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## Original Article

# Experiences of civilian nurses in triage during the Iran-Iraq War: An oral history

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## ABSTRACT

**Purpose:** Nurses played a critical role in performing triage during the Iran-Iraq War. However, their experiences in triage have not been discussed. Therefore, the current study aimed to investigate the triage experiences of civilian nurses during the Iran-Iraq War.

**Methods:** Oral history method and in-depth interviews were used to collect data to gain the nurses' experiences in triage.

**Results:** Four themes were extracted from the data, which were the development of triage, challenging environment to perform triage, development of mobile triage teams, and challenges of triage chemical victims for nurses.

**Conclusion:** Triage is an important skill for nurses to manage critical situations such as disasters and wars. Nurses have to be competent in performing triage. Involvement in critical situations helps the nurses learn and gain more experience on how to manage unexpected events.

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## Introduction

The prolonged Iran-Iraq War (1980–1988) resulted in military and civilian casualties, which is documented as the most important landmark during the second half of the 20th century.<sup>1</sup>

The crucial and ultimate goals in wars are the preservation of life, caring the victims, and returning the greatest possible numbers of wounded soldiers.<sup>2</sup> In Iran-Iraq War, Triage occurs at every level of care for victims and starts with a rescuer (Emdadgar) at battlefields, continues in emergency tents, emergency camps, and emergency field hospitals, operating rooms, and finally transferring to general hospitals in the safe cities. Nurses do care through performing triage at war zones. Resuscitation as an essential procedure of triage is performed frequently by nurses. Triage is a dynamic process of prioritizing care and treatments for the wounded.<sup>3–6</sup>

The quality of triage had been improved in austere environments such as the First and Second World Wars, the Korean, Vietnam,

Falkland, and the Persian Gulf War. It was clearly demonstrated that early assessment, prompt resuscitation and fast patient transfer significantly help to reduce mortality rates in military hospitals and battlefields. The mortality rate of soldiers reduced from 5% during the World War II to 1% by the end of the Vietnam War.<sup>7</sup>

Triage has been traditionally performed by medics and nurses in battles and mass casualties,<sup>8,9</sup> and continues in hospital emergency departments.<sup>10</sup> However; performing triage is different in disasters and at hospital settings. In the Iran-Iraq War, triage was performed in relief posts, field emergency units and hospitals during the chemical agent attack.<sup>11</sup> During a disaster, the goal of triage is to save as many people as possible without prioritizing who has the best chance for survival.<sup>7</sup>

In the Iran-Iraq War, because of the high number of chemical injuries, the triage was used in relief posts, hospitals and field emergency units. Triage was administered differently from the usual methods.<sup>10</sup> Upon exiting from the combat zone, the injured individuals were evaluated, and for those who critically wounded, resuscitation was performed, starting with an intravenous catheterization. Moreover, if they required immediate surgery, they were transferred to the emergency units with operating rooms established in the battlefields. The individuals were then transferred to the professional medical units behind the frontline, if needed.

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As a vast war zone and inadequate military nurses, civilian nurses participated in the war and gained valuable experiences on how to perform triage. The civilian nurses did not have any experience in performing triage in a war before deploying to the war zones. There is, thus, a paucity of knowledge related to their performance in the Iran-Iraq War on performing triage. Therefore, this study aimed to investigate the lived experiences of civilian nurses related to the triage performance during the Iran-Iraq War.

## Materials and methods

### Design

This study aimed to investigate the lived experiences of nurses in triage during the Iran-Iraq War. Oral history was chosen to gain data from the civilian nurses who participated in the war. Oral history is a systematic approach for collection of first-hand data and an analytic framework.<sup>12,13</sup>

Oral history can be used as "... source of objective information and filling gaps left by existing documentation".<sup>13</sup> Some others use oral history as a means of creating social history for those who does not have opportunities to voice themselves.<sup>14</sup> While it has been over 30 years since the war ended, Iranian nurses who contributed to save soldiers in frontline never told, if any, their stories and challenges on triage. Therefore, oral history is an appropriate approach to investigate the civilian nurses' experience.

### Data collection

Semi-structured interview was used to elaborate the participants' experiences. As there was not a list of nurses who served in the Iran-Iraq War in military and non-military agencies, snow ball sampling method<sup>15</sup> was applied to recruit participants. The participants who were civilian volunteer nurse (registered and student) and were able to recall the memories and had experiences of performing triage in the war was included in the study. The ultimate sample comprised 16 civilian nurses and the demographic data are listed in Table 1. The participants' narrative was gathered through a semi-structured interview. Diaries, personal documents, photos and other available evidences were used to aid recollection and cross-check participant's claims.

Informed consent was obtained from all participants before the interviews. All participants were interviewed for one or two sessions based on their triage information. The interviews ranged from 45 to 90 min, with an average of 60 min in each session. After collection and analysis of the data, obtained through each interview, successive respondents, suggested by the previous participants, were selected. This helped the researchers to extend the range, depth, and scope of the achieved information. Some of core questions were: "Would you mind describing your responsibilities in the frontline?", "Would you mind explaining the tasks that were done for the injured?", "Would you compare the initial and final days of war in terms of triage?" and "What else do you want to tell me about the triage?" Further, explanatory questions<sup>12</sup> were used

to encourage the participants to elaborate the stories such as "Why did that happen?" and "How did relate to other events?" Judgmental questions<sup>12</sup> were also used to provide the opportunity for participants to talk about the "big picture" of events that positively and negatively influenced on participants' professional practice and attitude. All the interviews were recorded by a voice recorder and transcribed for data analysis.

### Data analysis

The data analysis was formed based on the four-stage method of oral history.<sup>16</sup> In the first step, the initial codes were extracted from each interview separately. The audiotapes of interviews were transcribed and significant words, phrases, sentences, or paragraphs were highlighted as initial codes. Then subcategories were formed from the initial codes. The subcategories formed categories and finally the narrative themes created from the categories. Data collection was preceded until data saturation gained, which means no more information attained about research questions when analyzing data.

### Rigor

The scientific rigor and trustworthiness of the data in historical research were measured based on credibility, dependability, confirmability and transferability criteria.<sup>17</sup> The credibility was achieved through investigating the participants' culture and a prolonged engagement between the researcher and the participants, triangulation of data through asking for the other evidences such as photos, and diaries, and giving back transcripts to some of the interviewees to check the accuracy of the texts and our interpretations, and debriefing sessions between the researcher and the project supervisor for developing ideas and interpretations. Dependability was maintained while the researcher asked another colleague to transcribe and analyze the interviews. Besides, the researcher used an external audit and bracketing to achieve data confirmability. The transferability of data limited to the Isfahan's nurses, whereas attempted to find a sample with the highest possible diversities.

### Ethical consideration

The ethical approval was achieved from the Ethics Committee of Isfahan Medical Sciences University (Number thesis: 389295). The nurses who were willing to participate in the study signed a consent form. They had right to participate or reject to be interviewed at any time during the study. The participant's names were assigned to a number and the anonymity was guaranteed.

## Results

After analyses of data, four themes were extracted from the interviews, which were the development of triage, challenging environment to perform triage, development of mobile triage teams, and challenges of triage chemical victims for nurses.

### Development of triage

Organizing the medical staff was difficult at the beginning of the war due to unpreparedness of the medical centers to deploy trained staff. In the beginning of the war, volunteer civilians who were deployed to the war helped the wounded at the frontlines. The wounded were transferred to medical centers in the safe area, though triage did not apply at that time. As the war continued, the medical staff were deployed to the combat zones from other parts

**Table 1**  
The basic information of participants.

Variable	Results
Mean age in war	20.9 years
Mean age in interviewing time	40.9 years
Registered nurse in war	5%
Student nurse in war	75%
Nurses with primary experiences in clinical skills	35%

of the country. The primary medical centers were established over two years around combat zones to provide the first aid medical services to the wounded. Although during the first two years triage was not systematized, the medical staff performed the skills for the severely wounded soldiers.

Participant 16 narrated:

*... Triage was meaningless at that time. But it was being done imprecisely. At the entrance, there was a large hall where the uncategorized wounded soldiers were brought. Then, they were divided based on the physical examinations and medical aids were given.*

While the war had been prolonged, field hospitals were established near the frontlines, triage became advanced. Nurses, physicians, surgeons and anesthetists were available at the emergency centers of the field hospitals. They became experienced and more competent to perform triage. In order to perform triage, the wounded soldiers were firstly examined by paramedics. Vein catheterization was provided, if necessary, and the airway was secured. They were transported to the medical centers by ambulance. By arriving to the medical centers, the injured was reassessed and medical interventions such as intubation, airway opening and control of bleeding were provided to save them. The severely wounded were directly transferred from the frontlines to the field hospitals. In the field hospitals, triage was firstly performed by nurses because of a shortage of physicians. After providing advanced intervention, the victims were transferred to a hospital at safe zones by an ambulance or a helicopter.

The majority of the severely injured soldiers were resuscitated and moved to the next level specialized clinical centers. All the medical centers at the frontlines were able to provide medical tasks such as intubation, chest tube, tracheotomy, gastric and bladder drains and so forth. After getting intubation and respiration by the ambu bag (manual resuscitator), the soldiers with multiple trauma were transferred to the backlines.<sup>18</sup>

The participant 14 narrated his experience of triage as:

*... The triage done over there was different from what is described in books. We did triage based on the survival of the patients. If he was going to expire, we did the tasks for him. The first stage of our triage was life saving of severely injured. We used to choose the patients who needed surgeries. For example, the wounds in the neck and abdominal areas were a priority for us. The clinical services were provided for those with internal bleeding. The vascular cases were regarded too. If we had a broken hand, we would brace it and dispatch the patient. At the second stage, triage was performed based on the availability of transporting vehicles (ambulance, buses with or without seats, helicopter ...).*

#### Challenging environment to perform triage

Given the high load of the wounded, especially in the critical situations, it was difficult to prioritize them. Performing triage was a difficult duty of the nurses in the war. Nonetheless, they experienced how to manage the victims and the mortality rate was considerably decreased during the last years of the war.

To affirm what have been provided so far in the current documents, during the first two years of the war, approximately 12.5% of the injured had been operated on in less than 8 h, which was reduced to 4 h following six years (1983–1988). The average time to transfer the victims to a hospital was 12 h at the first two years of war (1980–1982), which was diminished to a 7-h during the following six years.<sup>19</sup>

Triage was diversified during war stages. For the last six years of the war, the services for the critically wounded were speeded up through performing triage despite staff shortages. However, saving as many soldiers as possible was an extremely challenges for the nurses who were allocated among the other medical groups.

Participant 1 narrated on this experience:

*... The nurses were not so familiar with the tasks, but they gradually got to know. I exactly remember that we were so inexperienced and we couldn't firstly do a simple stitching, but we had to set chest tube sometimes. The nurses would get involved in emergencies, and had to do things they hadn't faced before, and this led them to get more experience in some tasks such as resuscitation.*

The other challenge in performing the triage was doing many interventions simultaneously despite staff shortages. Many of the critically wounded needed a long-time manual resuscitator after cardiopulmonary resuscitation (CPR). The number of nurses was not enough to continue the CPR for the injured soldiers. Spending more time for the injured with less chance of survival was extremely challenging while many of them waited for treatments. The investigation and analysis of the interviews with nurses showed that a number of the wounded died due to inadequate forces, high work load, and delayed triage and services.

Participant 14 narrated:

*Lack of treatment utilities and the large number of casualties had overloaded the nurses. For instance, the resuscitation with an ambu bag keeps a nurse busy for too long making him unavailable to help casualties with severe condition.*

#### Development of mobile triage teams

Mobile resuscitation teams of physicians and nurses were developed to increase successful retrieval of the critically wounded. The primary care, such as IV catheterization, airway opening, intubation and even placing a chest tube and control of bleeding were performed in the triage line before arriving to the emergency units. As the war continued, professional field hospitals with advanced medical equipments were installed, which decreased the mortality rate of the wounded soldiers.

Participant 3 narrated:

*... Mobile triage teams were one of the successes in this war. Due to a huge number of wounded soldier's in front of field hospitals, and increasing death rates in critically wounded, the emergency mobile teams were established, to promote the caring process, and saving the soldier's life.*

Participant 8 added:

*... And the emergency teams (mobile triage teams) consisted of medical and nurses. They were organized beforehand and composed of surgeons, assistant surgeons, nurses and assistant nurses. The teams' summoning was sudden, that is, they would contact us on the phone and placing an immediate request for a team to be sent to a specified destination in the war zone and our response was very rapid.*

#### Challenge for nurses to triage chemical victims

The climax of the evolution in medical services occurred in the second four-years of the war. Due to the wide use of chemical

agents by the enemy that resulted in the great number of the wounded, the nurses encountered many challenges in this field when performing the triage.

Earlier in the first years of the war, the nurses and other medical staff had a shallow knowledge about chemical agents and their treatment. As the war prolonged and the frequency of the enemy's use of chemical agents increased, the number of soldiers affected by these agents increased. As a result, establishing emergencies to respond to chemical agents and deploying trained nurses to deliver specialized care were urgently required. To perform the triage, first, the medical forces looked for the recognition of the type of intoxication by different gases and special symptoms related to that special gas or chemical factor. The initial recognition was very important, which was emphasized also in the interview results. The triage of the wounded in the emergencies and recovery room in the second four-years of the war was performed by professional methods in which the nurses played essential roles in performing it and treating the chemically injured soldiers. Based on the severity of symptoms after being contaminated by chemical agents, the injured soldiers were divided into four groups: as to the intoxication by nerve agent, the A group included those who had alternated in the consciousness levels or were in coma. The B group was completely conscious and standing, but had symptoms like asthma, coughing, nausea, vomiting, miosis, and blurred vision. The C group enjoyed a rather good general condition. They did not have systematic intoxication or vomiting, but suffered from miosis, blurred vision and asthma. The D group was in a good general condition and did not require treatment. However, they thought they were sick and were actually the major problem in the chemical emergency. They brought about disorder in the treatment of the previous groups, and there were a large number of them.<sup>20</sup>

The kind of medical activities was different based on the groupings. All the intoxicated soldiers asked to deliver their contaminated cloths and equipment after entering the emergency, which were destroyed after collection. Then, they went to the bathroom for decontamination. Those who were in coma or suffered severe muscular weakness were directly transferred by a stretcher and with contaminated cloths to the ICU, where decontamination and treatment were performed simultaneously.<sup>20</sup>

Participant 13 mentions:

*The number of chemical casualties is too high after a chemical bombardment. We learned that we should categorize the casualties based on their condition in order to save lives of those in sever conditions and in urgent need of help. This was quite successful.*

Due to the closeness to the combat lines of the convalescent home that was designed and used especially in this war and had more beds, a large number of the injured soldiers with light contamination returned to the combat lines after initial treatments and a brief rest.

Participant 15 remembered the scene when he looked after chemical contaminated soldier:

*... In the case of the Majnun Island (an area in Iraq) many injured soldiers needed intubation. We did intubation for most of them at 3 am, their lungs gurgled, and they definitely needed intubation. Two of them died, because of severe secretion. Specially, at the very first moments, the injured went into coma.*

The patients needed intensive care at the initial stages, and the nurses were competent. In chemical emergencies, after performing triage and categorizing the injuries, different treatments were provided. The medical procedures such as opening the airway, suctioning the secretions, placing patients in lateral position, and

injecting the anti-dots if necessary had been prioritized. Administration of oxygen was continued from the admission until recovery. When the vital signs were stabilized, the patients were sent over to the specialized centers.

Participant 5 explained how one in their group would get specialized in the treatment of chemical warfare casualties:

*At first we didn't have enough information on how to cope with war chemical contaminations. But by being in contact with the casualties, we gradually developed a good knowledge, such that when new casualties arrived in the hospital we could identify which chemical agent could have contaminated the person's body. Once sure about the cause, we would carry out the relevant protocol.*

## Discussion

In the Iran-Iraq War, the majority of healthcare providers were nurses. They applied triage, though they were not competent. In field hospitals, triage was valued more and performed better because of the presence of many nurses and different medical specialties. One of the findings of the present study was the development of triage. The professional medical forces were insufficient and incompetent to provide medical services punctually to the critically wounded.

Imbalance between health needs and health care providers challenge due to the large number of injured and dead people.<sup>20</sup>

The major problem at the beginning of the war was the lack of coordination among forces. Military nurses were capable to deal with difficult and unpredictable situations and to care victims independently even without the presence of physicians. However, the civilian nurses were incompetent to organize a critical situation.<sup>21</sup> The results are in-line with Schmedake's study that consider war conditions are unpredictable and many civilian and military people dies because of inadequate medical staffs and equipments.<sup>22</sup> In addition, Blaz et al.<sup>23</sup> states that civilian and military forces encounter with many damages and threats during combats. Although immediate consideration to the wounded and preparation for helping them did not exist at the beginning of the war, it attained gradually through deploying trained forces.

Challenging environment to perform triage was another theme of the current research. Environmental conditions play a major role in the implementation of triage.<sup>24,25</sup> There was no infrastructure to facilitate medical care especially the triage. Lack of equipped places, no well trained nurses, and crowd of victims during military combats were difficulties of performing triage. In the nights when military operations were done, for example, performing triage was difficult in dark and finding and assessing the injured soldiers were very difficult. Besides, unexpected attack of the Iraqi forces was at the initial of the war, offering successful medical services were impossible until the medical units and professional forces were established.

The results of the present study supported Goniewicz (2013)<sup>26</sup> reports that the degree of success in servicing the wounded was increased after gaining experience by the medical forces. Developing primary medical units and the use of various experiences ended with the development of professional medical units and efficient forces at wars.

Development of mobile teams with nurses and physicians to perform triage and offer care for the critically wounded was the other finding of the present research. The mobile team was a big step to save the lives of the injured through on-time classification of the critically wounded and delivering emergency care. Despite the large number of the wounded, the interventions of the mobile team

were effective in decreasing the morbidity and mortality rate in the soldiers. The mobile team performance showed that it was successful in achieving the purpose of triage, which is a rapid recognizing of the critically wounded and performing care for them.<sup>7</sup>

The results of our study support the quotation of Gierson et al. that state a team of specialists, civilian and military nurses, act more successfully in treating the wounded.<sup>27</sup> The results also in line with the findings of using mobile teams to survive the Nepal earthquake victims.<sup>28</sup>

The other finding of the present research was the challenges of triage chemical victims for nurses. Dealing with a large number of chemically wounded soldiers was a new challenge for the nurses. The psychological effect of the chemical agent attacks was panic. Most of the medical staff and the victims did not understand how to deal with that crisis. A huge number of soldiers crowded in front of the medical units to receive care. However, many of them did not need any care. Therefore, delivering care and treatments were difficult for those who were really affected. To overcome the problem, reduce the mortality rates, and lifelong complications, the medical team developed Mass Casualty triage in the medical units to help the victims. The organized program of triage was performed by the nurses in chemical emergency units and in the convalescent home. In the centers for treating the chemically injured increased the nurses' ability to enhance performance of the medical care.<sup>29</sup> In order to decrease the morbidity and mortality rates the victims who have been exposed to chemical agents received critical care promptly.<sup>30</sup> In agreement with the results, Culley et al.<sup>31</sup> show that there is an imbalance in chemical crises between the number of the wounded and the medical facilities. Many of the wounded do not need special medical activities. Recognition of those injured who are in a critical situation and are in need of prompt medical activities is very important.

The triage was successful in saving the lives of many wounded and chemically injured. The nurses were able to offer an effective medical service, despite a few numbers of forces and inadequate medical facilities.

No study was found, if any, to contradict the findings of the current study, most studies support our findings with different extents.

Some of the study limitations included lack of access to military documents and military nurses. Further study is recommended to be conducted in the military forces to reveal other aspects of the presented health services for the victims.

## Conclusion and recommendations

Triage is an unforgettable practice in war, which has been saving lives of many soldiers. Although the nurses were incompetent in performing triage in the early years of the Iran-Iraq War, by continuation of the war and the presence of trained nurses, they could manage the critical situation relatively well through performing triage.

Unexpected events such as war, may happen everywhere, thus medical staffs and nurses always should be ready to help victims. Continuing education on crisis management has to be offered for the nurses and public. Awareness of the importance and performing triage enhances the self-confident, satisfaction, and professional competencies in nurses as well as leads to low morbidity and mortality rate. Nurses' experiences also can be beneficial in managing similar events.

The lessons and experiences achieved from triage by the nurses could be helpful not only for nursing education, nursing practice, and crisis management but also for the other healthcare groups in civilian and military services. The triage also should be updated based on high tech advances and public needs.

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