

The Effect of Trauma Intervention on the Satisfaction of Patients Admitted to the Emergency Department: A Clinical Trial Study

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Abstract

Background: Patient satisfaction is a key determinant of the quality of medical care. Moreover, satisfaction can be used as a criterion for examining the adequacy of the care, health, and competency of personnel.

Objectives: This study was conducted to determine the satisfaction of patients receiving trauma care in the emergency department of a hospital affiliated with Isfahan University of Medical Sciences.

Patients and Methods: This simple clinical trial was performed on 104 patients admitted for traumatic injury to an emergency department in Iran. Given that patients frequently enter an emergency department for care, the sampling of patients in the department was done on days that were randomly assigned to the study group. The experimental group received trauma intervention in four areas from their admission to the emergency department to their discharge from the hospital, and the control group received routine nursing care. The data were collected through a questionnaire that asked for demographic characteristics and then went on to ask about patient satisfaction. The satisfaction questionnaire was completed after the trauma intervention at the end of patients' stay in the hospital. The data were analyzed using SPSS 22 software and descriptive statistical tests and analytical tests (independent t and Chi-square).

Results: The mean score for total satisfaction after trauma intervention in the experimental group (45.6 ± 3.69) was significantly different from that of the control group (32.01 ± 7.78) ($P < 0.001$). Therefore, the levels of total satisfaction in the experimental and control group were favorable and relatively favorable, respectively.

Conclusions: In this study, trauma intervention increased satisfaction in patients admitted to the emergency department. Therefore, managers and personnel of hospitals and healthcare training centers are urged to implement trauma intervention in their hospitals or healthcare training centers.

Keywords: Patient Satisfaction, Trauma, Emergency Department

1. Background

Trauma is one the most important causes of death worldwide (1). Almost 90% of the deaths caused by trauma occur in countries with low or middle income (2). Iran has the highest rate of trauma in the world with an annual rate of 28,000 people dying in car accidents. An accident occurs every 3 minutes, and one person dies from these accidents every 19 minutes (3, 4).

The emergency department is considered a major entrance point for hospital care. Patients often experience the hospital firstly through the emergency department (5). The emergency department provides para-clinical and clinical emergency care for injured patients (6). When patients with precarious and life-threatening conditions go to the emergency department, they demand accurate and fast diagnosis and treatment without having to wait (5).

Emergency patients often experience anxiety because they do not receive enough attention from the personnel and because they fear the unknown (7). They expect health-care personnel to attend to them, be genial and skillful, and provide them with scientific care. When the patients and their families, who are already under stress, do not know the exact waiting time, they may act out with the nursing staff, and their satisfaction with care will decrease (8).

Patient satisfaction is defined as the sum of their experiences in hospital (9), and a key determinant is the quality of the care provided to them (10). Moreover, satisfaction can be used as a criterion for examining the adequacy of care, health, and competence of the personnel (11). The quality of care and patient satisfaction is widely used as an indicator for choosing healthcare services (12).

Regarding the contribution of nurses to most dimen-

sions of patient care, nursing care is considered an important aspect of satisfaction (13). Moreover, nursing care is a major contributor to overall patient satisfaction in health care services (14). Nursing care is also considered an initial determinant affecting patient total satisfaction (15).

It is important to measure patient satisfaction with nursing care in order to understand patient needs and evaluate the quality of the provided care (16). Studies show that patient satisfaction with nursing care increased treatment compliance and follow-up after discharge from the hospital (17). The factors increasing patient satisfaction include a favorable patient-nurse relationship, a nurse's high level of knowledge, the nurse treating patients politely, and the nurse responding to patients' expectations (18).

Most studies have examined provision of information about emergency processes and estimation of waiting time for patients (19-26). These studies have reported contradictory results about the effect of information on patient satisfaction with emergency care. However, no study has examined the effect of trauma intervention on patient satisfaction with the emergency department. The present clinical trial was conducted to determine the effect of a trauma intervention on the satisfaction of trauma patients admitted to the emergency department in 2014. The hypothesis of the study was that trauma intervention would increase patients' satisfaction in the experimental group compared to a control group receiving basic care.

2. Objectives

This clinical trial was performed to determine the effect of a trauma intervention on satisfaction of patients admitted to the emergency department with trauma (falling, hitting, and accidents) in 2014.

3. Patients and Methods

This study was a simple randomized clinical trial that was performed on 104 trauma patients admitted to the emergency department of a general hospital affiliated with Isfahan University of Medical Sciences, Isfahan, Iran, from March to May 2014. The inclusion criteria for participating in this study were: the patients were being admitted for trauma for the first time; the patients were oriented enough to know time, place, and people; they had no psychological diseases and were using no psychiatric medications; the patients were able to understand conversations in Persian and had a minimal level of literacy; the patients were over 18 years old; they were staying at the hospital for least for 4 hours; and their level of injury was no higher than triage level 3. The exclusion criteria for this

study were: the patients' failure to cooperate in collecting information; the patients' urgent need for surgery; the patients' reduced level of consciousness; and the discharge of patients by their consent during the study. Two patients in the experimental group who needed immediate surgery and three patients in the control group who were discharged with personal consent were excluded from the study. Sampling continued until the estimated sample size was reached.

The ethics committee of Tehran University of Medical Sciences approved this study (Code: 1302919) in March 2014. The informed consent form included explanations of the objectives of the study. Before collecting the data, all of the participants were informed of the confidentiality of their information and their right to withdraw from the study at any time. The patients with inclusion criteria were informed of the study objectives by the researcher. The data were collected through self-report after obtaining written and verbal informed consent. The researcher assisted patients who could not complete the questionnaire alone. The data were collected from March to May 2014.

Since patients frequently enter the emergency department, the sampling of patients in the department was done on days that were randomly assigned to the study group. The experimental group received trauma intervention from the time of their admission to the emergency department to their discharge. However, the control group received only the usual nursing care.

The trauma intervention consisted of four areas as follows:

- i. informational support. Patients received an introduction to the emergency department. They were provided with an information manual on diagnostic tests and procedures, as well as reasons for possible delays in treatment. They were informed of the discharge process. They were given information on any medications they received. Family members were informed of the patient's presence in the emergency department;
- ii. emotional support. Medical staff listened to the patients and their families and answered their questions, and gave them the opportunity to talk about their concerns, fears and feelings. Patients were provided with maximum care as needed and ensured of accessibility to nurses. Families or companions were allowed to be with patients;
- iii. responding to personal needs. Patient privacy was protected. Their position in bed was changed on a regular basis. Light and sound was adjusted, and unpleasant smells were eliminated. Patient toilet needs were attended to in privacy. The medical staff coordinated financial issues with the hospital social worker, and the insurance unit of the hospital was contacted if the patient was not insured;
- iv. spiritual support. Patients were provided with a place appropriate for prayer, and were, as

much as possible provided with spiritual support. At the end of their stay in the hospital, members of each group were asked to complete a questionnaire.

A two-part questionnaire collected demographic information and then asked questions about patient satisfaction. The first part of the questionnaire (demographic characteristics) included ten questions about age, sex, marital status, educational level, occupational status, place of residence, family income, nature of the injury, the patients' companion, and physician's orders recorded in the triage room upon their admission to the emergency department. The second part of the questionnaire consisted of a satisfaction scale made up of 25 questions and was used for measuring patient satisfaction in the emergency department. This scale was established in English in 2004 by Dawood and last used by Mohamed et al. in 2012 (5).

This questionnaire's 25 satisfaction questions were collected under four subscales, that is, satisfaction with the waiting time for different activities (5 items), satisfaction with nurses' communication and performance (9 items), satisfaction with nurses' promptness (5 items), and satisfaction with the emergency department (6 items). Each item was assigned four options of yes, to some extent, no, and no problem, which were respectively scored 2, 1, 0, and 0 points. The satisfaction scale total score ranges from 33% to 66%. Scores lower than 33%, scores of 33% - 66%, and scores over 66% were considered as unfavorable satisfaction, relative satisfaction, and favorable satisfaction, respectively.

The satisfaction questionnaire was translated into Persian by an expert who was not aware of the subject matter and then translated back into English. The deficiencies and differences of the questionnaire were corrected and revised through consultation with university professors. A pilot study was conducted to assess the sample size; these 60 patients (30 in each group) were not included in the study. The Cronbach's alpha coefficient in this study was 0.92.

The questionnaire form was evaluated by the researchers. The data collected was coded in the SPSS data analysis program, and descriptive statistics such as frequency, percentile, mean, and standard deviation were used along with inferential tests. The chi-square test was used to assess the homogeneity of the two study groups in terms of demographic variables. The Kolmogorov-Smirnov test was used to assess the normality of the data. The independent t-test was used to compare control and experimental groups. In this research X² and independent T were used for data processing while the level of confidence was 95%. A $P < 0.05$ was considered as significant.

4. Results

This study was performed on 104 traumatic patients admitted to the emergency department in 2014. The mean age of the patients in the experimental and control groups was 35.38 ± 11.03 years and 38.17 ± 17.32 years, respectively, without a significant difference ($P = 0.33$). Table 1 presents demographic characteristics of the patients in brief. There were no significant differences in the two groups before the intervention in terms of age, sex, marital status, educational level, occupational status, place of residence, family income, nature of the injury, companions of the patients, physician's orders.

The data analysis through an independent t test showed a significant statistical difference between the mean score of satisfaction with nurses' communication and performance after the intervention in the experimental group (17.30 ± 1.07) and that in the control group (11.84 ± 3.67). Moreover, mean score of satisfaction with the emergency department in the experimental and control groups was respectively 10.09 ± 1.51 and 7.19 ± 3.09 , which differed significantly from each other. The mean score of total satisfaction after the intervention in the experimental group (45.6 ± 3.69) was significantly different from that in the control group (32.01 ± 7.78) ($P < 0.0001$) (Table 2). Based on the score analysis, the level of satisfaction in the experimental and control groups was respectively favorable and relatively favorable. One hundred percent of patients had a favorable satisfaction after intervention in the experimental group, compared with 48.1% of patients in the control group.

5. Discussion

Patient satisfaction is a key determinant of the quality of provided care (10). Furthermore, nursing care is one of the most important dimensions of patient satisfaction because nurses are responsible for most aspects of patient care (13). Therefore, the present study was conducted to examine the effect of trauma intervention on patient satisfaction in the emergency department, and the study found an increase in patient satisfaction after implementation of a trauma intervention. It seems that informing patients admitted to the emergency department of the actions, the emergency process, tests, diagnostic procedures, probable delays, treatment methods, waiting time, and the discharge process could increase patient satisfaction with care. The informational support in this study was multidimensional and involved all dimensions of patient care. In this regard, the studies conforming to this study are as follows.

Table 1. Demographic Characteristics of Patients (n = 104)

Characteristics	Experimental Group, No. %	Control Group, No. %	X ²	P Value
Gender			1.31	0.25
Male	37 (71.2)	42 (80.8)		
Female	15 (28.8)	10 (19.2)		
Marital status			3.72	0.05
Married	32 (61.5)	41 (78.8)		
Single	20 (38.5)	11 (21.2)		
Occupational status			6.14	0.52
Unemployed	7 (13.5)	7 (13.5)		
Disabled	2 (3.8)	0 (0)		
Employee	4 (7.7)	7 (13.5)		
Worker	15 (8.8)	15 (28.8)		
Retired	4 (7.7)	1 (1.9)		
Free ^a	11 (21.2)	16 (30.8)		
Homemaker	9 (17.3)	6 (11.5)		
Place of residence			0.05	0.74
City	41 (78.8)	44 (84.6)		
Village	7 (13.5)	5 (9.6)		
Countryside	4 (7.7)	3 (5.8)		
Family income			2.92	0.23
Sufficient	4 (9.6)	8 (15.3)		
Partially sufficient	25 (48.1)	30 (57.7)		
Not enough	22 (42.3)	14 (27)		
Nature of injury			0.05	0.97
Accident	28 (53.8)	29 (55.8)		
Fall	8 (15.4)	8 (15.4)		
Hit ^b	16 (30.8)	15 (28.8)		
Treatment			6.44	0.37
Operating room	9 (17.3)	3 (5.8)		
Dressing	4 (7.7)	2 (3.8)		
Stitch	9 (17.3)	13 (25)		
Catch plaster	6 (11.5)	7 (13.5)		
Catch splint	11 (21.2)	16 (30.8)		
Serum therapy	13 (25)	11 (21.2)		

^aFarmer, Mason, Carpenter, Painter.^bTo fall down, Corrosion knife, Sprain.

Tran et al. (2002) found that providing patients with information about emergency processes, reasons for delays, treatment plans, and diagnostic tests every 15 minutes improved patient satisfaction in the emergency department. Moreover, failure to provide enough information and ex-

planations about the procedures in the emergency department was known as a reason for patient complaints and dissatisfaction (22). McCarthy et al. (2011) also reported an increase in patient satisfaction after providing comprehensive information about emergency processes (26).

Table 2. The Mean of Satisfaction Scores of Questionnaire Items in Two Groups After Intervention

	Control Group, Mean (SD)	Experimental Group, Mean (SD)	t (P)
Waiting time for the different activities	6.65 (2.64)	9.34 (1.39)	6.49 (0.0001)
Nurses' com- munication and performance	11.84 (3.67)	17.3 (1.07)	10.28 (0.0001)
Nurses' promptness	6.32 (2.54)	8.86 (1.44)	6.25 (0.0001)
Emergency department	7.19 (3.09)	10.09 (1.51)	6.07 (0.0001)
Total satisfaction	32.01 (7.78)	45.6 (3.69)	11.37(0.0001)

In another study, Hsieh in 2010 showed that an instructional brochure about emergency processes alone could not improve patient satisfaction; rather, the provision of comprehensive information about emergency processes could improve their satisfaction (27). Furthermore, Sun et al. (2004) also reported that a one-page instructional form about emergency processes could not improve patient satisfaction (21). Based on the results of this study and previous studies, the provision of comprehensive information about emergency processes can improve patient satisfaction.

Another dimension of the trauma intervention in this study was to communicate with patients and their family. It seemed that communicating with patients upon their entry to the emergency department and ensuring them of the accessibility of nurses could improve patient satisfaction, as the mean score of satisfaction with nurses' communication and performance after the intervention in the experimental group (17.30 ± 1.07) was significantly different from that in the control group (11.84 ± 3.67).

Lovato et al. (2013) explained that nurses' accessibility and communication were two key dimensions increasing patient satisfaction (28). Furthermore, Taylor et al. (2006) found that instructing the patients and communicating with them were important and effective factors in patient satisfaction with the emergency department (20). Another study reported communication as a key issue in the emergency department from patients' points of view, and patients also stated that they needed to be aware of the emergency department's procedures, such as the triage process, patient examination, and procedures of admission (29).

Moreover, Cooke et al. (2006) found that the personnel's paying more attention during waiting time and

communicating with patients increased the quality of the emergency department and patient satisfaction (30). Another study reported that patient satisfaction increased after personnel spent more time with patients, communicated with them more, and reduced the time they stayed in the hospital (31). Moreover, the improvement of communication skills increased patient satisfaction (32).

This study recommends broader studies for examining the satisfaction in patients admitted to the emergency department with any diagnosed illnesses. Moreover, a study should be undertaken of the satisfaction of the family of patients admitted to the emergency department. In addition, a study should be conducted with a larger sample size in a private hospital, as well.

A limitation of this study was the uncontrollable influence of patients' personal characteristics and attitudes on their satisfaction with the provided care. Another limitation of this study was the small sample size.

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Footnotes

Authors' Contribution: Masoumeh Zakerimoghadam and Somayeh Sadeghi participated in writing and designing the article and collecting the data; Anoshirvan Kazemnejad and Somayeh Sadeghi performed the data statistical analysis; Masoumeh Zakerimoghadam and Shahrzad Ghiasvandiyan supervised the study and critically edited the content of the article.

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References

1. Mock C. Strengthening care for the injured: success stories and lessons learned from around the world. World Health Organization; 2010.
2. Rasouli MR, Saadat S, Haddadi M, Gooya MM, Afsari M, Rahimi-Movaghar V. Epidemiology of injuries and poisonings in emergency departments in Iran. *Public Health*. 2011;125(10):727-33. doi: [10.1016/j.puhe.2011.07.006](https://doi.org/10.1016/j.puhe.2011.07.006). [PubMed: 21906762].
3. Ali M, Saeed MM, Ali MM, Haidar N. Determinants of helmet use behaviour among employed motorcycle riders in Yazd, Iran based on theory of planned behaviour. *Injury*. 2011;42(9):864-9. doi: [10.1016/j.injury.2010.08.030](https://doi.org/10.1016/j.injury.2010.08.030). [PubMed: 20883994].

4. Kadhodaie MH. Three-year review of facial fractures at a teaching hospital in northern Iran. *Br J Oral Maxillofac Surg*. 2006;**44**(3):229-31. doi: [10.1016/j.bjoms.2005.06.016](#). [PubMed: [16099558](#)].
5. Mohamed H, TanTAEWY N, El-said N, nassar M. Efficiency of Care and Satisfaction for Head Injury Patients at Emergency Department in Mansoura Emergency Hospital. *Med J Cairo Univ*. 2012;**80**(2).
6. Ajami S, Ketabi S, Yarmohammadian MH, Bagherian H. Wait time in emergency department (ED) processes. *Med Arh*. 2012;**66**(1):53-7. [PubMed: [22482345](#)].
7. Arli SK, Aslan FE, Purisa S. WITHDRAWN: Patient Complaints in the Emergency Department. *J Emerg Nurs*. 2009 doi: [10.1016/j.jen.2009.02.016](#). [PubMed: [25744914](#)].
8. Gilboy N, Tanabe P. Who Is Leaving the Emergency Department Without Being Seen?. *Adv Emerg Nurs J*. 2008;**30**(1):03-10.
9. Oluwadiya K, Olatoke SA, Ariba AJ, Omotosho OA, Olakulehin OA. Patients' satisfaction with emergency care and priorities for change in a university teaching hospital in Nigeria. *Int Emerg Nurs*. 2010;**18**(4):203-9. doi: [10.1016/j.ienj.2009.12.003](#). [PubMed: [20869661](#)].
10. Ahmad I, ud Din S. Patients Satisfaction from the Health Care Services. *Gomal J Med Sci*. 2010;**8**(1).
11. Aldebasi YH, Ahmed MI. Patients' satisfaction with medical services in the qassim area. *J Clin Diagn Res*. 2011;**5**(4):813-7.
12. Qiu C, MacVay MA, Sanchez AF. Anesthesia preoperative medicine clinic: beyond surgery cancellations. *Anesthesiology*. 2006;**105**(1):224-5.
13. Samina M, GJ Q, Tabish S, Samiya M, Riyaz R. Patient's Perception of Nursing Care at a Large Teaching Hospital in India. *Int J Health Sci (Qassim)*. 2008;**2**(2):92-100. [PubMed: [21475490](#)].
14. Charalambous A. Variations in patient satisfaction with care for breast, lung, head and neck and prostate cancers in different cancer care settings. *Eur J Oncol Nurs*. 2013;**17**(5):588-95. doi: [10.1016/j.ejon.2013.01.006](#). [PubMed: [23453567](#)].
15. Liu Y, Wang G. Inpatient satisfaction with nursing care and factors influencing satisfaction in a teaching hospital in China. *J Nurs Care Qual*. 2007;**22**(3):266-71. doi: [10.1097/01.NCQ.0000277785.52428.a5](#). [PubMed: [17563597](#)].
16. Akin S, Erdogan S. The Turkish version of the Newcastle Satisfaction with Nursing Care Scale used on medical and surgical patients. *J Clin Nurs*. 2007;**16**(4):646-53. doi: [10.1111/j.1365-2702.2006.01583.x](#). [PubMed: [17402945](#)].
17. Habich M, Wilson D, Thielk D, Melles GL, Crumlett HS, Masterton J, et al. Evaluating the effectiveness of pediatric pain management guidelines. *J Pediatr Nurs*. 2012;**27**(4):336-45. doi: [10.1016/j.pedn.2011.06.002](#). [PubMed: [22703680](#)].
18. Ozsoy SA, Ozgur G, Durmaz Akyol A. Patient expectation and satisfaction with nursing care in Turkey: a literature review. *Int Nurs Rev*. 2007;**54**(3):249-55. doi: [10.1111/j.1466-7657.2006.00534.x](#). [PubMed: [17685908](#)].
19. Papa L, Seaberg DC, Rees E, Ferguson K, Stair R, Goldfeder B, et al. Does a waiting room video about what to expect during an emergency department visit improve patient satisfaction?. *CJEM*. 2008;**10**(4):347-54. [PubMed: [18652727](#)].
20. Taylor D, Kennedy MP, Virtue E, McDonald G. A multifaceted intervention improves patient satisfaction and perceptions of emergency department care. *Int J Qual Health Care*. 2006;**18**(3):238-45. doi: [10.1093/intqhc/mzl002](#). [PubMed: [16537580](#)].
21. Sun BC, Brinkley M, Morrissey J, Rice P, Stair T. A patient education intervention does not improve satisfaction with emergency care. *Ann Emerg Med*. 2004;**44**(4):378-83. doi: [10.1016/S0196064404000939](#). [PubMed: [15459619](#)].
22. Tran TP, Schutte WP, Muelleman RL, Wadman MC. Provision of clinically based information improves patients' perceived length of stay and satisfaction with EP. *Am J Emerg Med*. 2002;**20**(6):506-9. [PubMed: [12369021](#)].
23. Corbett SW, White PD, Wittlake WA. Benefits of an informational videotape for emergency department patients. *Am J Emerg Med*. 2000;**18**(1):67-71. [PubMed: [10674537](#)].
24. Mowen JC, Licata JW, McPhail J. Waiting in the emergency room: how to improve patient satisfaction. *J Health Care Mark*. 1993;**13**(2):26-33. [PubMed: [10127062](#)].
25. Krishel S, Baraff LJ. Effect of emergency department information on patient satisfaction. *Ann Emerg Med*. 1993;**22**(3):568-72. [PubMed: [8442546](#)].
26. McCarthy ML, Ding R, Zeger SL, Agada NO, Bessman SC, Chiang W, et al. A randomized controlled trial of the effect of service delivery information on patient satisfaction in an emergency department fast track. *Acad Emerg Med*. 2011;**18**(7):674-85. doi: [10.1111/j.1553-2712.2011.01119.x](#). [PubMed: [21762230](#)].
27. Hsieh M. Evaluating the effect of a patient education brochure on patients' expectations and satisfaction with emergency department service. 2010
28. Lovato E, Minniti D, Giacometti M, Sacco R, Piolatto A, Barberis B, et al. Humanisation in the emergency department of an Italian hospital: new features and patient satisfaction. *Emerg Med J*. 2013;**30**(6):487-91. doi: [10.1136/emermed-2012-201341](#). [PubMed: [22761512](#)].
29. Stuart PJ, Parker S, Rogers M. Giving a voice to the community: a qualitative study of consumer expectations for the emergency department. *Emerg Med (Fremantle)*. 2003;**15**(4):369-75. [PubMed: [14631705](#)].
30. Cooke T, Watt D, Wertzler W, Quan H. Patient expectations of emergency department care: phase II-a cross-sectional survey.
31. Carter AJ, Chochinov AH. A systematic review of the impact of nurse practitioners on cost, quality of care, satisfaction and wait times in the emergency department. *CJEM*. 2007;**9**(4):286-95. [PubMed: [17626694](#)].
32. Yellen E. The Influence of Nurse-Sensitive Variables on Patient Satisfaction. *AORN Journal*. 2003;**78**(5):783-93. doi: [10.1016/S0001-2092\(06\)60638-8](#).