Original Article

Information Quality of the Emergency Medical Services 115 Report Form Among Traffic Injured in Mashhad Social Welfare Hospitals

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Abstract

Background: Incorrect and inadequate information is one of the most important obstacles in providing appropriate health care services to injured traffic accidents. The aim of this study was to measure the quality of patient information about the Emergency Medical Services (EMS) 115 Report Form among traffic injured in Mashhad Social Welfare Hospitals. Materials and Methods: This descriptive cross-sectional study was comprised of Mashhad social welfare incident cases. The data collection tool was a checklist tailored to the data elements of the EMS 115 care report form. Data collection was carried out in two steps to verify the amount of information documentation and verify the accuracy of the information. To evaluate the findings, the score was less than 50%, 50-90%, and more than 90% was considered as weak, relatively favorable, and desirable, respectively. Data analysis was done using descriptive statistics. Results: The findings showed that the amount of information elements in the EMS 115 form was 83.15%, and the accuracy of the completed information was 99.27%. Conclusion: Although the degree of completion of the study was in a relatively favorable condition and the accuracy of information was in a favorable situation, but due to the importance of information in timely decision-making and the providing the appropriate treatment plan for patients, measures should be taken to optimize the information.

Keywords: Information Quality, Emergency Medical Services, Accidents, Traffic

Introduction

In today’s advanced Emergency Medicine Services (EMS) system, patient care starts from the scene of the incident. EMS continues as the first part of the patient care chain, from the time of the incident or disease to rehabilitation and discharge of the patient from the hospital (1). On emergency missions, while sending patients to medical centers, documentation of demographic data, accident details, vital signs of the patient, and the completion of the mission form are required (2, 3). The purpose of documenting injured individuals’ information during dispatch is to accelerate and improve the process of continuing treatment, supporting the patient in legal matters, repayments, standardized care assessment, EMS services planning, improving the quality and safety of health care and optimal emergency management (4-6). Despite the emphasis on standard, accurate, and complete registration of information from various organizations (e.g., Joint Commission on Accreditation of Healthcare Organizations [JCAHO]), there is still a weakness in documenting health system information (7, 8). The results of the study on the evaluation of medical care documentation in medical records in Sweden showed that despite extensive training of nurses, the documentation was not complete (9). In another study by Shannon, deficiencies in the recording of information elements of records and the writing of reports by the medical staff were identified (10). The results of studies carried out in Iran indicate that the unfavorable status of information recording and non-compliance with standards and the lack of satisfaction with the quality of documentation of emergency ward files (11-14).

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In this conducted study, the secondary nature of documenting activities to providing care, lack of knowledge about the principles of documentation and the importance of recording information are the most important reasons for poorly documented information (15-17). Therefore, in order to improve the documentation of the Hospital Information Systems (HIS) and emergency ward, the management and planning of activities, the training about processes, and the provision of specialized journals to physicians are effective (18). Developing guidelines, training and continuous monitoring of documentation of medical records, observing documentation principles with the help of HIS, more control over the completion of nursing reports and comprehensive planning for improving the quality of documentation can also be effective (19). The results of the evaluation of the success of health information technology showed that electronic recordings of data, along with the development of an appropriate strategy to reduce the incidence of medical errors and prioritizing nationality have been effective in improving the quality of documentation and reducing the rate of medical errors in US health care centers (20). Since emergency wards are among the key centers of hospitals, management of these sectors is of particular importance, and information is one of the important sources of management (21). The quality of evidence and information-based treatment could be a determining factor for life, death and/or disability throughout life, and can be effective in timely decision-making and providing appropriate treatment plans for patients (22, 23, 19). However, there is not a study to assess the documentation of the EMS 115 Report form for the traffic injured. Therefore, this study was aimed to assess the quality of patient information about the EMS 115 Report form for traffic injured patients in Mashhad Social Welfare Hospitals.

Material and Methods

This cross-sectional study was performed on traffic accident cases. Regarding the fact that since September 2017 the forms of EMS 115 Report were mechanized in the studied hospitals, for the purpose of the study, the files of September 2017 to July 2018 were considered. The total number of cases was 953 that with Cochran sample size formula with a 95% confidence level and 5% error rate, 274 cases were randomly selected. The data collection tool was a checklist, which was based on all the data elements contained in the EMS 115 Care Report form. The validity of the checklist was confirmed by the content verification methodology by the professors of the health information management field and its reliability was confirmed using Cronbach’s alpha= 0.92. Data collection was done in two steps. In the first step, the registration / non-registration of information was reviewed in the EMS 115 Care Report form, by the researchers. It should be noted that the recording of certain data elements is dependent on previous data elements, and if the previous data elements are not recorded, recording of this information is not required, so these data elements are not considered in some files. The second step was to check the accuracy of information from the EMS 115 Care Report forms. Here, it is assumed that the information contained in the patient’s case has been documented properly with regard to the greater opportunity for physicians to examine and perform clinical and paraclinical examinations. Therefore, in order to verify the accuracy of the physician records in the patient files, they were compared with the information contained in the EMS 115 Care Report forms. Due to the high sensitivity of the emergency work in transferring victims and saving the patient’s life, scoring for checklists was considered weak for less than 50%, 50-90% was relatively favorable, and more than 90% was considered desirable. Statistical analysis was conducted with Excel software, version 2013. The results were presented using descriptive statistics (frequency, percentage, mean and standard deviation). It should be noted that in order to comply with the professional ethics of research, the identity and demographic information of patients were not mentioned and the confidentiality of information was maintained.

Results

Completion of the EMS 115 Care Report form’s information is done by 115 staff. Given the high volume of information elements available in the form and for ease of verification, the information elements were divided into eight groups according to the scope of the study, which includes:

1. Information element for dispatching personnel;
2. The identity information of the victims;
3. Acquitance letters
4. Accident location and vehicle type;
5. Complaint, diagnosis, and symptoms of the patient;
6. Therapeutic measures, counseling, consumables;
7. Physician and dispatch center specifications
8. Additional Description of the Mission.

The findings from a survey of 274 traffic injury cases sent by Emergency to Social Security’s hospitals, showed that EMS 115 Care Report forms have not been 100% completed in any case. Considering that the third group of questions about the acquitance letters has not been completed at all, so this group was deleted (Table 1). As noted in Table 1, the highest rate of registration and completion was related to therapeutic measures, counseling, and consumables (99.72%). Accident location and vehicle type had the lowest level of completeness of information elements included in the EMS 115 Care Report forms (73.35%). It should be noted that, in the EMS 115 Care Report form, acquitance letters are for patients who do not have the consent to the transfer to a health center, provided that all cases under
In general, this study showed that, given the initial training in the importance of recording and completing information elements in the EMS 115 Care Report form, in the next stages of treatment and even after the patient discharge, completion of these forms is of a relatively favorable status. Since the EMS 115 Care Report forms are considered as legal documents, it is imperative that all provisions be carefully completed on the basis of the Pre-hospital Emergency Card, and it is also necessary to obtain an appropriate patient history to suit the patient’s complaint in requesting assistance from the EMS 115, as required by the EMS 115 Care Report form, and any neglect, in this case, has medical consequences for the patient or injured person and legal consequences for the technician (24). An examination of the information about the dispatcher and ambulance personnel showed that the data elements of the mission history and the ambulance code, which had a significant impact on the documentation of the hospital, were in a relatively favorable range with an average of 84.79%. The information element for registration of the ambulance kilometer has not been completed in any of the EMS 115 Care Report forms. Due to the importance of the seconds to save the lives of injured people and their rapid dispatch to medical centers, recording this data element is of great importance. The management of medical emergencies and emergency situations emphasized the issue of insertion of mission history and hours in the need to accurately record the information and contents contained in the EMS 115 Care Report forms (2). The demographic information elements of victims, with an average of 85.66%, were in a relatively favorable range. In this regard, the data elements of the national code and phone number of the injured person were in an unfavorable range, with an average of zero percent. Due to the importance of recording these elements in the process of patient admission, as well as in registering the system of traffic accidents, the need for training to documentaries is determined. The results of the study by Mahmoudian et al. in examining the demographic data of the admission form and the summary of discharge showed that the maximum amount of completion of the admission form and the summary of discharge was 68%, while the data recording in the emergency medical records has serious defects, so, in none of the forms examined, complete information is not recorded (25). According to the instructions of the Zanjan University of Medical Sciences, the reference to legal and judicial authorities, in order to exploit, references to legal and judicial authorities, including the judiciary, the medical system, insurances, and the prevention of violations of client’s rights, correct registration of patients and injured persons is mandatory in the EMS 115 Care Report form (2). Regarding the acquitance letters, given that the acquitance letter is special for those who are not satisfied with their transfer to the health center, the information elements related to the acquitance letters are excluded from the results of the study. At the time of sending a patient, if the patient refuses to accept treatment or transfer, all findings are recorded and then the dissatisfaction form is completed (2). The purpose of completing pre-hospital and hospital emergency satisfaction forms is to defend the personnel of these groups due to failure or mistakes in the provision of medical services (7). The information elements about the location and type of accident vehicle, with an average of 73.35%, were in a relatively favorable position. Given the sensitivity of accidents related to transportation (crashes) in terms of insurance services and penal rules, determining the type of injury situation and vehicle in the form of a mission is of particular importance. Al-

<table>
<thead>
<tr>
<th>Row</th>
<th>Variables</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Information element for dispatching personnel</td>
<td>84.79</td>
</tr>
<tr>
<td>2</td>
<td>The identity information of the victims</td>
<td>85.66</td>
</tr>
<tr>
<td>3</td>
<td>Accident location and vehicle type</td>
<td>73.35</td>
</tr>
<tr>
<td>4</td>
<td>Complaint, diagnosis, and symptoms of the patient</td>
<td>81.17</td>
</tr>
<tr>
<td>5</td>
<td>Therapeutic measures, counseling, consumables</td>
<td>99.72</td>
</tr>
<tr>
<td>6</td>
<td>Physician and dispatch center specifications</td>
<td>90.87</td>
</tr>
<tr>
<td>7</td>
<td>Additional Description of the Mission</td>
<td>96.53</td>
</tr>
</tbody>
</table>

\[ \mu = 1.18, \sigma = 0.11 \]
though the most important task of emergency personnel at the scene of the incident is to investigate the condition of the injured. An experienced technician, while investigating at the scene of the accident in terms of the safety of the scene and the number and condition of the injured, takes into account the type of accident and damage mechanism and obtains such information from the very first moment about the incident (2). The information elements related to the complaint, diagnosis, type of lesion and patient’s symptoms were in a relatively favorable range with an average of 81.17%. Here, the information element of the patient’s main complaint was not completed at all. One of the most important questions in this group is the diagnosis and history of the patient. The patient’s medical history provides an emergency physician with an overview of why the patient needs emergency care. Such information is being recorded by several people in the file, including ambulance technicians, triage nurses, reception staff, social workers, nurses, and doctors. So, during a visit to a patient in an emergency department, documentation can be vital. Registering the patient’s medications, her/his allergies, and her/his recent or previous medical history can help the emergency doctor manage the acute problem of the patient (7). In the study by Parsa et al., the average percentage of frequency of clinical records recorded in the history sheet was 38% due to the lack of sufficient training in the field of registration (24). Information elements related to therapeutic measures, with an average of 99.72%, were in a desirable range. In this regard, the degree of completion of medical counseling was in an unfavorable range. Carry out medical counseling on all emergency missions (after visiting the patient and carry out an initial assessment, controlling vital signs and taking a biography) with the physician or command room experts is necessary, and the result of this call must be recorded in the orders section. Failure to contact the command room and refusal to provide counseling (in spite of the availability of access) is the acceptance of all responsibilities, including the diagnosis, treatment and the outcome of the mission by the technician. The consultation with the command room, while reducing the burden on the technician, will result in reducing a possible error in decision making and action (2). The evaluation of electronic documentation of primary health care in Sweden by nurses indicated that nursing interventions, nursing outcomes, and nursing status had the highest scores and nursing notes and diagnoses had the lowest score. The results of the assessment showed that all records, medical details, and medical treatments included prescription drugs, but nursing notes and a comprehensive nurses’ view of the effects of illnesses on the individual were rarely recorded. The results of further evaluations showed a significant relationship between the training courses for documenting and improving the quality of documentation. There was also a significant relationship between the organization of computer training courses and the improvement of the quality of documentation (9). The degree of completion of information elements related to the profile of the physician and the dispatch center with an average of 90.87% was in a desirable range. Meanwhile, all forms of EMS 115 Care Report have been sealed by the physician. In the instructions of the Ministry of Health, it has been emphasized that, if the patient is sent to the medical center, the name and surname of the patient’s receptor must be mentioned and stamped (26). The additional description of the mission, with an average of 96.57%, was in the desirable range. At the same time, because of the need to record this information in deciding on the treatment of injured, solutions should be developed and implemented to record 100% of the information. In the complementary descriptions of the mission, one can note the unexpected cases in the EMS 115 Care Report.

Table 2. Accuracy rate of the EMS 115 Care Report form traffic injured in Mashhad Social Welfare Hospitals, 2018

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information element for dispatching personnel</td>
<td>228</td>
<td>83.15</td>
</tr>
<tr>
<td>The identity information of the victims</td>
<td>272</td>
<td>99.27</td>
</tr>
<tr>
<td>Accident location and vehicle type</td>
<td>272</td>
<td>100</td>
</tr>
<tr>
<td>Complaint, diagnosis, and symptoms of the patient</td>
<td>272</td>
<td>100</td>
</tr>
<tr>
<td>Therapeutic measures, counseling, consumables</td>
<td>272</td>
<td>100</td>
</tr>
<tr>
<td>Physician and dispatch center specifications</td>
<td>272</td>
<td>100</td>
</tr>
<tr>
<td>Additional Description of the Mission</td>
<td>272</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 3. Completion and accuracy rate of the EMS 115 Care Report form for traffic injured in Mashhad Social Welfare Hospitals, 2018

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete rate</td>
<td>228</td>
<td>83.15</td>
</tr>
<tr>
<td>Accuracy rate</td>
<td>272</td>
<td>99.27</td>
</tr>
</tbody>
</table>
form that are needed to be recorded. Several examples include traffic to the accident site or going to the treatment center, the property of the patient that was given to you on the scene of the incident or collected by you due to the risk of being lost or destroyed (be sure to deliver it to the authorities and register it), significant cases in the assessment of the scene of the incident, such as the presence of drugs or alcohol along with the patient, or the observation of narcotic drugs, the IV failure of the patient or several attempts to stretch, how to administer oxygen, e.g., RN, Nasal, Ambobg, Ventilator (2). In general, the rate of completion of the EMS 115 Care Report forms of traffic accidents’ cases that were dispatched by EMS 115to the Social Security Hospital of Mashhad in 2018 with an average of 15.83 was at a relatively favorable range. One of the main reasons for failing to observe the principles of documentation and filing can be the lack of responsibility, and most importantly the lack of adequate training of the medical staff, and the role of positive encouragement in the completion of files has been very effective (13). Emergency care providers and hospital managers need to become familiar with a variety of documentation technologies, including dictation technology (7). The findings of a study entitled “Investigating the Effects of the Introduction of Discharged Patients’ Conferences on the Skills of Summary Writing of the Domestic Assistances” showed that the training of assistants through the conference had a better performance in how to record and document information (27). The results of Mashaoufi et al.’s research on information recordings revealed weak documentation of doctors (28). Comparing this group of checklist questions with the previous results showed that this is in a better position.

2 - Accuracy of information
As previously stated, in order to verify the accuracy of the completed version of the EMS 115 Care Report form, the comparison of this information with the contents of the hospital file was used. As some of the information elements of the EMS 115 Care Report forms were not in the patient’s file, the accuracy of this information was not checked. The accuracy of the completed information, in all cases with an average of 100%—except for the identity of the injured (99.27%)—was in the desired range. However, given the importance of registering identity information, it is necessary to pay more attention to the registering the identification of the injured person in order to continue the patient’s treatment, as well as to prevent the occurrence of legal and insurance issues. In assessing the documentation of a medical dossier related to the diet in Sweden, the existence of problems in documenting information, the results of the evaluation of the accuracy of documentation and encoding of the medical records of patients, showed that there is no significant difference between documenting and encoding information in manual and electronic systems. Also, there is no significant difference between the documentation and coding of information in the various hospitals under study - despite the use of numerous specialists for recording and encoding information in the manual and electronic systems (29).

Assessing the quality of data in Ghana’s immunization system has shown that not all evaluated health centers have an electronic storage system, but they have full confidence in the manual information system and use it for safety plans (30).

Conclusion
The information obtained from this study can be used to further the patient’s treatment, research and education studies, to defend the patient in legal agencies, and to defend medical deficiencies. The action is needed to improve the quality of information documentation and the optimal use of information. Recruiting trained technicians, continuing training in the service of technicians, developing familiarity programs with the software used, repeated emphasis on the necessity and usefulness of the information elements of the EMS 115 Care Report form and the Traffic Accident System of the Ministry of Health, the regular communication and interaction of EMS 115 technicians and hospitals’ emergencies to transfer patients, holding sessions and committees with the participation of hospital and university therapists and approval of effective approvals can be effective on the quality and accurate completeness of information related to the EMS 115 Care Report forms. It is also recommended to use proper punishment and reward systems to improve the accuracy and sensitivity of completing the forms by emergency technicians. Finally, in order to easily solve the documentation problems of the EMS 115 Care Report forms and to optimize the information contained in the forms, it is suggested that the challenges and obstacles in the failure to complete the information elements from the viewpoint of 115 technicians be investigated.

Acknowledgments
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