/equipment both at the frontlines and also at Duhok Emergency hospital which took care of the injured Peshmerga forces near Mosul. **Conclusion:** This study assessed the medical services and the outcome performance of wounded Peshmerga from blast injuries during the ISIS war.

**Keywords:** Blast injuries, explosion injuries, ISIS, Peshmerga

## INTRODUCTION

The areas controlled by the ISIS have grown quickly since the start of the Syrian Civil War in 2014.<sup>[1]</sup> It has also spread to the Sunni areas of Iraq due to the failure of official Iraqi forces to hold their grounds,<sup>[2]</sup> as a result, ISIS expanded its control into Northern Iraq, resulting in a major humanitarian crisis in the region, many civilians have been displaced and/or expelled from their own hometowns as a result of ISIS's offensive.<sup>[3,4]</sup> Due to the geopolitics of the region and its richness in oil, war with ISIS has proven to be of major regional and global impact.<sup>[5]</sup>

The term "Peshmerga" is translated as "those who face death," and has become a staple of Kurdish culture in the last 100 years. They were officially established by Mustafa Barzani in 1943, since then the force has come to represent the Kurdish nationalist movement and their link to the Kurdish struggle for seeking a homeland in the Middle East.<sup>[6]</sup> When ISIS rose rapidly in 2014 capturing large swathes of territories in Iraq without any resistance from the other forces, Peshmerga forces

showed fierce resistance even with their old outdated weaponry, keeping their controlled areas safe from the horror of terror groups. From that moment on they became the most effective ground force in which the international allies relied on to battle against ISIS and free the occupied regions from ISIS's control.

As a result of being on the frontline, it is inevitable that Peshmerga forces are prone to injuries. In this situation, there is a major role for the military doctors and paramedics in reducing the number of mortalities and complications that can arise from these wound injuries. Many recommended medical practices and guidelines have been established for preventing death in the battlefield and have been investigated thoroughly in many studies.<sup>[7-11]</sup>

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Despite the fact that Peshmerga forces have been in war against ISIS for 4 years, little is known about the most common dangers they face on the ground and how they manage to survive in a land filled with explosive materials, such as TNT. There is even little knowledge about the first aid routines practiced by the paramedics who accompanies Peshmerga forces in the frontlines. There is limited data on the management lines the injured Peshmerga received from the battlefield until transferred to hospital. Similarly, no data are available on the final outcome and the efficiency of the medical service.

This study aims to fill this gap by providing descriptive analyses on the medical records of injured Peshmerga. The objective is to provide the information on the management lines these victims received from the battlefield in the frontline, till their transference to a hospital and their final outcome. This study highlights the effectiveness of these management lines and also the availability of medical staff and/or medical equipment for saving the lives of these injured Peshmerga.

## MATERIALS AND METHODS

Reports estimate that 8610 Peshmerga were injured and 1466 have died since the war with ISIS started in 2014.<sup>[12]</sup> In this study, we randomly sampled the medical records of 100 Peshmerga injuries during the 3 years ISIS war (2014–2017) from Duhok Emergency Hospital, Kurdistan Region, Iraq.

Although emergency hospital of Duhok was not a dedicated war or injury hospital, but it received the injured Peshmerga from Mosul and nearby frontlines. Mosul is the largest captured city by ISIS, where it is at the center of the battlefield. For this study, we excluded bullet injuries because our main interest was the outcome from explosion and blast injuries. Regarding data collection, we relied on the victims' medical files at the hospital. If the victim was alive and capable of giving a history, we took the medical history directly from the victim. Otherwise, relatives were contacted by phone for more details (when needed). Further information was collected from victims' peers in the frontal line who had witnessed the injury directly or from the paramedics who had taken care of the victim during the earliest stages of the injury.

In the first part, we collected information about the victim's biography including gender, education level, and past medical history. Then, we focused on the cause of the injury, victims' initial symptoms, and vital signs. We collected detailed information about the lines of the management and the medical service the victim received in the Battlefield until his/her transference to the hospital. The details of victims' in-hospital assessment, laboratory and medical investigations, and further management lines including surgery (if needed), were documented.

Finally, we recorded the outcomes and the complications caused by the injury. For more details about the data collection, please refer to the Appendix at the end. Our analyses for the

collected data were mostly descriptive. We used Microsoft Excel 2010 for analyses and image generation.

## Ethical considerations

The study was conducted in accordance with the ethical principles that have their origin. It was carried out with patients' verbal approval before sample was taken. The ethical approval of the present study was taken from the Ethical and Research Committee of Kurdistan Board of medical specialties.

## RESULTS

The vast majority of the injuries occurred during the day time (89%). Blast injuries due to the Trinitrotoluene were the most common cause followed by Mortar, 17% [Figure 1].

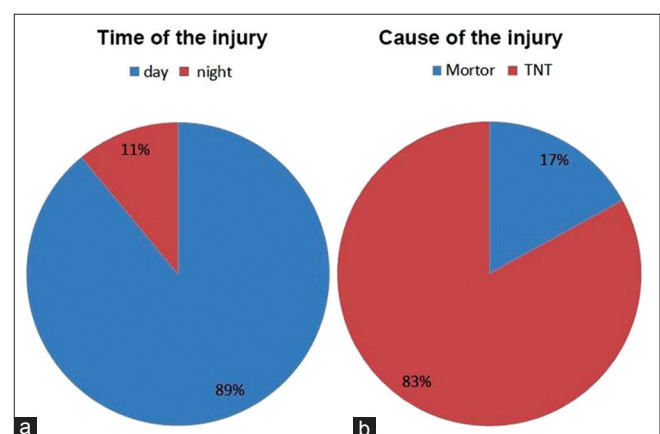
The most common presenting finding or complaint was an open wound/bleeding which comprised more than 70% of the cases. Others presented with hearing loss, burns, or signs of external or internal bleeding [Figure 2]. All these findings were clarified in Figures 3–5.

## DISCUSSION

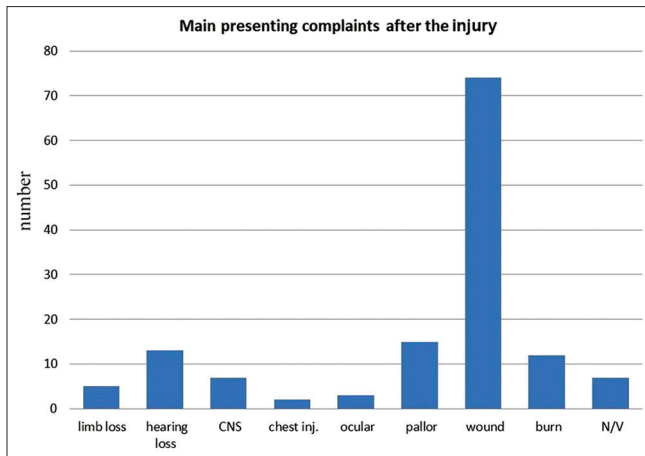
This is the first study of its kind investigating the management of injured Peshmerga forces during their war with ISIS over 3 years period between (2014–2017) year. The study concentrates on the outcome of blast and explosion injuries and excludes bullet injuries.

The majority of those injured aged 20–30 years. Again, since we do not have precise information about the age distribution among the Peshmerga, we cannot deduce from this sample whether this age range more prone to the injury or it is just the reflection of age distribution among all Peshmerga warriors. Due to strict security measures, biometric data on this regard are hard to obtain.

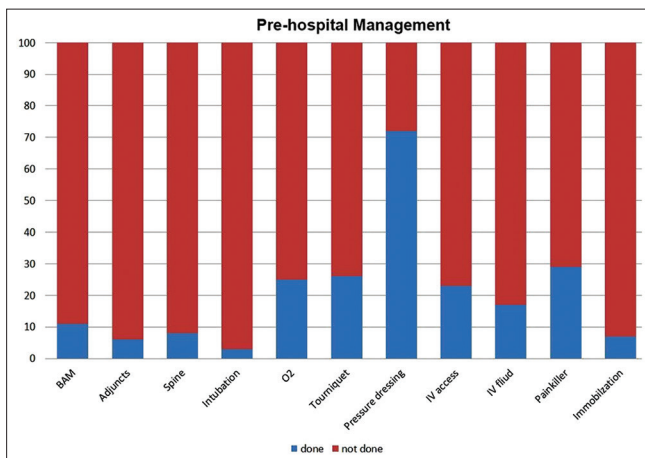
The cause of the injury and wound patterns among the Peshmerga were comparable to those among the US personnel during the Iraq operation of Iraqi freedom,<sup>[13]</sup> although we excluded bullet injuries. TNT is remained the major case of explosive and blast injuries in Iraq,<sup>[14]</sup> as it is widely used by ISIS and other ground forces to limit or slow down the advance of their opponent.



**Figure 1:** The time of incidence (a) and the cause of the injury (b)



**Figure 2:** Main findings/complaints by the wounded victims after the injury. N/V is nausea/vomiting



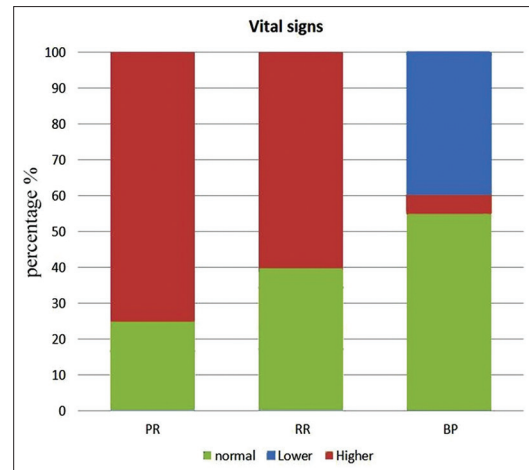
**Figure 4:** The performance of field management and the percentage of various medical services received by the wounded Peshmerga before arriving to the hospital. BAM: Basic Airway Maneuverer, IV: Intravenous What are adjuncts?

That only 25% of wounded Peshmerga were transferred by ambulance reflects the limited availability of ambulances at the frontlines or near the battlefield.

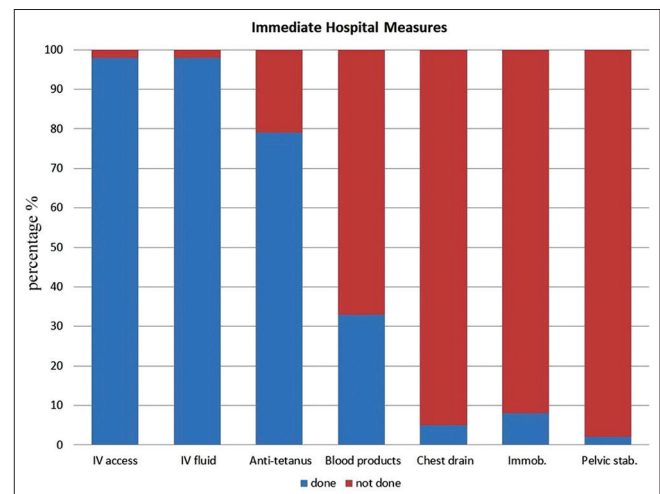
Management at the hospital had a better performance. The majority of the cases received IV-access, painkillers, fluid replacement, and anti-tetanus. Furthermore, essential laboratory and imaging investigations were done for those who needed further assessment.

Most wound injuries in the battlefield are unclean;<sup>[15]</sup> therefore, surgical intervention and wound debridement are recommended in most cases.<sup>[16]</sup> In our study, surgical intervention was performed in 72% of cases most of which were wound debridement. Vacuumed-assisted closure is helpful in preventing edema and improving wound closure,<sup>[17]</sup> however, this procedure not performed for any of the wound Peshmerga reported in this study.

Was it available? This has already been reported in the results section.



**Figure 3:** Comparison the distribution of each vital sign value recorded from the victim after the injury. PR: Pulse Rate, RR: Respiratory Rate, BP: Blood Pressure. Higher means either tachycardia, i.e., PR > 100 beats/minute or tachypnea, i.e., RR > 20 resp/minute. Lower = hypotension, i.e., systolic BP < 90 mm Hg



**Figure 5:** Distribution of the immediate hospital measures for several management lines after receiving the wounded Peshmerga

The risk of hearing loss due to the tympanic membrane perforation is to be expected in a noisy battlefield environment, especially in the vicinity of explosions.<sup>[18,19]</sup> Therefore, forces should use hearing protective.<sup>[20]</sup> Unfortunately, due to the lack of these protective devices and/or due to the negligence in wearing them, many of the wounded Peshmerga suffered from hearing loss after the injury.

## CONCLUSION

This study assessed the medical services and the outcome performance of wounded Peshmerga from blast injuries during ISIS war. TNT remained to be the major cause of blast injury in this region. The fact that Peshmerga forces do not have strong and protective armored vehicles and increases the risk of mortality rate from these blast injuries. The study revealed

a major deficit in field management which may reflect both lack of resources but also training. Particularly striking was the lack of ambulance transfer. Many complications might have been preventable if Peshmerga forces had been issued with protective clothing, such as head and ear protectives. This study cannot determine whether the lack in the field management was due the inadequate numbers of trained personnel or inadequate training of those personnel. If paramedics cannot normally access frontline positions, soldiers themselves should be trained in life-saving treatment, for example, the use of tourniquets<sup>[3]</sup> Since the majority of wounded subjects had only basic and elementary education, practical first aid training courses are essential and might reduce the mortality and serious morbidity significantly, bullet injuries. Future studies should include bullet injuries across a wider range of frontlines and hospitals.

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Nil

### Conflicts of interest

There are no conflicts of interest.

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