

# The impact of the coordinating nurse role on patient satisfaction in the emergency department: a semi-experimental study



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**Received:** 30 June 2020

**Accepted:** 29 August 2020

**Published online:** 8 September 2020

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**Competing interests:** None.

**Funding information:** None.

**Citation:** Samimi M, Safaie A, Sotoodehnia M, Rasooli F, Abdollahi A. The impact of the coordinating nurse role on patient satisfaction in the emergency department: a semi-experimental study. *Journal of Emergency Practice and Trauma* 2020; x(x): x-x. doi: 10.34172/jept.2020.xx.

## Abstract

**Objective:** This study was conducted to investigate the role of an emergency nurse coordinator (ENC) in improving patient satisfaction at the emergency department (ED) in Tehran, Iran.

**Methods:** This was an interventional study in the field of ED management. This study was undertaken in the ED of Sina hospital in Tehran, Iran, during March 2018 until April 2019. An ENC was assigned to the ED on even days and during the next week. Also, the presence of the ENC was switched to odd days and so on. Patient satisfaction was evaluated by a questionnaire. In order to analyze data, independent T-test was used to assess the mean difference in satisfaction scores. In addition, analysis of covariance (ANCOVA) test was utilized to assess the difference in satisfaction scores after considering age, sex and triage level as confounding variables.

**Results:** Finally, 315 and 291 patients were allocated to the intervention (patients with ENC) and control groups (patients without ENC), respectively. The total satisfaction rate in the intervention and control groups was 63.9% and 59.3%, respectively. The mean score of total satisfaction in the intervention group was significantly higher than the control group [115.1 (SD=20.0) vs 106.8 (SD=22.3);  $P < 0.001$ ]. The ANCOVA analysis showed that age, sex and triage level were not confounding factors affecting the satisfaction score.

**Conclusion:** This study showed that the presence of the ENC in the ED can increase patient satisfaction, especially in domains related to "diagnostic and therapeutic services", "cleanliness", "cost and discharge information", "ethical and privacy issues", "admission, discharge and management services".

**Keywords:** Advanced practice nursing, Emergency service, Hospital, Nursing, Team

## Introduction

With the introduction of modern management concepts into the medical world, emergency departments (ED) nowadays are more concerned with patient satisfaction. The special nature of the emergency department, including the nursing staff, physician issues, waiting time and etc. makes it more challenging (1-5). The results of some studies indicate poor communication with patients or rapport with nurses and other health care workers as well as inappropriate interpersonal relationships between nurses and patients in the hospital (6-8). This may be due to the lack of an appropriate framework for patient communication in hospitals (9-12).

The coordinating nurse is responsible for providing safe and high-quality care to all patients, as well as assisting medical teams to ensure safe, effective and efficient treatment to patients at all times (13-17). The nurse coordinator does a variety of tasks such as: 1) Performing

or coordinating clinical activities in accordance with patient care plans, 2) Admitting patients, verifying documents, and displacing patients' stuff, 3) Monitoring and evaluating the condition of patients and helping them to develop and adjust care plans, 4) Educating patients and families on methods, treatment options, and symptom management and 5) Monitoring patient scheduling, staff guidance, and adjustments when conditions change (18).

One of the duties of the medical staff is to explain the patient's condition to them and their companions. On the other hand, timely follow-up of examinations and imaging is one of the factors affecting patient satisfaction. According to ED crowding may not perform these tasks well (19). The presence of a coordinating nurse to assist physicians and other treatment staff in performing the above-mentioned tasks will be helpful.

Different researches have been done concerning the role of a coordinating nurse and various aspects have been



confirmed (18,20,21). Thus, in many prestigious hospitals around the world, the coordinating nurse is one of the main pillars of the hospital, especially in the emergency department. The role of a coordinating nurse has been taken into consideration recently as an important issue to obtain good outcomes for patients, their families, and the health system. These outcomes include proper access to required services, improved satisfaction with service delivery, and a decrease in the hospital length of stay and unplanned re-admission (22). It is highly important to mention that there is a paucity of research concerning the role of a coordinating nurse in the ED to increase patient satisfaction in Iran. Therefore, this is the first study to investigate the role of an emergency nurse coordinator (ENC) in improving patient satisfaction at an ED in Tehran, Iran.

### Methods

This was an interventional study in the field of ED management. The study population included patients referring to the ED of Sina hospital in Tehran, Iran, during a one-year period from March 2018 until April 2019. Sina hospital is an academic tertiary referral center affiliated to Tehran University of Medical Sciences (TUMS) with more than 100 patients' admission per day.

Inclusion criteria encompassed patients presenting to the ED with triage level 3, 4, or 5 [based on Emergency Severity Index (ESI)] that were admitted during morning and evening shift hours. Exclusion criteria were altered mental status, cognitive dysfunction and patients presenting to the ED or admitted during night shift hours. During the first week of the study, an ENC was assigned to the ED on even days and during the second week, the presence of an ENC was switched to odd days and so on. Patients admitted to the ED on even days in the first week were considered as intervention group, and those presenting on odd days in the first week were allocated to the control group; and vice versa in the second week and so forth. A meta-analysis conducted in 2015 in Iran showed a patient satisfaction rate of 69% (23). We assumed that ENC increased satisfaction up to 79%, so the required sample size was 315 patients in each group, with 0.05 type I error and with 80% power.

In the present study, ENC was a female nurse with a bachelor degree. She had the role of communicating between physicians and patients. The ENC had responsibilities related to explaining the problems and treatment plans to the patient, following-up the tests and medical instructions, and counseling. In other words, she was responsible for the tasks neglected by physicians and nurses due to ED congestion.

Patient satisfaction was evaluated by a questionnaire consisting of 36 questions anchored on a 5-point Likert rating scale ranging from 1 to 5. This questionnaire was a revised version of the valid and reliable PRESS GANEY questionnaire with an internal consistency of

0.889 obtained in our study. The higher scores indicate more satisfaction. This questionnaire had eight following domains:

1. Diagnostic and therapeutic services
2. Communication with non-medical staff
3. Cleanliness
4. Nursing services
5. Cost and discharge information
6. Ethical and privacy issues
7. Admission, discharge and management services
8. Other services

We presented descriptive statistics as frequency and mean with standard deviation (SD) for categorical and nominal variables, respectively. We used Chi-square or Fisher exact test to assess statistical differences of categorical variables such as sex and triage score level between study groups. We used independent t test to assess the mean difference of satisfaction score in study groups. Also, analysis of covariance (ANCOVA) test was utilized to assess the difference of satisfaction score in study groups after considering age, sex and triage level as confounding variables. The satisfaction score ranged from 0 to 100. The correlation between the score of satisfaction domain was assessed using Pearson correlation. P-value less than 0.05 was considered as statistically significant. The statistical analyses were performed using SPSS software, version 25 (SPSS Inc., Chicago, IL, USA).

### Results

Of 700 patients assessed for eligibility, finally 315 and 291 patients were allocated to the intervention (patients with ENC) and control groups (patients without ENC), respectively. Data analysis of 315 and 291 patients in the intervention and control groups is shown in Figure 1. Totally, 216 (68.6%) and 219 (73.3%) were men in the intervention and control groups, respectively. The distribution of sex and mean of age was not significantly different between the two groups ( $P > 0.05$ ). Also, most of the patients (90%) were triaged in three levels and there was not a significant difference between the two groups in this regard ( $P = 0.555$ ) (Table 1).

**Table 1:** The distribution of sex, age and triage level between the intervention and control group

	Intervention group (n=315)	Control group (n=291)	P value
Sex, No. (%)			0.068
Male	216 (68.6)	219 (73.3)	
Female	99 (31.4)	72 (24.7)	
Age, year; mean (SD)	40.2 (16.9)	38.4 (17.0)	0.199
Triage level score, No. (%)			0.555
Two	10 (4.5)	5 (2.6)	
Three	204 (92.3)	185 (94.4)	
Four	7 (3.2)	6 (3.1)	

Note: Intervention group: Patients with ENC; Control group: Patients without ENC

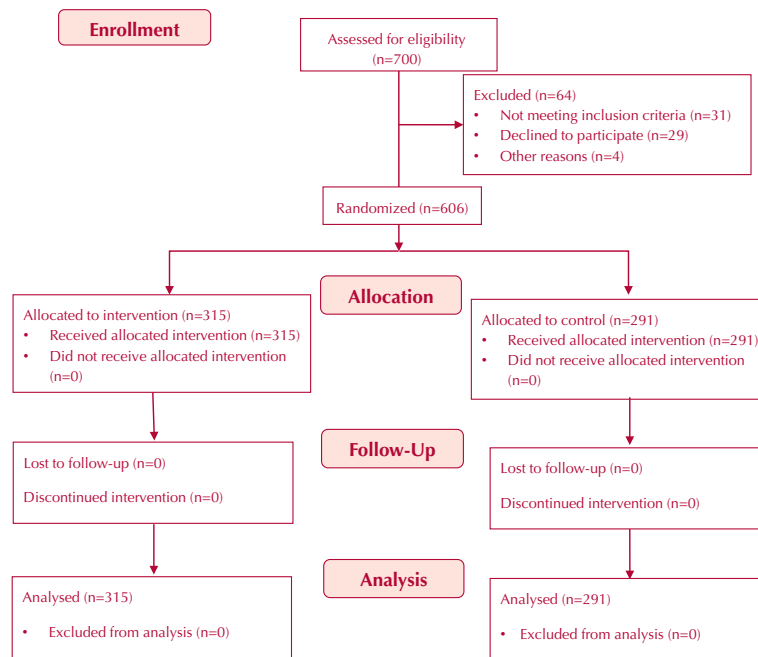


Figure 1. The flow diagram of study participants.

The mean score of total satisfaction in the intervention group was significantly higher than the control group [115.1 (SD = 20.0) vs 106.8 (SD = 22.3);  $P < 0.001$ ]. The mean score was higher for all satisfaction domains in the intervention group. The difference of mean score for all domains was statistically significant ( $P > 0.05$ ), except for “communication with non-medical staff” and “other services” domains. The ANCOVA analysis showed that age, sex and triage level were not confounding factors affecting the satisfaction score (Table 2).

The highest satisfaction, with almost 80%, belonged to “communication with non-medical staff” domain. Albeit, the performed intervention did not have a role in this regard. The highest effect of intervention was seen in domains including “cost and discharge information” (55.7% vs 62.9%), “cleanliness” (56.5% vs 62.9%) and “admission, discharge and management services” (56.6% vs 61.7%), with more than 6.0% difference between the two groups. The total satisfaction score was also higher in intervention group than the control group (59.3 vs 63.9) (Figure 2).

The correlation coefficient analysis of satisfaction score between the two study groups showed that the correlation between domain was lower than 0.6, and the intervention had considerable correlation with total satisfaction score. Therefore, intervention by affecting some domain can increase the patient’s total satisfaction score (Table 3).

**Discussion**

The findings of the current study indicated that the presence of an ENC in the ED can increase patient satisfaction, especially in domains related to “diagnostic and therapeutic services”, “cleanliness”, “cost and discharge

information”, “ethical and privacy issues”, and “admission, discharge and management services”. The total satisfaction in the intervention and control groups was 63.9% and 59.3%, respectively. Research studies conducted in Iran have reported different rates for patient satisfaction in the ED. This rate was 24% in Golestan and 98.4% in Ghazvin. Also, the satisfaction rate was from 41.8% to 82.4% in Tehran (23).

The difference of the total satisfaction score in the intervention and control groups was almost 5%. There is no other study in Iran in this regard, but other similar studies in the world have shown that the presence of a coordinating nurse can increase patient satisfaction (24-27). By the same token, research findings highlight that ENC can significantly decrease the admission time,

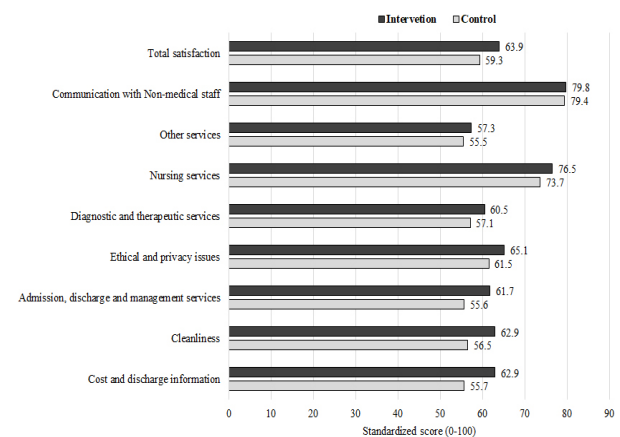


Figure 2. Satisfaction score in the intervention (patients with ENC) and control groups (patients without ENC) by domain and total score.

**Table 2.** The mean difference of satisfaction score between the intervention and control groups in unadjusted and adjusted model

	Intervention group (n=315)	Control group (n=291)	Cohen (P value)	Adjusted model; F (P value)	
				ENC	Another variable
Diagnostic and therapeutic services	18.2 (4.7)	17.1 (4.9)	0.23 (0.005)	6.7 (0.010)	Age: 1.5 (0.218) Sex: 1.9 (0.165) Triage: 0.54 (0.581)
Communication with non-medical staff	8.0 (1.7)	7.9 (1.6)	0.06 (0.736)	0.03 (0.860)	Age: 2.1 (0.146) Sex: 0.16 (0.688) Triage: 1.2 (0.289)
Cleanliness	15.7 (4.0)	14.1 (4.5)	0.38 (<0.001)	20.4 (<0.001)	Age: 1.9 (0.165) Sex: 1.2 (0.276) Triage: 0.96 (0.383)
Nursing services	11.5 (2.5)	11.1 (2.8)	(0.043)	1.8 (0.186)	Age: 1.8 (0.187) Sex: 0.08 (0.776) Triage: 1.6 (0.183)
Cost and discharge information	15.7 (4.5)	13.9 (4.6)	(<0.001)	15.8 (<0.001)	Age: 0.01 (0.915) Sex: 3.9 (0.048) Triage: 0.41 (0.664)
Ethical and privacy issues	16.3 (3.9)	15.4 (3.9)	(0.005)	9.9 (0.002)	Age: 1.6 (0.203) Sex: 4.1 (0.044) Triage: 4.6 (0.011)
Admission, discharge and management services	18.4 (4.6)	16.7 (5.2)	(<0.001)	18.3 (<0.001)	Age: 0.10 (0.756) Sex: 0.84 (0.361) Triage: 4.4 (0.001)
Other services	11.5 (3.6)	11.1 (3.4)	(0.205)	1.1 (0.296)	Age: 5.0 (0.026) Sex: 0.30 (0.582) Triage: 1.1 (0.336)
Total satisfaction	115.1 (20.0)	106.8 (22.0)	(<0.001)	20.9 (<0.001)	Age: 1.9 (0.165) Sex: 0.62 (0.433) Triage: 1.9 (0.165)

Note: Intervention group: Patients with ENC; Control group: Patients without ENC

**Table 3.** The correlation coefficient of satisfaction domain score between the two study groups

	Intervention group								
	1	2	3	4	5	6	7	8	9
10. Diagnostic and therapeutic services	1	0.249*	0.271*	0.266*	0.249*	0.526*	0.508*	0.431*	0.708*
2. Communication with non-medical staff	[0.067]	1	0.282*	0.395*	0.523*	0.282*	0.387*	0.200*	0.523*
3. Cleanliness	[0.402*]	[0.159*]	1	0.460*	0.268*	0.264*	0.399*	0.383*	0.632*
4. Nursing services	[0.302*]	[0.266*]	[0.403*]	1	0.255*	0.335*	0.442*	0.280*	0.627*
5. Cost and discharge information	[0.289*]	[0.478*]	[0.311*]	[0.312*]	1	0.249*	0.466*	0.302*	0.545*
6. Ethical and privacy issues	[0.466*]	[0.220*]	[0.378*]	[0.273*]	[0.327*]	1	0.491*	0.472*	0.722*
7. Admission, discharge and management services	[0.473*]	[0.321*]	[0.436*]	[0.382*]	[0.427*]	[0.473*]	1	0.466*	0.785*
8. Other services	[0.489*]	[0.245*]	[0.468*]	[0.312*]	[0.428*]	[0.572*]	[0.559*]	1	0.710*
9. Total satisfaction	[0.700*]	[0.386*]	[0.692*]	[0.551*]	[0.609*]	[0.727*]	[0.762*]	[0.816*]	1

Note: The upper correlation coefficient matrix is for the intervention group and the bottom presented in [] is for the control group.

\* Correlation is significant at the 0.01 level (2-tailed).

length of stay, and transfer time (24,25,28,29). The current study showed that age, sex and triage level did not have a significant effect on patients' satisfaction.

In the present study, after the "cost and discharge information" domain, the greatest impact concerning the presence of an ENC was seen in "cleanliness" and "admission, discharge and management services" domains. In this regard, similar studies have shown that the presence of a coordinating nurse can improve the patient's treatment process by enhancing coordination between diagnosis and treatment, as well as enhancing treatment

management and inter-departmental collaboration in hospitals (22). The ENC can facilitate care by presenting preadmission information, arranging required medical consultations, para-clinical investigations, organizing follow-up, and so many other issues (24,30).

**Limitations**

One of the limitations of this study is the selection bias as the patients were admitted in the morning and evening shift hours. Furthermore, our study only showed the impact of an ENC on the improvement of patients'

satisfaction in the ED. Further studies should emphasize on the effect of other factors such as interventions in emergency care services in areas such as medical care, nursing care, courtesy of staff, physical comfort, waiting time, developing the interpersonal and attitudinal skills of medical staff. Studying the effect of various factors on the satisfaction of patients can help policy makers design new protocols and implement new policies in order to improve patient management that will ultimately lead to higher patient satisfaction.

### Conclusion

This study was designed to show the impact of an ENC on the level of patients' satisfaction presenting to the ED at Sina Hospital in Tehran, Iran. According to the analysis of our data, patients who were accompanied by an ENC were statistically more satisfied than the other group. This difference in satisfaction was clearly seen in all domains including the registration process, physical comfort, medical staff care and nursing care, except for non-medical care and other facilities (including transport facilities, quality of food and bed and the ability to rest).

It seems that an ENC can increase the satisfaction and meet the needs and expectations of a patient presenting to the ED by adopting appropriate communication skills with the patient, family members and hospital personnel. Also, the ENC has interactive communication with physicians and other caregiving centers such as radiology and pharmacy, thereby, reducing the time in providing the best care possible. An ENC can also help in contacting social services to meet patient's needs. As the present study is the first investigation in Iran on the impact of the ENC role on patients' satisfaction in the ED, we recommend conducting more studies on a larger population.

### Authors' contributions

The conception and design of the work by AA, AS and MeS; Data acquisition by MoS; Analysis and interpretation of data by AA and FR; Drafting the work by MoS, FR and AS; Revising it critically for important intellectual content by AA and MeS; All the authors approved the final version to be published; AND agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work.

### Ethical issues

The study protocol was approved by the ethics committee of TUMS (code: IR.TUMS.MEDICINE.REC.1397.883).

### Acknowledgements

We would like to express our obligations to Prehospital and Hospital Emergency Research Center affiliated to Tehran University of Medical Sciences.

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