

Multidisciplinary Approach for Early Rehabilitation of Multiple Trauma Patients

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Abstract

Introduction: Trauma is one of the major non-communicable diseases threatening public health. Trauma injuries are the leading cause of disability and mortality globally. This study aimed to explore and understand the challenges of early rehabilitation care in multiple trauma patients using a qualitative research method.

Methods: This study was conducted via the qualitative research approach using qualitative content analysis. The participants interviewed were seven nurses, two doctors, three physiotherapists, and two occupational therapists in inpatient wards and outpatient setting. Data were collected through semi-structured interviews with a purposive sampling continued until data saturation.

Results: Overall, 800 codes were extracted from depth description of the participant opinions. Two main themes namely the lack of holistic care and support structure were extracted for analysis, and constant comparison.

Conclusion: The results showed that comprehensive and rehabilitation-based care was essential to achieve important goals in this group of patients. Understanding the challenges of early rehabilitation care in multiple trauma patients may help health policymakers solve these problems and improve the general health of this group.

Keywords: Multidisciplinary Team, Rehabilitation, Multiple Trauma, Challenge, Qualitative Study.

Introduction

Multiple traumas are defined as “the presence of two or more injuries to physical regions or organ systems, 1 of which may be life-threatening, resulting in physical, cognitive, psychological or psychosocial impairments or disability”¹. Trauma is a prominent public health issue and a leading cause of mortality, morbidity, and long-term disability². The World Health Organization (WHO) estimates about 1.3 million people die each year because of injuries. Between 20 and 50 million people become disabled because of injuries³. Trauma is associated with moderate-to-severe disability for >45 million people, mainly in adults <45 years, causing a substantial loss of economically productive years⁴.

Injuries occur in a wide range from mild trauma requiring limited medical interventions to multiple

traumas to several areas of the body, which need interventions of the health care team and rehabilitation care^{5,6}.

The majority of the traumatic patients improve after several months, but more than 3 million American TBI patients as one type of trauma suffer from disabilities after trauma.

The trauma centers increase public health through injury prevention, acute care, and rehabilitation. Trauma care is multidisciplinary and covers all stages of care⁷.

Rehabilitation care is often the longest and most challenging stage of trauma care for patients and families⁷. However, only a few patients have access to rehabilitation programs due to a lack of financial support and scattered health care. However,

rehabilitation services focus on a specific injury, but there are patients with multiple injuries in rehabilitation care ⁸.

In addition, rehabilitation services are created based on specific patterns of injury or functional disorders. Therefore, providing care for multiple injuries can be challenging. Similarly, most rehabilitation literature has examined interventions for specific trauma conditions. A few quantitative studies have examined the effectiveness of multidisciplinary rehabilitation programs for patients with multiple injuries ⁷.

According to some studies on the need to recognize the challenges in providing injury care from the perspective of the caregiver team ^{9, 10}, it is necessary better understand the challenges of this significant phenomenon in traumatic people. Although there are extensive studies with little plan on the epidemiology of traumatic patients, few qualitative studies have been conducted on the challenges of rehabilitation care from the perspective of the care team in traumatic patients. Therefore, due to the need to acquire knowledge about this important phenomenon, this study was conducted to understand the challenges of early rehabilitation care in multiple trauma patients from the perspective and experience of a multidisciplinary team.

Methods

This study was conducted using a qualitative design with a content analysis approach to understand the challenges of rehabilitation care based on the experiences of caregivers. Content analysis is one of the many research methods in textual data analysis. In this study, conventional content analysis was used. Conventional content analysis is commonly used in the design of a study that aims to describe a phenomenon. This design is usually appropriate when existing theories or research texts on a phenomenon are limited. Researchers refuse to use preconceived categories and instead allow categories and their names to be derived from data ¹¹.

Participants

A purposive sampling technique was used in this study, participants included nurses, practitioners, physiotherapy, and occupational therapists in inpatient wards and outpatient trauma that explain the process of care based rehabilitation the house in patients with

spinal cord injury were interviewed. Participants in this study were selected from two specialized hospitals under the supervision of Tehran University of Medical Sciences by purposeful sampling. The two selected centers for sample selection were major and important referral ones for the treatment and care of trauma patients in Iran.

Information collection methods

The data collection method was performed using in-depth semi-structured individual and face-to-face interviews. The interview began with the health team through a semi-structured method and an open-ended question based on the main research question. It gradually proceeded based on data analysis and in-depth and follow-up questions regarding facilitators and barriers to rehabilitation care for traffic casualties. Data collection lasted about nine months, from June 2016 to July 2016. The duration of the interviews was between 25-45 minutes, depending on the ability of participants to interview. The interviews were conducted by the first author in Persian and then translated into English. The interviews were recorded on a tape recorder and transcribed verbatim after each session. The main interview question included "What do you think hinders recovery care from reaching the patient's desired care level?" In addition, exploratory questions were used to clarify the participants' answers during the interview ¹¹.

Ethical considerations

The proposal for this study was approved by the Ethics Committee of the Research Council of the Trauma and Surgery Research Center of Sina Hospital, Tehran, Iran. The purpose and method of the study were stated for the ones participating in the study. In addition, in the research process, participants could withdraw from the study at any time without any penalty or loss. Written informed consents were taken from those participating in the study, and they were also allowed to record interviews. Participants in the study were assured that their information would be kept confidential.

Data analysis

The content analysis approach was used to analyze the data. Content analysis as a research technique involves specialized methods in processing scientific data.

Qualitative content analysis reduces data and gives them structure and order. Content analysis is a method of exploring the symbolic meanings of messages. The recorded interviews were transcribed verbatim on paper and read several times to gain a general sense of the data. The text of the interviews was divided into semantic units, which had been condensed. Condensed semantic units were abstracted and labeled by codes. The codes were then sorted by sub-themes and themes based on comparisons in terms of similarities and differences ¹².

Rigor

In this study, peer checking was used to gain reliability. The data were independently coded and categorized by the authors. Then the themes from the analysis were compared with each other. In the disagreement about themes, the discussion among the authors continued until a general agreement was reached. Checking by members was also used to give a summary of the extracted themes to several study participants to confirm their experiences with the extracted themes. Careful auditing of the early stages of the study and during data collection was used to achieve the reliability of the research ¹³.

Results

In this study, we enrolled 13 participants and the sampling continued purposefully until data saturation. The participants were seven nurses, two doctors, three physiotherapies, and two occupational therapists in inpatient wards and outpatient trauma that explain the process of care-based rehabilitation the house in patients with spinal cord injury, and they were interviewed. All people lived in Tehran (Table 1). After continuous analysis and comparison, the two main themes related to rehabilitation care barriers from the multidisciplinary team perspective, included "Inadequate -supportive structure" and "lack of holistic care" as rehabilitation care challenges were extracted from the care team experiences. Table 2 shows the process of obtaining these themes, and sub-themes and their explanations are as follows.

Table 1: Demographic characteristics of the studied participants.

Variables	(N)/Min-Max	Median (Interquartile range)
Age range (year)	25-50	42 (33-45)
Gender		
Female	6	
Male	9	
Job status		
Nurse	7	
Physiotherapist	3	
Occupational therapist	2	
Physician	2	
Psychiatrist	1	
work experiences	2-25	15 (8-20)
Total of the participants	15	

Table 2: Themes and subthemes resulting from the analysis process

Theme	Subtheme 1	Subtheme 2
Inadequate supportive structure	Inadequate supportive care of trauma patients	
	Incomplete insurance service	
	Insufficient support in home care	
	Limitation of centers with the trauma system and specialized services	
Lack of holistic care	Weakness of belief in rehabilitation	incomplete comprehensive evaluation
		insufficient competence
	Lack of systemic care	Failure in the team care system
		Interruption in the continuation of rehabilitation care
Inadequate trauma rehabilitation guidelines		
Lack of trauma nurse		

Inadequate supportive structure

The inadequate supportive structure was the main challenge extracted from the findings of this study, which continued for rehabilitation care from hospital exposure until after discharge. This category included four subcategories, namely insufficient government support for trauma patients, incomplete insurance services, inadequate support in-home care, and the limitation of centers with trauma systems and specialized services.

Inadequate supportive care of trauma patients

Many participants were mentioned inadequate government support in various areas, such as the cost of several operations, care and treatment until recovery from the injury. Also, they were stated that there was no continued support for physical, and occupational problems, and for the cost and damages resulted from working days lost because of the accident while these issues have shaped many challenges for their lives:

"The patient who leaves here has no source of support to solve his/her problems. Disability has a destructive effect on a person's life." (An occupational therapist participant)

Incomplete insurance service

According to the participant's experiences, the insurance coverage is inadequate for trauma patients, especially to accept all care and treatment measures for the first time. But, this issue has caused challenges due to incomplete insurance services in many cases of care experienced by participants in the study:

In addition, insurance does not support following physiotherapy and occupational therapy, although some centers bill insurance companies. Many people in Iran become disabled after accidents, and whether or not the support of insurance companies can ensure their return to life is still unclear. I at least have experienced this period unsatisfactorily. A change in the insurance system is necessary to support accident disabled and injured people in our country." (A physician participant from Welfare Organization)

Insufficient support in home care

Inadequate support authorities and relevant organizations for home-care after trauma-related disabilities was another obstacle. According to the participants' experiences, some of the reasons behind the

lack of adequate support of the injured for home care, included the lack of home visits due to high costs and lack of transportation facilities for therapists:

"There is practically no patient visit at home in our society. Although the patient has to return home, he/she stays alone with thousand other issues such as problems from his/her accident, physical and mental problems, and other legal concerns." (A nurse participant)

A number of therapists saw the lack of the workforce as an obstacle to caring for patients at home. One occupational therapist said:

"Coordination, lack of manpower, financial problems and the inability to meet patients' demands are all barriers to patients' home visits." (An occupational therapist participant)

Limitation of centers with the trauma system and specialized services

Another challenge in providing rehabilitation care to multiple trauma patients was the limitation of centers with trauma systems and specialized services. The experiences of the participants showed that the injured and trauma patients were not followed up in specialized medical care centers:

"We have not trauma centers like those in developed countries, and if the injured person needs specialized services, he/she cannot receive full care in health centers." (A physician participant)

Lack of holistic care

Based on the findings, the lack of holistic care system was identified as a critical obstacle in the care of trauma patients.

Weakness of belief in rehabilitation

Based on the results, the lack of belief in rehabilitation was recognized as one of the most critical obstacles in the comprehensive care of accident casualties. The fragile trust in rehabilitation was the most crucial obstacle in providing comprehensive to prevent the extension of secondary disabilities in the injured. This theme had two subthemes such as inadequate competence and incomplete comprehensive evaluation.

Insufficient competence

One of the subthemes of lack of holistic care was inadequate competence. This confrontation with

insufficient competence started from encountering the injured in the hospital emergency department and continued.

"Ten years ago, when we went over a patient without any training, we would shake the patient and quickly release him/her. However, today the situation has improved, but we have not reached the ideal. We must say that no non-specialist should touch the accident patient, but we also have a lot of non-specialist forces. For example, a resident moves the patient regardless of the spinal cord and clavicle injury, or the patient is passed over a thousand of holes with a stretcher. Of course, it is also very important how we receive the patient." (A nurse participant)

Both caregivers and caretakers experienced the lack of specialized rehabilitation care from the first days of hospitalization. Starting early rehabilitation care prevents many unpleasant complications of the trauma. *"There are patients whose rehabilitation care has not been started at the first time after injury. So, problems and issues resulting from undiagnosed traumas or the addition of secondary traumas disrupted the patient's return process to the normal life."* (A nurse participant)

Incomplete comprehensive evaluation

Participants experienced the neglect of evaluation as an obstacle to the patient's recovery and as a cause behind an increasing period of the patient's return:

"I have seen that a patient, who has not been examined comprehensively, has further complications. It has happened many times that the patient has not been evaluated comprehensively and an organ has been left behind and caused the patient not tolerate the rehabilitation program." (A physiotherapist participant)

Another participant said:

"It is essential to get a complete history and do a comprehensive examination. Here we are confronted with that patient has not been comprehensively examined, and neither the doctor nor the nurse has performed the necessary history and physical assessment. So, he/she readmit to the hospital with further problems." (A nurse participant)

Lack of systematic care

Lack of systematic care was one of the reasons for the weakness in providing team care and insufficient attention to the continuation of care for the injured,

which was a main challenge experienced by most of the study participants. The category of non-systematic care included two subcategories of failure in the team care system and interruption in the continuation of rehabilitation care.

Failure in the team care system

Another sub-concept was a failure in the team care system. The participants considered team care with the involvement of nurses as one of the essential members of the team, as one of the critical factors in solving the problems of the injured, and they experienced its failure in the care system of Iranian hospitals:

"In a public hospital, the nurse does all the patient's work, such as occupational therapy, physiotherapy, etc., so that the patient can return to normal life. The physician does patient visit and physiotherapists also play a completely stereotypical role in the hospital, and these people are not related to each other at all." (A nurse participant)

Therefore, in the team of hospital trauma care, only physicians and nurses were active who took care of the accident victim in the hospital. But, there was no coherent care team for this issue.

Interruption in the continuation of rehabilitation care

One of the concerns of most participants in providing care was the interruption in the continuation of rehabilitation care so that after the patient was discharged from the ward, the patient couldn't reach the hospital or treatment center with a staff specialized in trauma rehabilitation:

"I have no news of the patient after he/she leaves the clinic. Many patients skip treatment sessions and return to a worse condition after a long time. Unfortunately, this system is not implemented in the country at all." (A physiotherapist participant)

Inadequate trauma rehabilitation guidelines

The necessary guidelines were inadequate for rehabilitation care in trauma patients. Study participants blamed insufficient care instructions for delayed and challenging recovery in the injured and experienced a lack of knowledge for non-standard team performance.

"We do not treat the accident patient according to the instructions, and therefore quality care may not be

provided. In general, after discharge, for comprehensive and continuous care at home, we do not have any known standards so that we can provide the necessary care to the injured." (A nurse participant)

Another participant experienced the lack of guidelines for training patients and ultimately improving their recovery:

"We do not have a guideline to take care of traffic and other trauma injuries, and rehabilitation care has been neglected at all. To optimize the care of traffic victims and their families, we need to develop care guidelines as well as train medical staff to improve their recovery." (A physician participant)

Lack of trauma nurse

One of the sub-categories of lack of holistic care was the lack of a trauma nurse. According to the participants, one of the most significant challenges in the rehabilitation care of trauma patients was the lack of a trauma nurse. In principle, rehabilitation care of the patient is ignored and focused on standards of training and rehabilitation care. Participants stated that lack of competence in diagnosing needs and unfamiliarity with patients' problems, challenges, and care needs caused concerns for the injured:

"In my experience, not everyone can work with these patients. They have their problems. Almost all of them suffer from mental crises resulting from the accident, a series of legal and insurance problems, lack of medical follow-up, and difficulty in correctly diagnosing physical problems. So, it is necessary to train a specialized nurse familiar with special expertise. In case of an accident or orthopedic patient, he/she should be trained as a suitable and qualified specialist. He/she should have at least six months of retraining to work in that special field and be able to help the patient, and he/she should support this patient anyhow." (A nurse participant)

Discussion

The experiences of the care team in this study were the non-supportive structure and lack of holistic care, respectively, which were finally conceptualized as "challenges of rehabilitation care in traumatic events".

The lack of supportive structure was derived from the findings of this study as the main challenge. This category included several subcategories, such as the

limitation of centers with trauma systems and specialized services, insufficient government support for rehabilitation of trauma patients, incomplete insurance coverage, and inadequate support for home care. There are no trauma centers in Iran like those in developed countries. Therefore, if the injured person needs specialized services, he/she cannot fully receive them in health centers.

Other important factors were effective in the care of trauma patients, along with other factors, according to the perspective of the participant. These factors were human resources, specialized services, and equipment.

According to studies, the minimum clinical capabilities for each trauma center should be determined. Also, in each region, a list of active centers with detailed services should be prepared and organized. Trauma teams who provide intensive care should receive adequate training¹⁴⁻¹⁶. The results of the present study were the following studies of Khan et al. that showed the rehabilitation services were still not included as a part of care related to trauma. In principle, rehabilitation services were mostly insufficient after severe and extensive trauma, but this rate varied. In many medical centers, there has been no department for the rehabilitation of such patients¹⁷. This study was similar to the present study.

Also, the results demonstrated that the traumatic patients were not followed up in specialized medical care centers after discharge. Nowadays, only a small number of patients suffering from severe disabilities after trauma receive ongoing specialist rehabilitation services. This evidence is consistent with situation-based models, which state that care delivery is determined by the underlying situation¹⁸. In this study, the underlying situation was described with limited facilities, services and shortage of specialized manpower.

Another challenge with the non-supportive structure was insufficient and incomplete insurance services. Pashaei et al. also stated that due to the lack of insurers' services, families were under severe economic pressure, and most of them complained about their inability to pay for the patient's treatment. They even considered these factors as the cause for delays in the patient's recovery and return to society¹⁹.

Another obstacle to achieving optimal rehabilitation care was insufficient government support for the rehabilitation of trauma patients. The findings of this

study indicated that the government did not provide sufficient support in various areas such as care and treatment of casualties, their families, and continued support until returning to normal life. Economic and medical problems and the burden of damage caused by accidents and disabilities made their lives with many challenges. A review of trauma systems in developed countries showed that it was necessary to pay attention to rehabilitation care equipment and facilities and improve the quality of rehabilitation care for the return of trauma patients to society^{15, 20}.

Trauma patients behind an acute hospitalization period have new problems with expansive impact on physical, mental, and other aspects of life. Home care plays a crucial role in returning patients to independent life, preventing disease complications, and reducing treatment costs. Home care (due to its unique economic, social, and care benefits using the power and capacity of families, NGOs, and the community) play a critical role in providing health services and helping the injured person return to the community faster²¹.

One of the characteristics of holistic care was the existence of obstacles such as lack of systematic care. There was evidence of a lack of follow-up of care for survivors of traumatic events in the study. The results indicated the patient cared during the hospitalization time. So that the patient was left in the community after discharge. Therefore, care after discharge would be done privately and at costs beyond tolerance. These findings were consistent with the results of a study performed by Christine et al., which aimed to assess the rehabilitation needs of patients discharged from the African Regional Trauma Center. The results of Christine's study showed that 17% of patients with significant physical dysfunction were followed up after discharge, and most patients with physical dysfunction were not followed up until they returned to their previous state²². Haghparast et al. also state that there was disruption in all stages of care from pre-hospital until after discharge in Iran²³. These results were similar to our study.

Another challenge in the present study was a failure in the team care system. The participants of the present study considered team care as one of the critical factors in solving problems of the injured, and they experienced failure in it in their centers. However, early trauma rehabilitation with team goals is essential in caring for injured patients. But, its most significant challenge in

this study was doing it not as a team and in a disconnected manner. The findings were similar to the results of studies done by Haghparast et al.²³⁻²⁸ and Delprado, which stated that a large part of rehabilitation services was provided by professionals who did not work in a single collection. It was often provided in a hospital ward privately in rehabilitation centers. However, there is evidence that rehabilitation will be much more effective if a health care team works together. One major challenge of holistic care challenges in trauma patients was the lack of a trauma nurse. The unskilled personnel, who were mainly working with trauma patients, created problems and challenges for the accident injured hospitalized. demonstrated that inappropriate workforce planning was also one of the reasons which led to poor organization in this area and reduced quality of care^{25, 26, 29}.

Conclusion

The provision of comprehensive and systematic care by a competent care team is essential from the beginning of the initial phases of care to achieve the goals of trauma patients returning to life. In this study, it was presented as a challenge of comprehensive care to trauma patients. Knowing the challenges of rehabilitation care for trauma patients by a multi-professional care team with a specialized approach in a systematic manner help the health team to remove barriers of return to society; ultimately, it will increase the quality of care.

Furthermore, this study had some limitations. The main limitation of our study methodology was the challenging coordination with professors and colleagues due to their limited time, as well as limitation of the observer in inpatient wards, rehabilitation clinics, and emergencies by the head nurse of the hospital because of some problems and in some cases, lack of suitable space for interviews were the most critical implementation problems of this study. It is suggested doing a meta-analysis of qualitative research on facilitators and barriers to rehabilitation in traffic accident victims for further investigation.

Limitations

The main limitation of the methodology of our study was the use of the qualitative method for a deep understanding of the explanation of the rehabilitation care process in patients with multiple traumas. The present study was limited due to the quality of the selected methodology and the location of the study. Also, there was challenging coordination with bosses and colleagues due to time limitations and a lack of adequate space for interviewing participants.

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Conflict of Interest Disclosures

The Author(s) declare(s) that there is no conflict of interest.

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Authors' Contributions

FP and KN responsible for suggesting topic, performing interviews, analyzing and interpreting the interviews, writing the manuscript. FP and MS was responsible for interpreting the interviews, helping to acquiring data, drafting and revising the article. SS analyzing the interviews, drafting and revising the article. VRM helping to translation, critical revise and drafting the article.

Ethical Statement

We certify that all applicable institutional and governmental regulations concerning the ethical use of human volunteers were followed during the course of this research.

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