

# Effective Factors on Patients' Satisfaction with Emergency Care Services using Factor Analysis: A Cross Sectional Study

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## ABSTRACT

**Introduction:** Due to certain physical and psychological conditions of patients in emergency wards, pay attention to the effective factors on Patients' satisfaction is an essential issue in modern medicine. The aim of the present study was to investigate the effective factors on Patients' satisfaction with emergency medical services.

**Materials and Methods:** A cross-sectional survey was carried out from November to December 2010. The study sample consisted of 100 patients hospitalized in the emergency wards of Imam and Mustafa Hospitals in Ilam- Iran. Subjects were selected through simple random sampling method. Data gathered using questioner. The questioner validity was obtained using the content validity. Reliability of questionnaire was checked using Cronbach  $\alpha$  coefficient. To find the most important factors affecting patient satisfaction, factorial analysis technique was used.

**Result:** Exploratory factor analysis showed that the Patients' satisfaction is composed of six factors, including: satisfaction of physicians, nursing staff, the presence of students, the method of reception and discharge, deciding to cure and knowing the position of the therapist. Base on the results of the factorial analysis, the most important aspect of satisfaction was the satisfaction of physicians. The results revealed significant relationships between the occurrence time and the satisfaction of physician ( $r = 0.23$ ,  $p=0.027$ ), the number of visits and the satisfaction of physician ( $r =0.27$ ,  $p=0.01$ ), the time of visits and the satisfaction of physician ( $p= 0.016$ ), also between occurrence time and the number of visit ( $r = 0.36$ ,  $p=0.001$ ).

**Conclusion:** Physicians and nurses actions and decision making are the major affecting factors satisfaction in emergency patients. Thus improving the quality of these factors will improve the quality of emergency services for patients.

**Keywords:** Factor analysis, Patients' satisfaction, Quality of emergency care

## INTRODUCTION

Nowadays, effective factors on health have been widely investigated [1-3]. Attention to the issue of patients' satisfaction with the medical care has been proposed as the best evaluators of health care systems. Getting feedback from patients about the quality of primary health care is a powerful way through which to develop more patient-centered approaches to health care delivery [4].

Previous studies reported several factors as beneficial factors on Patients' satisfaction [5]. Extreme waiting time is one of the most awful and dissatisfaction and several studies have been documenting the negative association between increased waiting time and Patients' satisfaction [6,7]. Yousuf et al., explained patients' experiences and appraisal of care as effective factors, therefore, any medical and personal errors increased the patient dissatisfaction even if has not caused any harm [8]. Ware at al., argued that interpersonal manner, technical quality, accessibility, cost, efficacy, continuity, the physical environment, and availability of resources are the components of satisfaction [9]. A study conducted in Iran reported that the main factors of Patients' satisfaction are including: the length of hospitalization, wards, and members of the medical team such as physicians and nurses and patients' education level [10]. Anoosheh et al., mention unfamiliarity of nurses with dialects, having contagious diseases, sex differences between nurses and patients were the main communication barriers [11]. It has been shown that age and health status are significant parts of the Patients' satisfaction [12]. However, in another study, no relationship was found between age, education and the Patients' satisfaction [13].

There is a lack of studies about Patients' satisfaction among patients admitted in hospitals in Ilam. The aim of the present study was determine factors affecting Patients' satisfaction in two hospitals in Ilam, Iran.

## MATERIALS AND METHODS

This research was a cross-sectional study that was done on 100 bedridden patients hospitalized in the emergency wards of Imam Khomeini and Mustafa hospitals (two educational hospitals) in Ilam- Iran, from Novembers to December 2010. The patients were selected by the simple random sampling method. Sample size was determined by  $p=.5$ ,  $d=0.097$  and confidence interval 95%. Data was collected by a trained research nurse. Patients were approached in person and provided with a brief description and aim of the study. The informed consent was obtained before they were asked to answer the questionnaire.

### Measures

Data gathered using questioner that its validity was obtained using the content validity. The questionnaire included questions on various aspects of inpatient care that play important role in Patients' satisfaction as follows:

- 1) Socio- demographic component: (age, gender, marital status and education).
- 2) Admission information: patients asked about the process of the admission, and waiting time in the reception area for admission.
- 3) The relationship between patient and treatment providers.
- 4) Accessibility and availability of services, such as: access to specialist, easy to get care in an emergency, and availability of drugs.

Stable patients were included and communication-disabling diseases, the need for emergency transfer or intervention, failure to provide informed satisfaction, communication failure and death in the Emergency Department (ED) were excluded.

Variable	Time*		
	> 0.5	0.5-2	< 2
The occurrence to admission (%)	60	20	20
The admission to first physician visit (%)	50	13	27

[Table/Fig-1]: The Importance time of patents emergency services

Questions	Component					
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Satisfaction with receiving full information on the medicine – adverse effects	.88	.03	-.14	.01	.05	-.12
Satisfaction with physician attention	.87	.26	.11	-.14	.03	-.12
Satisfaction with providers' behavior	.83	-.04	.07	-.35	-.16	.28
Orientations with patients about patient's rights	.82	.07	.01	-.02	-.07	-.1
Satisfaction with patients' education toward expected therapeutic response	.81	.11	.33	-.07	.13	.08
Satisfaction with influence on the treatment plan	.77	-.32	.16	.42	.01	.14
Satisfaction with providers' appearance	.74	-.18	-.12	.23	-.35	.1
Satisfaction with patients' privacy	.73	-.16	-.07	-.24	-.29	-.16
Satisfaction with receiving necessary information about treatment alternatives	.72	.23	-.05	.39	.07	-.1
Satisfaction with orientations about costs	.72	.17	.01	.01	-.03	-.35
Satisfaction with healthcare by nurse	.68	-.41	.25	-.3	.14	.25
Satisfaction with receiving full information on the prognosis, management, and danger signs	.67	.3	.08	.16	-.05	.07
Satisfaction with voluntarily exodus	.11	.71	.05	-.02	.5	-.22
Satisfaction with examination by student	.31	-.7	.02	.3	.31	-.02
Satisfaction with access to physician all time	.46	.47	-.37	.17	.000	-.15
Satisfaction about emergency care	-.35	.51	-.00	.55	-.14	.05
Satisfaction with the method of reception and discharge	.18	.05	-.37	-.54	.52	-.14
Satisfaction with receiving permission of providers	-.06	-.45	.25	.32	.63	-.19
Satisfaction about the recognition of the position of title provider	.19	.36	-.51	-.03	.29	.57
Possibility of patients and relatives participating in session	-.01	.45	.54	.06	.19	.56

[Table/Fig-2]: Rotated Component Matrix of patient satisfaction

## STATISTICAL ANALYSIS

Mean  $\pm$  Standard and frequency percent were used to present descriptive statistics. Reliability of the questionnaire was checked using Cronbach Alpha coefficient and was estimated to be about 78%.

To find the most important dimensions of patient satisfaction, exploratory factor analysis were used. Extraction method in factor analysis was principal component analysis. The summation of satisfaction scores of the questions that made a factor was computed. For example, factor 1 consisted of the questions that their factors loadings are bigger than 0.66. Total Patients' satisfaction was defined as summation questions factors 1 to 6. To compute loading of factors Varimax Rotation was used. Normality assumption was checked using Kolmogorov–Smirnov test. Spearman and Pearson

correlation coefficient was used to estimate the association between factor components and continuous variables.

## Ethics

The Ethics Committee of Ilam University of Medical Sciences approved the study design. Written informed consent was obtained from the participants after comprehensive explanation of the procedure involved.

## RESULTS

Mean age of participants was  $37.9 \pm 19.4$  y and a range of 5–83 y. The Important time of emergency services is provided in [Table/Fig-1].

Explanatory factor analysis showed that the satisfaction of patients is made of six factors, including: satisfaction of physicians, nursing staff, the presence of students, the method of reception and discharge, deciding to cure and knowing the position of the therapist [Table/Fig-2].

[Table/Fig-2] showed the factor loadings using Varimax rotation; in factor 1 these loadings are higher for questions;

- 1- Satisfaction about receiving full information on the adverse effects of medicines.
- 2- Satisfaction with the physicians' attention.
- 3- Satisfaction with the providers' behavior.
- 4- The patients' orientation toward their rights.
- 5- Satisfaction with the education of therapeutic responses.
- 6- Satisfaction with influence on the treatment plan.
- 7- Satisfaction with the appearance of the providers, were bigger than factor loadings for other questions. These loadings are smaller in factor 1 for other questions.

The factor loadings for question "satisfaction of voluntarily exodus" are big compared to other questions. This factor was labeled satisfaction of nurses.

Other factors were also named according to factors loadings of the questions. Questions that had correlations with each other made one factor.

The most important factors on the Patients' satisfaction are provided in the [Table/Fig-2]. These six factors explained 78% of the total variance of the patient satisfaction.

There is a significant relationship between the occurrence time and the satisfaction of physician ( $r = 0.23$ ,  $p=0.027$ ) and the number of visits and the satisfaction of physicians ( $r = 0.27$ ,  $p=0.01$ ). The associations between factors of satisfaction using the Pearson correlation coefficient are presented in [Table/Fig-3].

There was not any association between total Patients' satisfaction with age ( $r = -0.02$ ,  $p=0.83$ ). Spearman correlation showed that there are significant correlations between total Patients' satisfaction with their education ( $r=0.27$ ,  $p=0.009$ ).

## DISCUSSION

In the last decade, rapid changes in the health care delivery system and the social climate have resulted in considerable emphasis on the Patients' satisfaction about the health care system [8]. Therefore, to provide curative and the health services, especially nurses and physicians must be informed of the contents of patient rights charters.

In the factor analysis when there are a lot of variables, we reduce the dimension of data so we make several linear combinations of variables and then consider these linear combinations of variables instead of the original variables. In the factor analysis, the first factor has the biggest variance among these linear combinations and the second factor has the second biggest variance among all linear combinations and so on [14]. In this research, six factors explain

		Satisfaction with physician	Satisfaction with nurse	Satisfaction with students presence	Satisfaction with the method of reception and discharge	Satisfaction with deciding to cure	Satisfaction with knowing the position of therapist
Satisfaction with physician	r	1	.57**	.12	.21*	.02	.24*
	P		.000	.216	.038	.868	.018
Satisfaction with nurse	r		1	.01	.17	.13	.15
	P			.908	.095	.204	.143
Satisfaction with students presence	r			1	.001	-.05	-.07
	P				.962	.616	.519
Satisfaction with the method of reception and discharge	r				1	-.01	.23*
	P					.931	.022
Satisfaction with deciding to cure	r					1	-.02
	P						.835
Satisfaction with knowing the position of therapist	r						1
	P						

**[Table/Fig-3]:** Correlation between patient satisfaction components. \*\*, Correlation is significant at the 0.01 level (2-tailed), \*, Correlation is significant at the 0.05 level (2-tailed).

78% of the variation of Patients' satisfaction that is a latent variable so we can conclude the first factor is more important in explaining the Patients' satisfaction. In our study, the satisfaction of patients was shown to be made of six factors including satisfaction with physician, nursing staff, the presence of students, the method of reception and discharge, deciding to cure and knowing the position of the therapist. A study reported Patients' satisfaction is consisting of five factors, including: (i) doctor competency; (ii) provision of information; (iii) quality of care; (iv) waiting time; and (v) hospital [15].

Based our results, satisfaction of physician was the most important aspect of satisfaction.

There was correlation between satisfaction of physician and satisfaction of nurses. A study showed the significant relationships between interpersonal skills, technical quality of medical staff, especially nurses and physicians and general satisfaction patient [16]. A study of Japanese found that the interpersonal skills and technical quality of health care providers are two unique dimensions involved in patient assessment [17].

In our study, the number of visits had a strong association with the satisfaction of physician. Higher number of visits has directly associated with greater patient satisfaction. In a study, patient perception of the time spent with their physician was strongly associated with overall satisfaction [18]. Anderson et al., found that time spent with the physician is the most powerful determinant of overall patient satisfaction. However, the combination of long wait times and short visit times produced the lowest level of Patients' satisfaction observed in the study, and suggests that both measures are important [19].

In our study satisfaction of the method of reception and discharge was a main factor in patient satisfaction. In a study, triage satisfaction reported as a significant factor on overall satisfaction [20]. Other study reported that admission to discharge services is a critical factor of Patients' satisfaction [19].

In the present study, satisfaction of deciding on cure was a factor of patient satisfaction. Patients' satisfaction is influenced by the level of care expectation [21]. Accessibility of patient requests and expectations will enhance his satisfaction [22]. Recently, much attention has been directed to studying the varying orientations of physicians to their patients, in particular the differences between a patient-oriented style versus a disease and doctor-oriented style of interaction [23]. Another researcher has focused on patients' orientations toward their providers noting in particular that some patients prefer a more participatory style of interaction. Kaplan and colleagues showed that physicians who scored the highest in encouraging patients to participate in their care retained the greatest number of patients. Conversely, among patients of physicians who

were rated in the lowest quartile of participation, one third of the patients changed physicians the next year [24]. Conversely, as patient evaluation of a service may be mainly free of actual care received, therefore, some previous studies have announced that the association between satisfaction and patient expectations is not essential [25].

In this research we find the most important factors affecting Patients' satisfaction and then the correlation of the factors with some of the variables was estimated. To improve patients' satisfaction, we should pay attention to behavior of physician, nurse, student with patients. Physicians should know their behavior with patients have the most important role in patients' satisfaction. In our study, there was a significant correlation between the number of visits and the satisfaction with physician, so to improve patient satisfaction; we should increase the number of visits to physicians.

## CONCLUSION

Physicians and nurses actions and decision making are the major affecting factors satisfaction in emergency patients. Thus improving the quality of these factors will improve the quality of emergency services for patients.

## ETHICAL CONSIDERATION

This study has been approved by Ethical Committee of Ilam University of Medical Sciences

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