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Knowledge of Medical Staff on Medical Segregation of Patients Having Suffered in Mass Accidents and Disasters

Wiedza pracowników personelu medycznego na temat segregacji medycznej poszkodowanych w wypadkach masowych i katastrofach

Katarzyna Sienkiewicz[1], **Dorota Kulina**[2], **Katarzyna Przylepa**[3], **Irena Wrońska**[2]

[1]University Children's Hospital in Lublin, Poland
[2]Department of Development in Nursing at Medical University in Lublin, Poland
[3]Department of Foreign Languages at Medical University in Lublin, Poland

Abstract

Introduction. Ever growing pace of life in developing societies results in a considerable increase in abrupt threats to life and health. Both Accidents and Emergency Unit workers to whom a patient is referred having been ascribed a provisional category as well as members of Medical Rescue Teams who are the first medical staff to have contact with a patient ought to apply a correct procedural variant in their interactions with patients.
Aim. The aim of the research was an attempt to evaluate medical personnel's knowledge levels within the scope of segregating patients having suffered in mass accidents and disasters.
Material and Methods. The diagnostic poll method was used in this work and a survey form was the research tool. The research involved 50 persons employed in Accident and Emergency Units and Medical Rescue Teams.
Results. A general proportion of correct responses averaged out at 63% for both groups. No statistic correlation was found between the two groups.
Conclusions. Knowledge level referring to medical segregation that medical staff presented proved unsatisfactory. The study shows there is a need for training within the scope of medical segregation in mass accidents and disasters.
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Key Words: medical segregation

Streszczenie

Wstęp. Wzrastające tempo życia rozwijających się społeczeństw niesie ze sobą olbrzymi wzrost gwałtownych zagrożeń zdrowia i życia ludzi. Prawidłowym wariantem postępowaniem z poszkodowanymi powinni posługiwać się zarówno pracownicy Szpitalnych Oddziałów Ratunkowych, do których poszkodowany trafia poniekąd już z pierwotną kategorią, jak również osoby mające pierwszy kontakt medyczny jakim są Zespoły Ratownictwa Medycznego.
Cel. Celem przeprowadzonych badań było próba oceny poziomu wiedzy pracowników personelu medycznego na temat segregowania poszkodowanych w wypadkach masowych i katastrofach.
Materiał i metody. W pracy wykorzystano metodę sondażu diagnostycznego. Narzędziem badawczym była autorski kwestionariusz ankiety. Badaniami objęto 50 osób zatrudnionych w Szpitalnych Oddziałach Ratunkowych i Zespołach Ratownictwa Medycznego.
Wyniki. Ogólny odsetek wskazań wspólny dla obu grup w przypadku prawidłowych odpowiedzi wynosi 63%. Nie stwierdzono istnienia zależności statystycznej pomiędzy dwoma grupami badanych.
Wnioski. Poziom wiedzy pracowników ochrony zdrowia w zakresie segregacji medycznej jest niezadowalający. Badania dowodzą konieczności prowadzenia szkoleń w zakresie segregacji medycznej w trakcie wypadków masowych i katastrof. **(PNN 2016;5(1):16–20)**
Słowa kluczowe: segregacja medyczna

Introduction

The term triage was introduced by a surgeon Larey'a, the marshal of Napoleon. Napoleon's surgeons were the first to segregate the wounded on the battlefield, introducing three categories of aid [1]. Triage is a system of segregation of victims, used to assess the condition of the victim and his prognosis for survival the next day. Today there are many systems of segregation of the injured in mass incidents that use the assessment of vital functions and the extent of injuries of patients to determine the order of therapeutic procedures. They are based on anatomical assessment of injuries or identification of injury mechanism in emergency mass situations [2].

According to M. Skalski in Poland, principles of medical segregation result from the war surgery which distinguishes diagnostic segregation, transport — evacuation segregation, inside scoring and predictive segregation. As a part of medical segregation there are two groups among the wounded of an intern and surgical profile: seriously injured, who need to get help as soon as possible and slightly injured, who can postpone the time of the aid [3].

The purposes of medical segregation, with the rational use of the means and health protection measures include:

— separation of the injured dangerous for the environment, ie. radioactively contaminated and contaminated with persistent toxic agents,
— preventing their contact with other victims,
— determining the nature, scope and sequence of medical assistance, including the expected prognosis and timing of treatment: determining the stage of medical evacuation, to which the injured should be directed,
— determining the sequence, means and method of evacuation,
— determining the functional division of the medical evacuation stage, to which the victim should be directed [3–5].

The START System

The START System (Simple Triage And Rapid Treatment) is to enable a simple segregation and fast treatment. It is a system whose criterion consists in simple parameters of vital signs. The assessment base of segregation in the system is made according to the following criteria: the ability to walk independently, airway, breathing rate, the rate of capillary recurrence, and in severe weather conditions or poor lighting — the peripheral pulse and appearance of the skin, the ability to perform simple commands [6].

In order to improve the implementation process of segregation at different stages, contractual logos were specified [7]. The system START (Eng. Simple Triage And Rapid Treatment) distinguishes four categories of victims, which correspond to four band colors or badges given at the scene, depending on their health and suffered injuries [8].

— Red — the person needing immediate stabilization of vital signs and includes persons: in the state of shock for any reason, with difficulties in breathing, with head injuries, accompanied by asymmetry of pupils, with large internal hemorrhage.
— Yellow — a person requiring constant monitoring, medical care can be somewhat delayed. This category includes victims with abdominal injuries, open fractures, fracture of the thigh/pelvis, extensive burns, unconscious patients with head injuries, the victim in the unstable general state.
— Green — deferred treatment, wounded patients: small fractures, small wounds and burns.
— Black — dead and agonizing patients [6,7,9].

Segregation of children should be conducted separately. The Jump Start or Pediatric Triage Tape for example, should be used for that purpose [4,10–12].

The aim of the study was an attempt to assess the level of knowledge of medical personnel members about sorting the victims of mass accidents and disasters.

Material and Methods

In the work, the method of diagnostic survey was applied. The research material was collected using a proprietary questionnaire. It consisted of 24 questions. The questions in the survey were divided into two parts. The first part was designed to examine the knowledge of the respondents regarding accidents and mass disasters. The second part was designed to determine knowledge about the correctness of allocated codes on the basis of the colors used in the START system.

The research work was carried out in November 2013, two substations of ER and two emergency departments in Lublin.

Patients were informed of the anonymous nature of the study and each of the respondents agreed to complete the questionnaire. The study was conducted in accordance with the Helsinki Declaration. The specific time limit was not provided. The study used descriptive statistics and Chi² test. The level of significance at $p<0.05$ was adopted.

The study involved 75 people who worked in the aforementioned medical facilities. 25 questionnaires were rejected because the answers to the questions were

checked selectively. To analyze the remaining 50 surveys. In this group of 24 people were working in the Hospital Emergency Department (ED), and 26 in the Medical Rescue Teams (ZRM). The majority of respondents obtained their degree in post-secondary school/vocational studies (68%), university graduates — 32% of respondents.

Results

Among the respondents, 76% (38 people) can correctly define the START system. Using it in practice was declared by 62% of respondents (31 people). Mass accident was correctly defined by only 50% of the respondents (25 people). Only 34% (n=17) of respondents declared using the segregation sets. The most common set was Box — Med set, however in this group, only 6% were able to identify the correct part of this set. 70% (n=35) employees of SOR and ZRM properly defined the scope of the vital parameters used to assess the condition of the patient in the START system. Rules of proper designation of zones in the place of disaster were known to 96% (n=48) of patients. The problem appeared in an answer to he question relating to the responsibility for the life and health of victims in the danger zone, because in this case only 44% (n=23) of respondents gave the correct answer. Among the respondents, only 34% (n=17) declared knowledge of the plans developed by the organizational units for the purposes of the proceedings during the mass accident or disasters. At the same time 80% (n=40) stated that such plans are needed. Among the respondents, only 54% (n=27) participated in exercises, simulations or courses concerning behaviour during mass accidents or disasters. At the same time, up to 94% (n=56) of respondents thought that these forms of professional qualifications were unnecessary.

In the second part of the questionnaire, the questions referred to the issue of assignment of specific codes of segregation conducts to individuals or groups of people located in specific situations. When analyzing the situation, "several passengers were standing about 50 meters away from the accident with visible superficial injuries, arguing, shouting, looking for the guilty participants of the event".

98% (n=49) of respondents identified the correct segregation code (green). A high percentage of correct answers was also obtained in the case of "a man aged 35, sitting on the side with a visible open fracture of the right lower limb and non-physiological arrangement of the upper left limb, complaining of shortness of breath, numbness of the left limb and radiating pain to the left shoulder and severe pain of the abdominal area".

In this case, 86% (n=43) of the survey participants marked the correct segregation code (red). In the case of "a man aged 50, unconscious, lying on the ground, breathing heavily and gasping the air, in whom respiratory rate is 8/min, heart rate 148/min, groaning from time to time" the correct segregation code (red) was indicated by 82% of participants (n=41). While assessing the patient's condition of "the bus driver with legs crashed by the dashboard, with the respiratory rate of 25/min, capillary relapse 4 sec., muttering in response to the voice" — 80% (n=40) of respondents correctly assigned the red code to him. The situation was "an adult male lying in the wreckage of the bus, not breathing, lack of pulse, the body burns 20% III — of the degree" properly evaluated by 70% (n=35) of the respondents (code: black). A similar result was obtained by respondents when it comes to assessing the situation of "a young woman walking around the scene of the accident with visible light abrasion of the temple and right cheek, heavily pregnant, looking for her husband, being in a daze", giving her the correct code: red. Optimally the condition of, "a man — aged 27, strolling around the scene of the accident, crying and asking for help, there are visible burn wounds, with respiratory rate of 25/min., capillary relapse 1 sec." was evaluated by 68% (n=34) of the respondents (green code). The lower result was obtained in the case of "a woman about 35 years of age with craniofacial trauma and acute respiratory failure, capillary relapse above 2 sec.", where the correct segregation code was indicated by 64% (n=32) of the respondents (green code). In the case of a mature man, dazed and confused, complaining about a sore right shoulder, with a visible large wound without damaging the skull cap on the left side of the head, when asked cannot go to a specific place, with the respiratory rate of 22/min., heart rate of 90/min. and the capillary return of less than 2 sec., fulfilling simple commands "proper segregation was made by 56% (n=28) of respondents". Whereas the "woman of about 20, lying on the ground, with the soot visible on her face, asking for help with a little screeching voice, of the respiratory rate of 22/min, capillary return of 1 sec." was marked with the correct code — yellow by 52% (n=26). In the case of "a woman of about 30, lying on the ground with visible abrasions of the skin on the forehead, respiratory rate of 28/min, heart rate of 92/min, capillary return of 2 sec., performing simple commands", the correct segregation code — (yellow) was indicated by 50% (n=25) of respondents. However, in the case of "conscious man, breathing with difficulties, whose breathing is 28/min., and the garment has visible spots of blood in the place where the piece of metal pierced the chest, of a capillary return of about 3 sec., having more and more trouble breathing" only 34% (n=17) of respondents made the correct segregation assigning him the red code. Even

lower result was obtained in the case of the victim "of a man lying on the roadside, of the respiratory rate of 20/min, who has a strong pulse on the perimeter, fulfilling commands, informing that he cannot move his legs". In this situation, the correct separation code — (yellow) was indicated by only 28% (n=14) of respondents.

Analysing the answers according to granting the correct code of segregation depending on the workplace of respondents, it was stated that the participants employed in the Hospital Emergency Department gave a total of 65% of correct indications, and the Medical Rescue Teams — 61%. The overall percentage of indications common to both groups in the case of correct answer is 63%. There was no statistical relationship between the existence of two groups of patients (Chi^2=1.061, p=0.303).

Discussion

The development of communication technologies and the threats of the modern world make the ability to act correctly on the site of mass accidents or disasters extremely significant. Unfortunately, the authors analyzing the available databases, did not find scientific reports on the evaluation of the level of health care staff's knowledge in this field. It is therefore not possible to carry out discussion on the results of other authors. At the same time they are aware of the limitations of the studies, in particular the size of the examined group and its territorial coverage.

Authors deliberately chose the employees of Hospital Emergency Departments Medical Rescue Teams since as a rule they will usually be the first who will make a segregation of victims in these types of events. Overall assessment of correct answers in both groups was only at 63% of the total responses. So every other employee could perform the correct segregation of victims in the event of an accident or a mass disaster. A higher percentage of correct answers by 4% was obtained by ER employees, but the difference was not statistically significant. However, on the other hand, respondents also in 96% declare that they do not need any form of additional training in this area. This may result from having superficial knowledge, inability of its application in practice, or performing medical segregation in a mechanical, routine manner, without thinking about the improvement of ongoing procedures.

Responses on the knowledge of segregation sets the use of which was declared only by 34% of respondents, and in this group, only 6% were able to specify correctly the composition of a given set. They assess the knowledge of assigning the appropriate codes of segregation, in certain cases a large spread of results was also obtained. In some situations, the correct code of segregation could be chosen by nearly 100% of the respondents, or more than 80%. But also the results at 34% and 28% of correct answers were obtained. In most cases, the correct codes of segregation were assigned by about 50% of the respondents. It should be remembered that the assumptions of the Triage claim that it is a continuous function and every step should be conducted at one hundred percent capacity according to the knowledge, applicable standards, and above all, the health of the victim. Categorizing the most common mistakes committed by the survey participants is the overtriage depending mostly on qualification to higher segregation group.

Conclusions

1. The level of knowledge of health care staff in the field of medical segregation is unsatisfactory.
2. Research shows the need for training in medical segregation during mass accidents and disasters.

Implications for Nursing Practice

Introduction of regular staff training of health care employees in the field of medical segregation during mass accidents and disasters.

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Corresponding Author:
Dorota Kulina
Katedra Rozwoju Pielęgniarstwa
ul. Staszica 4-6, 20-081 Lublin, Poland
e-mail: dorota.kulina@umlub.pl

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