Original Article

Determining Factors of Patient Satisfaction for Frequent Users of Emergency Services in a Medical Center

Jin-An Huang[1,2]
Chi-Shiun Lai[2]
Wen-Chen Tsai[3]
Rhay-Hung Weng[4,5]
Wei-Hsiung Hu[1]
Dar-Yu Yang[1]

[1] *Department of Emergency Medicine, Taichung Veterans General Hospital, Taichung;*
[2] *Graduate Institute of Business Administration, National Yunlin University of Science & Technology;*
[3] *Institute of Health Services Management, China Medical University;*
[4] *Graduate Institute of Business Administration, National Chung Cheng University;*
[5] *Department of Hospital and Health Care Administration, Chia Nan University of Pharmacy and Science, Tainan, Taiwan, R.O.C.*

Background. The present era of a competitive healthcare environment indicates that providers have been convinced that attentiveness to patient satisfaction is integral to care quality and market share. Patient satisfaction is especially critical for frequent users of the emergency department (ED). The aim of this study was to compare satisfaction of overall ED care between frequent and infrequent ED users, and to find out the factors determining satisfaction among the frequent ED users.

Methods. Frequent ED users (≥ 4 visits/per year) and infrequent ED users (< 4 visits/per year) were selected randomly from patients visiting the adult ED of a public tertiary medical center from October 1, 2000 to September 30, 2001. Retrospective telephone interviews were completed for 200 frequent users and 200 infrequent users. Ordinal logistic regression analysis was performed.

Results. Infrequent ED users tended to give a higher satisfaction rating than frequent ED users to emergency care (OR = 2.14; 95% CI = 1.40-3.25). The 2 significant determinants associated with satisfaction with emergency care among frequent ED users were discharge instructions (OR = 2.78; 95% CI = 1.27-6.12) and subjective waiting time (OR = 12.6; 95% CI = 4.22-37.8).

Conclusions. The frequent ED users were unique, and their satisfaction with overall emergency care was significantly lower than that of infrequent ED users. Managing waiting time perceptions and providing discharge instructions may be an effective strategy to achieve improved patient satisfaction among frequent ED users.

With the implementation of the National Health Insurance in 1995, Taiwan's healthcare industry has become a more cost-containing environment. The cost-containing pressure got heavier as the government applied the global budget pay system to all levels of providers as of July 1, 2002. The growth rate of health expenditures was limited and a healthcare market of intense competition was brought about. A competitive healthcare market is usually quality-oriented, and improving the quality of care service is a continuing challenge to healthcare providers.[1]

Patient satisfaction is an important measure of healthcare quality because it offers information on the provider's success at meeting the expectations of most relevance to the client.[2] Patient satisfaction is correlated with important outcomes, such as superior compliance, decreased utilization of medical services, less malpractice litigation, and better prognosis.[3-5] With the present era of rising medical consumerism, evaluation of patient satisfaction has become increasingly important for healthcare providers.[6]

Emergency departments (EDs) are both the gate-

ways to, and marketing mechanisms for, hospitals.[7] For many patients, the ED visit is their first to a particular hospital. Furthermore, one-quarter to one-half of all inpatients are admitted through the ED.[8] Patient satisfaction is therefore a critical issue for EDs. Unfortunately, ED satisfaction is complicated by the high volume of patients, time-consuming queues, wide variations in patient complaints, and complexities of acute care.[4,6]

It has been reported that a certain segment of the population makes frequent use of EDs, thereby accounting for a considerable portion of total ED visits.[9-11] Repeated visits are often treated as nonurgent and inappropriate for ED care, which may adversely affect patient satisfaction.[11-13] This phenomenon has raised the question of whether patients return to the ED because their wishes and needs are being met or because their wishes and needs are not being met.[12]

Although many satisfaction surveys for ED have been published,[6,7,14-18] none has been devoted to comprehensive factors that may affect level of satisfaction among frequent ED users. The objective of the present study was to compare the satisfaction of overall ED care of frequent ED users with that of infrequent users, and to identify the factors associated with satisfaction among the frequent ED users. If some factors are alterable by healthcare providers and policy-makers, programs can be intervened to target patients at risk of worse experiences and to improve the quality of their care.

METHODS

Subjects and measures

The study population consisted of patients visiting the ED of Taichung Veterans General Hospital (TCVGH) from October 1, 2000, to September 30, 2001. TCVGH is a public teaching tertiary hospital in central Taiwan located in a suburban area of Taichung City. It has 1197 inpatient beds and has a census of approximately 55,000 ED visits per year. Patients who visited the adult (15 years and older) ED were eligible for the study. Frequent ED users were defined as those patients making 4 or more visits per year.[9,12] There were 1,096 frequent users

and 29,890 infrequent users during the study year.

The dependent variable, overall patient satisfaction with emergency care, was designated as an ordinal variable, and rated in a 5-Likert scale (1 = very poor, 2 = poor, 3 = fair, 4 = good, and 5 = very good). Because few patients gave very poor and very good ratings during the preliminary survey, the 5-level ordinal scale was finally collapsed into a 3-level ordinal scale (1 = poor, 2 = fair, and 3 = good). Patient predisposing characteristics, enabling resources, and need factors were included as explanatory variables.

Predisposing factors included sex, age, marital status (married, single and others), education (less than high school, high school and college or higher), employment status (working/not working), and living alone. Enabling resources comprised average monthly household income, financial barrier, distance from hospital (< 30 min/ ≥ 30 min), and a regular source of care. Needs factors were obtained for subjective health status (poor, average and good), high outpatient clinic use (> 24 visits per year), chronic disease (as designated by the Bureau of National Health Insurance in Taiwan), reason for ED use (doctor's suggestion, ED is faster, problem was serious, and others), average triage status (emergent as average triage level 1 or 2; not emergent as average triage level 3 or 4), length of ED stay (< 48 hours and ≥ 48 hours), provision of discharge instructions, and subjective waiting time (dissatisfied, fair, and satisfied).

Data concerning sex, age, chronic disease, triage status, and length of ED stay were compiled from the hospital information system database. By using a structured questionnaire, telephone interviews were held by using a computer-assisted telephone interview (CATI) system. With the aid of the CATI system, patients were randomly selected and interviewed by specialized investigators. The frequent ED users were interviewed until 200 questionnaires were completed. The completion rate was 28.5%. Among the infrequent ED users, 200 questionnaires were completed as a comparison group. The completion rate was 22.8%. Among the frequent ED users, 83.5% of the interviews were answered personally, while 86% of the interviews were answered personally in the infrequent group. The survey was conducted between 9 AM and 8 PM, from January 18 to

February 5, 2002.

Data analysis

Data were recorded on Excel files, and entered and processed by using the Statistical Package for the Social Sciences (SPSS) for Windows (Chinese version, 10.1, SSPS Inc., Chicago, IL, USA). Descriptive information for all included variables was presented by frequency analysis, and chi-squared test was used to determine the differences between frequent ED users and infrequent ED users with regard to each variable. Ordinal logistic regression models using the proportional adds assumption were constructed.[19] The rating of overall care (overall patient satisfaction with emergency care) was treated as an ordinal dependent variable. Patient predisposing characteristics, enabling resources, and need factors were used as independent variables. All independent variables were treated as nominal variables.

Some authors suggest that any variable whose univariate or bivariate analysis is significant statistically is a candidate for the multivariable model.[1,6] This, however, ignores the possibility that a collection of variables, each of which is weakly associated with the outcome, can become an important predictor of outcome when taken together.[19] Thus we included all relevant variables in the model, as some epidemiological methodologists suggested, regardless of their statistical significance.

Two ordinal logistic regression models were built. After controlling for sex, age, marital status, education, and employment status, 1 model was constructed to compare the satisfaction of overall emergency care between frequent and infrequent ED users. Using all available independent variables, another model was built to identify the factors determining satisfaction among the frequent ED users.

SPSS's PLUM procedure does not report the odds ratio (OR) estimates. However, by taking the exponent of the coefficient, ORs were derived for easy interpretation and expressed as OR with 95% confidence intervals (CI). A predictor was considered statistically significant if its p value was < 0.05. The likelihood ratio test for the overall model was performed. The interpretation of the proportional OR and the conclusions drawn from it were based on the proportional odds assumption that the ORs were identical across the cut-points.[20] The validity of this assumption was checked by a test of parallel lines using SPSS's PLUM procedure.

RESULTS

Table 1 demonstrates the patients' characteristics and the differences between the frequent and infrequent ED users. Patients with potential for frequent ED use were those who were male, elderly, single, had lower levels of education, and were not working. Lower average monthly household income, poorer subjective health status, higher outpatient clinic use, presence of a chronic disease, and lack of emergent triage status were also associated with frequent ED use.

The ordinal logistic regression model for rating of overall care among frequent and infrequent ED users is presented in Table 2. After controlling for sex, age, marital status, education, and employment status, infrequent ED users tended to give a higher satisfaction rating than frequent ED users to emergency care (OR = 2.14; 95% CI = 1.40-3.25; $p < 0.001$). The likelihood ratio test indicated a good model fit $(\chi^2 = 20.223; p = 0.017)$. The proportion odds assumption was also validated by a test of parallel lines ($\chi^2 = 9.420; p = 0.399$).

The ordinal logistic regression model for rating of overall care among frequent ED users is included in Table 3. A good model fit was shown by the likelihood ratio test ($\chi^2 = 72.154; p < 0.001$). The Cox and Snell Pseudo $R^2 = 0.303$, and the Nagelkerke Pseudo $R^2 = 0.381$. The explanatory variables were independent of each other (Pearson Chi-Square test, $\chi^2 = 351.375; p = 0.737$). In addition, the test of parallel lines indicated that the proportion odds assumption was met.

The model for rating of overall care among frequent ED users also demonstrated that there were only 2 significant variables associated with satisfaction of overall emergency care. If discharge instructions were given while a patient was leaving the ED, a higher rating of overall care was likely (OR = 2.78; 95% CI = 1.27-6.12; $p = 0.011$). Similarly, if a patient was satisfied with the waiting time while in the ED, this patient would was likely to rate overall care higher (OR = 12.6; 95% CI =

Table1. Patient characteristics

Variable	Infrequent users (n = 200) n (%)	Frequent users (n = 200) n (%)	Total (n = 400) n (%)	p value*
Sex				0.054
Female	93 (46.5)	74 (37.0)	167 (41.8)	
Male	107 (53.5)	126 (63.0)	233 (58.3)	
Age (yr)				< 0.001
15–39	69 (34.5)	28 (14.0)	97 (24.3)	
40–64	67 (33.5)	79 (39.5)	146 (36.5)	
>64	64 (32.0)	93 (46.5)	157 (39.3)	
Marital status				0.041
Married	39 (19.5)	21 (10.5)	60 (15.0)	
Single	139 (69.5)	156 (78.0)	295 (73.8)	
Others	22 (11.0)	23 (11.5)	45 (11.3)	
Education				0.005
Less than high school	74 (37.0)	103 (51.5)	177 (44.3)	
High school completed	70 (35.0)	63 (31.5)	133 (33.3)	
College or higher	56 (28.0)	34 (17.0)	90 (22.5)	
Employment status				0.020
Working	95 (47.5)	72 (36.0)	167 (41.8)	
Not working	105 (52.5)	128 (64.0)	233 (58.3)	
Live alone				0.001
No	163 (81.5)	164 (82.0)	327 (81.8)	
Yes	37 (18.5)	36 (18.0)	73 (18.2)	
Monthly household income				0.008
<30,000	91 (45.5)	128 (64.0)	219 (54.8)	
30,000–59,999	60 (30.0)	43 (21.5)	103 (25.8)	
60,000–89,999	28 (14.0)	12 (6.0)	40 (10.0)	
≥90,000	21 (10.5)	17 (8.5)	38 (9.5)	
Financial barrier				0.109
No	166 (83.0)	144 (72.0)	310 (77.5)	
Yes	34 (17.0)	56 (28.0)	90 (22.5)	
Distance from hospital				< 0.001
<30 min	85 (42.5)	101 (50.5)	186 (46.5)	
≥30 min	115 (57.5)	99 (49.5)	214 (53.5)	
Regular source of care				< 0.001
No	71 (35.5)	28 (14.0)	99 (24.8)	
Yes	129 (64.5)	172 (86.0)	301 (75.2)	

Variable	Infrequent users (n = 200) n (%)	Frequent users (n = 200) n (%)	Total (n = 400) n (%)	p value*
Subjective health status				< 0.001
Poor	61 (30.5)	96 (48.0)	157 (39.3)	
Average	81 (40.5)	73 (36.5)	154 (38.5)	
Good	58 (29.0)	31 (15.5)	89 (22.3)	
High outpatient clinic use				< 0.001
No	155 (77.5)	79 (39.5)	234 (58.5)	
Yes	45 (22.5)	121 (60.5)	166 (41.5)	
Chronic disease				< 0.001
None	94 (47.0)	31 (15.5)	125 (33.1)	
Yes	106 (53.0)	169 (84.5)	275 (68.8)	
Reasons for ED				0.006
Doctor's suggestions	18 (9.0)	11 (5.5)	29 (7.3)	
ED is faster	10 (5.0)	8 (4.0)	18 (4.5)	
Problem was serious	149 (74.5)	174 (87.0)	323 (80.8)	
Others	23 (11.5)	7 (3.5)	30 (7.5)	
Triage status				< 0.001
Acute	126 (63.0)	58 (29.0)	184 (46.0)	
Nonacute	74 (37.0)	142 (71.0)	216 (54.0)	
Length of ED stay				0.294
< 48 h	178 (89.0)	171 (85.5)	349 (87.3)	
≥ 48 h	22 (11.0)	29 (14.5)	51 (12.8)	
Discharge instruction				0.596
Yes	136 (68.0)	131 (65.5)	267 (66.8)	
No	64 (32.0)	69 (34.5)	133 (33.3)	
Subjective waiting time				0.150
Dissatisfied	36 (18.0)	35 (17.5)	71 (17.8)	
Fair	65 (32.5)	83 (41.5)	148 (37.0)	
Satisfied	99 (49.5)	82 (41.0)	181 (45.2)	
Rating of overall care				0.002
Dissatisfied	7 (3.5)	5 (2.5)	12 (3.0)	
Fair	70 (35.0)	105 (52.5)	175 (43.8)	
Satisfied	123 (61.5)	90 (45.0)	213 (53.3)	

Monthly household income measured as NTS; ED = emergency department. * Pearson's chi-squared test.

Table 2. Ordinal logistic regression model for rating of overall care among ED users

Variable	OR	95% CI	*p* value
Frequent ED use			
No	2.14	1.40-3.25	< 0.001
Yes	1		
Sex			
Female	0.85	0.53-1.36	0.498
Male	1		
Age (yr)			
15-39	0.74	0.36-1.48	0.392
40-64	0.77	0.47-1.26	0.294
> 64	1		
Marital status			
Married	1		
Single	0.85	0.43-1.66	0.631
Others	0.86	0.34-2.19	0.753
Education			
Less than high school	1.59	0.87-2.88	0.130
High school completed	0.93	0.54-1.61	0.808
College or higher	1		
Employment status			
Working	0.86	0.54-1.35	0.503
Not working	1		

Likelihood ratio test for model: $\chi^2 = 20.223$; $p = 0.017$
Test of parallel lines: $\chi^2 = 9.420$; $p = 0.399$

OR = odds ratio; CI = confidence interval.

4.22-37.8; $p < 0.001$).

DISCUSSION

We identified that satisfaction with overall emergency care was significantly lower among the frequent ED users than among the infrequent ED users. This research differs from prior satisfaction studies in that the comparison of satisfaction was made after controlling for demographic characteristics such as sex, age, marital status, education, and employment status between the frequent and infrequent ED users. To our knowledge, we are also the first to study the determinants of satisfaction with overall emergency care among frequent ED users including comprehensive factors. The 2 significant factors associated with a higher satisfaction were discharge instructions and satisfaction with waiting time.

Our findings suggest that frequent ED users have a number of features in common, which are different from those of infrequent ED users. Frequent ED users are apt to be male, elderly, single, and of lower socioeconomic class. Moreover, they generally have a chronic medical condition and think of their health status as relatively poor. Most frequent ED users have a regular source of care and use more outpatient services. However, their complaints are often judged as not emergent for ED care by the ED staff, causing dissatisfaction with subjective waiting times.

It has been suggested that patients with nonurgent complaints tend to be less satisfied with ED care than patients with urgent complaints.[6,17] This may be due to the perception by nonacute patients that they are receiving a lower level of attention from the ED staff compared with acute patients. Consequently, lower satisfaction with overall emergency care among frequent ED users was attributed to a lower triage level.[17] However, the present study suggests that the triage acuity level is not a significant determinant of overall satisfaction. In fact, the critical factor for satisfaction is subjective waiting time.

More than 87% of the frequent ED users in this study believed they indeed had serious medical problems and came to the ED because they thought they needed immediate medical attention. This is also the most obvious reason that any patient would come the ED rather than accessing other available sources of medical care. Because of such expectations, it is not surprising that satisfaction with waiting time was the most important variable contributing to patient satisfaction with emergent care among the general ED population in a previous study,[18] and particularly among frequent ED users in the present study.

Patients know little about ED principles, such as triage priorities, treatment protocols, and staff assignments. What they care about most is immediate attention. Unfortunately, patients spend much of their time in the ED 'doing nothing'. As has been shown in several studies,[6,7,18,21] the actual waiting time in the ED is not a significant predictor of overall patient satisfaction. By contrast, the perception of waiting time or the appropriateness of waiting time seems to be more important for satisfaction. Waiting time will be perceived as appropriate if there is explanation by the ED staff

Table 3. Ordinal logistic regression model for rating of overcall care by frequent ED users

Variable	OR	95% CI	p value	Variable	OR	95% CI	p value
Sex				**Subjective health status**			
Female	0.55	0.24-1.26	0.156	Poor	2.21	0.76-6.42	0.145
Male	1			Average	1.57	0.53-4.63	0.417
Age (yr)				Good	1		
15-39	2.30	0.59-9.04	0.232	**High outpatient clinic use**			
40-64	0.98	0.43-2.22	0.958	No	1.40	0.66-2.99	0.386
> 64	1			Yes	1		
Marital status				**Chronic disease**			
Married	1			None	1.37	0.47-3.96	0.561
Single	0.99	0.29-3.44	0.992	Yes	1		
Others	2.87	0.53-15.4	0.219	**Reasons for ED**			
Education				Doctor's suggestions	1		
Less than high school	1.66	0.59-4.66	0.340	ED is faster	1.19	0.11-12.7	0.883
High school completed	0.83	0.29-2.33	0.719	Problem was serious	1.58	0.32-7.86	0.576
College or higher	1			Others	16.3	0.92-284	0.057
Employment status				**Triage status**			
Working	0.89	0.39-2.05	0.790	Emergent	1.08	0.51-2.31	0.836
Not working	1			Not emergent	1		
Live alone				**Length of ED stay**			
No	0.97	0.39-2.40	0.945	< 48 h	1.68	0.31-2.43	0.788
Yes	1			≥ 48 h	1		
Monthly household income				**Discharge instruction**			
< 30,000	0.85	0.23-3.23	0.813	Yes	2.78	1.27-6.12	0.011
30,000-59,999	0.91	0.22-3.80	0.894	No	1		
60,000-89,999	0.83	0.13-5.28	0.839	**Subjective waiting time**			
≥ 90,000	1			Dissatisfied	1		
Financial barrier				Fair	1.73	0.63-4.79	0.288
No	1.53	0.68-3.47	0.307	Satisfied	12.6	4.22-37.8	< 0.001
Yes	1						
Distance from hospital				Likelihood ratio test for model: $\chi^2 = 72.154$; $p < 0.001$			
< 30 min	1.62	0.79-3.32	0.189	Pearson's chi-square test: $\chi^2 = 351.375$; $p = 0.737$			
≥ 30 min	1			Cox and Snell $R^2 = 0.303$; Nagelkerke $R^2 = 0.381$			
Regular source of care				Test of parallel lines: $\chi^2 = 37.024$; $p = 0.095$			
No	2.33	0.81-6.74	0.118				
Yes	1						

Monthly household income measured as NT$; ED = emergency department; OR = odds ratio; 95% CI = 95% confidence interval.

about what the wait is for, as well as the expected length of the wait.[7] The strong association between subjective waiting time and achieving a higher level of satisfaction of overall emergency care has important implications for the ED. Effective management of patients' waiting time perceptions should improve overall satisfaction.

Receiving discharge instructions from ED personnel is another determinant of patient satisfaction among frequent ED users. Lack of information or inadequate information distresses patients and make them uncer-

tain about their post-emergency department management, so effective communication between the ED staff and patient is required. As was demonstrated by Taylor and Cameron,[22] emergency department discharge instructions have been shown to improve communication and patient management. As a result, discharged patients who have their follow-up care instructions clearly explained are more satisfied.[21] On the contrary, 'Not told when to return to ED' is a significant negative determinant to satisfaction.[6] This is consistent with the previously cited studies showing that provision of dis-

charge instructions is integral to achieving patient satisfaction.

The present study has 3 potential weaknesses. First, the study population only consisted of patients at 1 hospital, which would have missed patients who use multiple EDs. Second, there was the possibility of sampling error. For example, interviews could not be held with patients who had died or who had no phone. Third, it was inevitable that there was recall bias because of a long lag between ED use and conducting the telephone interview.

Patient satisfaction is a valid and important issue for an ED. It has been proposed that patient satisfaction not only results in better outcomes,[3-5] but also allows an ED to maintain and augment market share in a competitive health care environment.[6,23] This study demonstrated that frequent ED users were unique, and their satisfaction with overall emergency care was significantly different with that of infrequent ED users. Patients's perceptions regarding waiting time and their perceptions about discharge instructions were significantly associated with satisfaction with overall emergency care among the frequent ED users. These findings suggest that managing waiting time perceptions and providing discharge instructions may be an effective strategy to achieve a higher level of patient satisfaction among frequent ED users.

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