

## Disaster Triage System and Educational Strategies

**Background:** One of the medical team's responsibilities is to teach the methods of rescue and aid necessary for casualties who have been injured in disasters. They must be taken away of the place of disaster, transferred, categorized and cured.

**Methods:** Delphi technique was used in this research. Firstly, a number of questions were framed and sent to a number of experts of different majors. They were asked to present their recommendation with regard to triage for casualties. Eventually, 18 people replied the questions.

**Results:** The results of the study shows that the members of triage team were not knowledgeable enough in three educational subjects of chemical casualties including: the recognition of chemical poisoning symptoms, the necessity to teach caring and curing methods while dealing with special factors that cause symptoms and disorders in different parts of the body, and the control of stress and anxiety of casualties in incidents. 80% of the members agreed with the first part. Their recommendations and comments were collected. For the second subject, 90% believe that instructions should be developed for care and treatment. In third subject, 70% of the participants believed the use of chemical weapons and explosives is probable in incidents.

**Conclusion:** Awareness of educational needs in relation with incidents and triage has considerable importance; in most cases it could rescue casualties. Therefore, paying attention to special educational issues and recognizing the weaknesses of the educational programs would provide appropriate strategies in order to enhance triage.

**Key words:** Triage, Education, Disaster

## التفكيك في الطوارئ و أماليب التعليم

**التصميم و الهدف:** إن احدي الوظائف التي تقطع على عاتق الفريق الطبي هي اسلوب اوصول البمد الى المصدومين في مناطق وجود الحوادث و يجب عليم المسارعة الى ابعاد المصدومين بشكل افضل و اسرع من مكان وقوع الحادث . الهدف هو اسلوب تفكيك و مساعده المصدومين.

**الأسلوب:** تم استعمال اسلوب دلفي في هذه الدراسة على اساس اعطاء اسئلة الى عدد من المتخصصين في مختلف المجالات الطبية وتم الطلب منسهم ان يرسلوا الاجوبة في خصوص تفكيك المصدومين. في النهاية اجاب ١٨ شخص على الاسئلة.

**النتائج:** تشير نتائج هذه الدراسة الى ان هناك ضعف في المجالات الثلاث التعليمية. هناك ضعف في فروع التفكيك عند المصدومين الكيميائيين. ١- معرفة العلائم الدالة على التسمم بالمواد الكيميائية ٢- لزوم تعليم اساليب المراقبة و العلاج عند مواجهة العوامل الخاصة التي تبرز علائم الخلل في الاجزءة الجسمية ٣- ضبط المضطراب و الريحانات عند الفريق الطبي و المصابين. كان هناك ٨٠% من الاعضاء قد وافقوا على النقطة الاولى و تم تبصيع الراء. المصححة و اما بالنسبة الى النقطة الثانية. اعترف ٩٠% انه يجب تدوين دستور يفتي بالمراقبة و العلاج و قد وافق ٧٠% من الاعضاء على النقطة الثالثة.

**الاستنتاج:** إن معرفة الإحتياجات التعليمية في مواجهة الطوارئ واسلوب التفكيك يعتبر امر في غاية الاهمية و تساعده هذه المعرفة على انقاذ الكثير من المخاطر. لذا يجب علينا الخضوض في الموارد التعليمية الخاصة برضا المجال و معرفة نقاط الضعف و ايجاد برامج ذوقفاته حتى يتسنى لنا اداء افضل خدمه للمحتاجين.

**الكلمات الرئيسية:** التفكيك، الطوارئ، التعليم.

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## تريازدر بحران و راهکارهای آموزشی

**زمينه و هدف:** یکی از کمک ها و وظایفی که بردوش گروه پزشکی می باشد طریقه امداد رسانی به افرادی است که به نوعی دچار صدمات در منطقه عملیاتی یا وقوع حادثه شده اند و باید هر چه سریعتر و بهتر به امر رسیدگی و دور نمودن آنها از محل حادثه اقدام نمود ، نحوه طبقه بندی کردن و کمک نمودن به مصدومین مورد نظر می باشد.

**روش:** جهت این پژوهش از تکنیک دلفی استفاده شده است بدین شکل که ابتدا سؤالاتی طراحی و برای تعدادی از متخصصین رشته های مختلف ارسال گردید و از آن ها درخواست شد نظرات خود را در خصوص تریاز در مصدومین ارائه نمایند. در انتها تعداد ١٨ نفر از افراد فوق به سؤالات پاسخ دادند .

**یافته ها:** نتایج این پژوهش حاکی از آن است که در سه حیطة آموزشی، اعضای تیم تریاز در مصدومین شیمیائی ضعف دارند که عبارتند از : شناسائی علائم ناشی از بروز مسمومیت های شیمیائی، لزوم آموزش شیوه های مراقبت و درمان مواجهه با عوامل خاصی که باعث بروز علائم و اختلال در سیستم های مختلف بدن شده اند ، در مهار کنترل هیجانها و استرس در اعضای درمانی و نیز مصدومین در بحران. در رابطه با حیطة اول بیش از ٨٠٪ اعضا با این بحث موافق بودند. و نظرات اصلاح شده آن ها جمع آوری شد. در رابطه با حیطة دوم ٩٠٪ اعتقاد دارند که در خصوص مراقبت و درمان باید دستورالعمل هائی را تدوین نمود . در رابطه با حیطة سوم ، ٧٠٪ در رابطه با اینکه احتمالا در شرایط بحرانی که استفاده از سلاح یا انفجارات شیمیایی انجام می شود.

**نتیجه گیری:** آگاهی از نیاز های آموزشی در مواجهه با بحران و طریقه تریاز از اهمیت ویژه ای برخوردار است که در اکثر مواقع می تواند بسیاری از افراد را از خطر نجات دهد از این رو پرداختن به موارد خاص آموزشی و شناختن نقاط ضعف موجود و برنامه ریزی برای بر طرف کردن آن ها راهکار مناسبی خواهد بود تا در مواقع لازم بتوانند بهترین و بیشترین خدمت رسانی را به نیازمندان بعمل آورند .

**واژه های کلیدی :** تریاز ، بحران، آموزش

## بحرانی حالات میں ایمرجنسی امداد ( ثری ایچ ) کا عمل اور تعلیمی روشیں

**بیک گراؤنڈ:** طبی عملے کی ایک اہم ذمہ داری حادثات کا شکار ہونے والے افراد کی جائے وقوعہ پر امداد پہنچانا ہے۔ متاثر افراد کا جائے وقوعہ سے باہر محفوظ جگہ پہنچانا نیز انہیں جلد از جلد اور بہتر طریقے سے مدد پہنچانا نہایت ضروری ہے۔ ایمرجنسی عملے کی ایک بنیادی ذمہ داری متاثرہ افراد کی ترجیحی بنیادوں پر گروہ بندی کرکے امداد پہنچانا ہے۔

**روش:** ہم نے اس تحقیق میں ڈالفی روش سے استفادہ کیا ہے۔ سب سے پہلے ہم نے ایک سوالنامہ مختلف شعبوں کے ماہرین کو بھیجا اور ان سے درخواست کی گئی کہ حادثے کے شکار افراد کے بارے میں ایمرجنسی عملے کی ذمہ داریوں کے سلسلے میں اپنے نظریات بیان کریں۔

**نتیجے:** اس تحقیق سے ہمیں پتہ چلتا ہے کہ ایمرجنسی عملہ تعلیمی، نگہداشت و علاج اور کیمیائی حملوں سے پیدا ہونے والے حالات میں کافی مہارت نہیں رکھتا ہے۔ کیمیائی حملوں کے نتیجے میں سامنے آنے والے حالات، کیمیائی ایجنٹوں سے پیدا ہونے والی علامتوں کی تشخیص نیز، اپنے اضطراب اور استرس کو کنٹرول میں کرنے میں کافی مہارت نہیں رکھتے۔ البتہ جواب دینے والے ماہرین کی اسی ٨٠ فیصد تعداد ان مباحث کے حق میں ہے ، ان کا کہنا ہے کہ ایمرجنسی کے مریضوں کی نگہداشت اور علاج کے سلسلے میں پروٹوکول بنانے کی ضرورت ہے ۔ اور تیسرے مرحلے یعنی کیمیائی حملوں کی صورتحال سے نمٹنے کے لئے مزید ٹریننگ کی ضرورت ہے۔

**سفارشات:** بحرانی حالات سے نمٹنے کی ٹریننگ دینے کی نہایت اہمیت ہے۔ اچھی ٹریننگ کے نتیجے میں بہت سے افراد کی جان بچائی جاسکتی ہے لہذا نصاب میں موجود کمزوریوں کو پہچان کر بہتر ٹریننگ کے لئے منصوبہ بندی کرنا اپنی جگہ مسلم ہے اور اسکی نہایت اہمیت ہے کیونکہ اس طرح حادثات کا شکار ہونے والوں کو بہتر امداد پہنچائی جاسکتی ہے اور بہت سے لوگوں کی جان بھی بچائی جاسکتی ہے۔

**کلیدی الفاظ:** ایمرجنسی عملہ، بحران، فوری امداد ۔

## INTRODUCTION

Triage is a French word that means "to arrange and choose from" [2-1]. In other words, it is the process of determining the priority of patients' treatments based on the severity of their condition, time and the possibilities. The term triage may have originated during the Napoleonic Wars from the work of Dominique Jean Larrey, Napoleon's doctor, in order to determine the order and priority of emergency treatment. [3]

One of the responsibilities of medical team is to assist the casualties of a disaster, arrange the emergency transport and administer treatment. [4]

The authorities' logical and constant demand of medical team is to decrease injured soldiers and casualties in a battlefield. In fact, the mission of military medical team is to assist and empower the soldiers who are involved in the war [1].

The philosophy of triage is to categorize the victims who require immediate medical care; moreover, this dynamic method is to manage the order and priority of emergency transport. When medical and emergency personnel deal with arranging wounded, rationing resources, taking care of human resources, equipments and physical environment, they will need to apply special strategies.

When classification is based on and in accordance with accepted medical standards and regulations, it would be an accepted law in most countries [6]. Triage is the process of active decision-making that determines the patients' treatment priority [1, and 7].

Some problems would be obviated through triage, such as: patients who have arrived earlier, who scream more, those who express more needs, or ones who have more retinue should be treated in advance. Triage is used only in mass casualty; therefore, the doctor who does triage should have some special traits and have experiences other than the ones in emergencies. The doctor who does triage should not have emotional look and attitude toward children, women, elders, youth, girls and boys. The purpose of his/her job is to save more lives, he is not supposed to help the wounded with critical injuries, even the doctor might leave them to save more casualties.

Doctor who does triage should have great knowledge about psychology and sociology in order to perceive the situation and conditions, and make decisions. He/she should recognize the conflicts and provide the solutions while they are under pressure. Moreover, the morality is important in the job. How is the doctor that does triage trained and prepared through one's own moral and virtues, reading, attending classes, listening or via gaining experiences?

If we have a logical and purposeful look at realities, we will realize that triage trainings are possible only in disasters and terrible catastrophe. In order to have more skilled practitioners in this field, the doctors who have had trainings should participate in disaster triage. The question is that why there are not enough definitions and contents in maneuvers and training courses of triage. The reply is obvious although education and practice would help to learn skills and principles of triage, the huge gap between

practice and reality would not be covered unless gaining experiences in real situations.

It should be accepted that the mental conditions, anxiety and stress in a disaster does not allow the doctor to use his knowledge appropriately. It would be very nice if we could have other doctors in real situations to teach experiences and skills of triage. This action is not immoral, we should have fresh look and take care of future. Along with experienced doctors who are in disaster, the inexperienced doctors should participate, as well, in order to gain skills and learn triage thoroughly [8].

Triage involves multiple levels including cooperation, coordination and decision making. This is an appropriate relationship that should be provided [9].

Taking care of the wounded and casualties has been developed since war. Different kinds of medical equipments, quick treatment, quick transfer, care flight, various methods of care, and etc have expanded. People and the authorities expect the medical system to enhance medical treatment, especially triage [10].

The members of triage team should have high knowledge and intelligence so that they can keep calm in disasters and provide the services. Without doubt, doctor of triage should have managerial skills in order to control and lead the personnel (paramedics, nurses and other medical team members), and patients appropriately.

## METHODS

Delphi technique was used in this method. Firstly, a number of questions were framed and sent to experts of different majors including Emergency Medicine, Pulmonary Disease, Forensics, Eyes, Skin, and Nurses, Pharmacologists and Toxicology. They were asked to express their opinions about triage and its issues. Finally, 18 people replied the questionnaires. The questions and answers were provided based on different and accessible resources.

The questionnaires were collected and analyzed. The opinions were categorized and feedbacks were provided. An invitation was sent to them to participate in a meeting in order to discuss about the categorized opinions. In the meeting, the issues that were raised in the questionnaire were debated; the meeting continued for hours and recorded. Then, the issues were categorized.

In the following table, the data related to triage categorization, symptoms of casualties with different factors, and the required treatment and cure are presented schematically.

## RESULTS

The results of the study reveal that the triage team is weak in three educational subjects of chemical casualties including:

1. The recognition of chemical poisoning symptoms,
2. The necessity to teach caring and curing methods while dealing with special factors that cause symptoms and disorders in different parts of the body,
3. And the control of stress and anxiety of casualties in disasters.

For the first issue about 80% agreed and their opinions

**Table 1.**

Type of poisoning	Classification	What is your opinion	Symptoms	what is your opinion	Care and treatment	what is your opinion
Nerves	Immediate - Delay		Each class specified separately		Each class was debated thoroughly	
	Minimal - Waiting					
Vesicant	immediate - Delay				Each class was debated thoroughly	
	Minimal -Waiting					
Potassium cyanide	Immediate - Delay		Each class specified separately		Each class was debated thoroughly	
	Minimal - Waiting					

were collected. In the second one, 90% believed that instructions should be devised for care and treatment. The last issue was discussed in the meeting and 70% agreed that the medical team is under pressure because of disaster, explosion, the high number of casualties, and etc; they become anxious and stressful and should control themselves.

**DISCUSSION**

Nowadays, non-compliance with ethical issues in totalitarian regimes and superpowers has made troubles for the countries that are looking for freedom and independency. The terrorists use chemical, biological, nuclear and explosive weapons which lead to terrible disasters. Therefore, the countries should program to reduce the number of casualties [11]. It is recommended that the programming be done according to the research results.

Triage system categorizes and specifies treatment resources for patients. The determined factors of triage in emergencies sound little or far-fetched. Therefore, there is imbalance between degraded environment and the medical team that might not be able to provide the required services and ask for foreign and international help [12].

In medical ethics, it is important to control the patients' stress and anxiety; moreover, it is mentioned in our religious teachings. The mission and philosophy of the prophets had been to improve ethics among human. Therefore, scientific development should be ethical. Professionalism without ethics is not sufficient for human. This is similar in medicine.

Attempting to save human's lives, improve their health, relieve their pain, survive generation and make the environment healthy are ethical values in medical community. The way that doctor treats patient is very crucial; they should have ethical, emotional, friendly, respectable and with dignity behavior. What are the red lines in commitment and law? How far should we continue to save the ethics? These are some questions debated in medical community. However, the replies for some of them are simply obvious and the medical community should pay attention to them [13].

Mahebinia has written an article named "Triage decision-making in disasters". It is concluded that appropriate and on-time decision-making is necessary in triage. The

priorities in triage and treatment experiences have been done for hundreds of years.

In order to have influential triage, the very first step is to be virtuous. Stability in thinking based on ethical principles is the problem that personnel of emergency deal with. This function might be because of getting used to scenes of disasters.

Understanding this concept is the preparation for doing triage in disasters. The results could be used to train the triage team after the disaster, as well. Furthermore, implementing difficult decisions, made by doctors, is vital in triage that should be based on ethics. Abstract thinking and judgment development of an empirical function could be determined according to the professionalism of caregivers. Further studies should be conducted on this field and the development of criteria to enhance experience levels and decision-making skills. In order to provide appropriate answers for triage in emergencies, the art and science of triage should be developed [14].

One of the major differences between normal and critical conditions in triage is that in critical one usually the victims are classified in three groups and the doctors are supposed to do the triage, and because of limitations in resources they cannot divide equally. At this moment the criterion is the effect not fairness. So, respecting ethics is different in critical conditions [15].

Ethical principles in disasters have not been devised thoroughly and internationally yet; and there are no special principles in state related to the issue. There are medical ethics for normal and usual conditions, to some extent, called Childress and Beachamp that include beneficence, autonomy, non maleficence, and justice. However, these principles are for normal situations and could not be applied in disasters. They have been developed to protect the society and could not be generalized [16].

Since decision-making in disasters would save casualties' lives, it is very crucial that design the triage program logically and scientifically.

In some countries like United States, there are special educations for emergency technicians, emergency medical technicians, nurses, dentists and psychologists to prepare them for disasters. They are taught and prepared to save peoples' lives in disasters [17].

Our country deals with different natural disasters like flood,

earthquake or other types of disasters like war or terrorism. Therefore, special educational programs should be provided for emergency doctors, emergency medical technicians, nurses and psychologists. It should be

conducted based on needs assessment and the classification of disasters. They should be trained for different situations to deal with, whether in the place of disasters or at the hospitals.

## REFERENCES

- Baldursdottir G, Jansdottir H. The importance of nurse caring behaviors as perceived . patients receiving care at an emergency department. In: Heart 'Lung . 2002 31(1):67-75.
- Kevin Mackway J, Marsden J, Windle J. Manchester Triage Group. Publish in black well 2nd ed. 2006: 4-1
- Richard B Schwartz, John G McManus, Raymond E Tactical Emergency Medicine. Lippincott Williams&Wilkins Chapter 13.2008,: 94-100
- Hojat M & etal The Patients' satisfaction from health services in Jahrom, Motahari Hospital; 1389; 23(54); www.SID.ir
- Triage technology comes with a Star Trek twist, at the U.S. Department of Homeland Security's Science & Technology Directorate (DHS S&T). Science Daily; 2009. Available from: [www.sciencedaily.com/releases/2009/05/090527174732.htm](http://www.sciencedaily.com/releases/2009/05/090527174732.htm)
- Asefzadeh Saeed, Hospital Charicterization, Tehran University Publishing, 1369
- TL Beauchamp and JF Childress, *Principles of biomedical ethics*, Oxford University Press, New York (2001).
- Shojae A Ahmad, Triage, Education and Disaster Seoid Weekly, Tehran , 1388.p158
- Burkle F M ` Mass casualty management of a large-scale bioterrorist event: an epidemiological approach that shapes triage decisions : Emerg Med Clin North Am 2002, 20(2) 409-36
- Jenkins J L, McCarthy.et al, Mass-Casulty triage; time for an evidence-based approach. Prehosp Disater Med. 2008 23(1) : 3-8
- BornCT' Briggs' et al. Disasters and mass casualties; explosive; biologic' chemical; And nuclear agents . J Am Acad Orthop Surg. 2007:15(8): 461-73
- B Domres, M Koch, A Manger and HD Becher, Ethics and triage, *Prehospital Disaster Med* 61 (2001), pp. 53-58. | Cited By in Scopus (14)
- S Golkar Cultural Engineering Under Authoritarian Regimes: Islamization of Universities in Postrevolutionary Iran ; [www.khorasannews.com](http://www.khorasannews.com).2009
- Reaserch by- Mahbobinia M. Triage decision making in disaster situations; 2008
- VeatchRM.Disaster Preparedness and Triage : justice and the Common good , *MtsinaiMed*, 2005; 72(4): 235
- Shojae A Ahmad,Abolhasani Fereshteh, *Morals in Disaster Medicine*,the forth periodical,no6,1390 [www.SID.com](http://www.SID.com)
- Clark Ervin Local planning for Terror and Disater, U.S.Department of Homeland Security, by Willy Blackwell 2012 .47