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ORIGINAL ARTICLE

Factors influencing satisfaction with emergency department medical service: Patients' and their companions' perspectives

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Abstract

Aims: To examine the individual determinants that influence satisfaction with medical services at the emergency department and to compare the factors that influence satisfaction for the patients, compared with their companions.

Methods: Using data from the 2009 Korea **H**ealth **P**anel **S**urvey, **A**ndersen's behavioral model was used to examine the factors that affect satisfaction with service. A logistic regression analysis was conducted with the data.

Results: Patients who were older, female, and employed were more satisfied with the service, as were patients who visited more frequently and those who had non-surgical treatment. Companions who had less education, were accompanying non-**M**edicaid-holders, and spent a longer time in the emergency department were less likely to be satisfied. This was in contrast to those who spent a shorter amount of time in the emergency department and who visited due to illness, rather than injury; these companions were more satisfied with the service. When all the factors were analyzed simultaneously, they differed significantly between the two groups of patients and companions.

Conclusions: Different factors contributed to the satisfaction with the services for the patients and their companions. In order to increase the satisfaction levels and improve the quality of care in emergency departments, it is necessary to consider more specific approaches that reflect the different perspectives of the visitors to the emergency department.

Key words: companions, emergency department, patients, satisfaction.

INTRODUCTION

As income levels increase, the expectations of consumers for medical services also have increased. Using the Internet and smart phones, people can easily compare and evaluate the quality of services and make selections independently. Given this trend, the administrators of medical institutions consider consumer satisfaction as one of the most important barometers for the improvement of service quality. Consumer satisfaction in the medical sciences has received increasing interest for several decades. When customers are satisfied with medical services, they revisit or continue to use the service (Yoo & Suh, 2009) or they recommend the service to others (Seol, Yu, Park, & Kim, 1997). This indicates that customer satisfaction is one of the most significant factors regarding service loyalty (Gremler, 1995; Han, Son, Gu, & Lee, 2007; Lee, Kim, Chang, & Han, 2008; Lee, Lee, & Jung, 2005; Yom & Lee, 2010).

The emergency department (ED) is the first entry point into medical services for individuals who need unexpected health services (Ekwall, Gerdtz, & Manias, 2008). The satisfaction that the patient experiences with the medical service in the ED could play an important role in their evaluation of the quality of care and might influence the regular use of the service in the future. Based on patient feedback, the hospital administrators might be able to improve the medical services (Seo *et*

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al., 1998); in turn, at the national level, it can be used as a basis for the improvement of policies related to the emergency medicine system (Lee, Kim, Kim, & Park, 2011). As ED use is, by nature, acute and urgent, a patient generally visits the ED with companions, such as family and friends. As significant social and emotional support providers, companions indirectly undergo the procedure while the patient directly receives the medical service. As a potential consumer of medical services in the future, the satisfaction of the companions also could be important for the institution.

Factors that influence patient satisfaction with the emergency department

Patient demographic characteristics are frequently investigated as determinants of satisfaction with medical services at the ED. In some studies, older patients have shown higher satisfaction (Boudreaux & O'Hea, 2004; Crow *et al.*, 2002; Krishel & Baraff, 1993; Morgan, Salzman, LeFevere, Thomas, & Isenberger, 2015; Sun *et al.*, 2000; Tucker, 2002), while age has not contributed to satisfaction with ED use in other studies (Boudreaux, Ary, Mandry, & McCabe, 2000; Dinh, Enright, Walker, Parameswaran, & Chu, 2013; Ekwall, Gerdtz, & Manias, 2009). Married patients (Tucker; Zia, Mohsen, Riji, Abbas, & Mostafa, 2011), those with less education, poorer health, and more frequent service use (Tucker), as well as patients with lower income (Krishel & Baraff), have been associated with lower satisfaction with ED use. In contrast, the patient's sex (Boudreaux, d'Autremont, Wood, & Jones, 2004; Boudreaux *et al.*; Crow *et al.*; Ekwall *et al.*), presence of a chronic illness, types of treatment received (Boudreaux & O'Hea), socioeconomic status (Crow *et al.*), and insurance status or method of arrival (Boudreaux *et al.*) have not been associated with satisfaction.

The amount of waiting time has been found to influence patient satisfaction with the ED. The waiting time in the treatment area before being seen by medical doctors has been shown to be a significant predictor of satisfaction (Boudreaux *et al.*, 2000; Dinh *et al.*, 2013; Maitra & Chikhani, 1991; Morgan, Shackley, Pickin, & Brazier, 2000; Morgan *et al.*, 2015). The factors that influence the waiting time include age and mode of arrival. Older patients and those who were transferred by ambulance have shorter waiting times (Goodacre & Webster, 2005). Notably, the perceived waiting time has been reported as more important for satisfaction with the ED, as opposed to the actual waiting time (Boudreaux & O'Hea, 2004; Boudreaux *et al.*; Bursch, Beezy, & Shaw, 1993; Hedges, Trout, & Magnusson, 2002; Mowen, Licata, & McPhail, 1992; Sun *et al.*, 2000; Thompson & Yarnold, 1995).

Patients in comparison with their companions regarding satisfaction

Higher patient satisfaction might influence positive health outcomes. For instance, greater patient satisfaction has been associated with improved health outcomes, such as higher compliance with therapy (Welch, 2010). Given that the visitors to the ED are potential consumers in the future (Ekwall *et al.*, 2008), the experiences that the patients and their companions encounter in the ED can influence the perception about the quality of the healthcare service that the hospital provides. When the customers are satisfied in the ED, they might use the service continuously as a result of enhanced loyalty (Gremler, 1995; Han *et al.*, 2007; Lee *et al.*, 2005; 2008; Yom & Lee, 2010). The factors that are known to influence patient satisfaction might not be the same for the companion, which indicates possible discrepancies in satisfaction between the two kinds of visitors. For example, demographic characteristics, such as age and sex, have not contributed to predicting the satisfaction level of companions (Ekwall *et al.*). Rather, a higher level of urgency was related to greater satisfaction in the companions of the patient, as compared to those with less urgent problems (Ekwall *et al.*).

Similar to the factors influencing ED satisfaction in patients, the waiting time is also a significant factor that predicts satisfaction with services from the perspective of companions (Ekwall *et al.*, 2009). Other than the waiting time, family members and friends are less satisfied with the overall inpatient stay, physician care, and nursing care, compared with patients, after controlling for demographic characteristics (Strasser, Schweikhart, Welch, & Burge, 1995). There is agreement between patients and companions on several factors that influence satisfaction. For instance, in pediatric patients, age is not related to their own satisfaction and the factors that influence satisfaction with the ED are not different between the pediatric patients and their parents (Magaret, Clark, Warden, Magnusson, & Hedges, 2003); this indicates that for both pediatric patients and their companions, higher satisfaction is related to the interaction with the physician and the information that is provided.

Theoretical framework

Andersen's behavioral model was developed to investigate the use of health services and the factors that influence access to health care (Andersen, 1968). In the initial behavioral model, three domains that affect the use of health services were defined. Predisposing characteristics include demographics, social structure, and health beliefs. Enabling resources consist of personal and family resources and community resources. As the most immediate cause of health service use, need includes the perceived needs that are related to experiences of symptoms, pain, and worries about health, as well as the evaluated needs that are judged and diagnosed by healthcare professionals (Andersen). For the final model that was revised in 1995, customer satisfaction was included in the outcome (Andersen, 1995). The model has been used in many studies that investigated variations in the use of health services (Datti & Conyers, 2010; McCusker, Karp, Cardin, Durand, & Morin, 2003; McCusker *et al.*, 2001; Wan, 1987; Wolinsky, 1994; Wolinsky & Coe, 1984). Figure 1 depicts the application of this model to the current study.

Study purpose

Most studies include small numbers of participants and focus on satisfaction from the patient's perspective only. Very few studies have used a theoretical model to predict satisfaction with ED use. Based on Andersen's behavioral model, this study aims to examine the individual determinants that influence satisfaction with medical services in the ED and to compare the factors that influence satisfaction between patients and their companions by using a large national dataset in Korea. The hypotheses of this study were: for the patients and companions of the patient, the predisposing characteristics, enabling resources, and need factors predict satisfaction with the ED visit; and the predictors of ED satisfaction differ between the patients and companions.

METHODS

Design, setting, and samples

Using a national data file, the Korea Health Panel Survey, a cross-sectional study design was used. As a nationwide survey, the Korea Health Panel Survey was

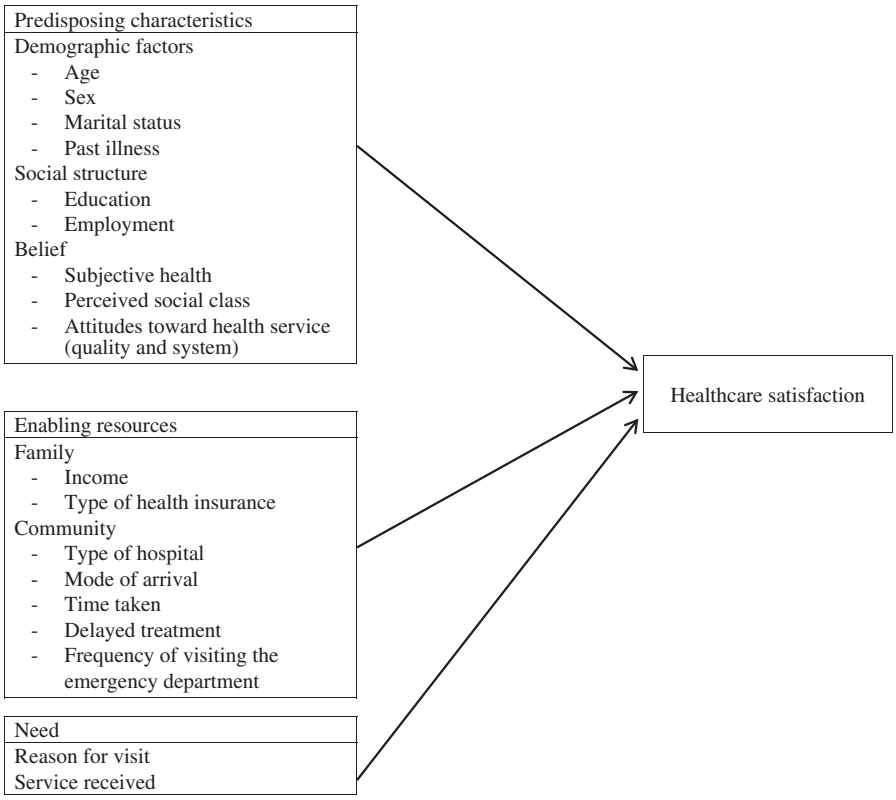

Figure 1 Conceptual framework based on Andersen's model (Andersen, 1995) for the individual determinants of health service use.

conducted from 2007 to 2009 and provides information about families and individuals, including their demographic and socioeconomic characteristics, health behaviors, and health service use patterns and health expenditures (Korea Institute for Health and Social Affairs, 2014). A total of 7009 households and 21,283 individuals responded to the survey in 2008. Among those who answered in 2008, 6314 households and 19,153 individuals replied to the survey in 2009, which indicates an ~70.3% response rate (Korea Institute for Health and Social Affairs). For the current study, the 2009 data were used. Individuals were asked to indicate if they had used the medical services in an ED within the past 6 months. A total of 1805 cases was included in the analysis.

Ethical considerations

As this study is a national study, the data file is publicly available. Any personal information, such as mail addresses or phone numbers, was already de-identified prior to the data analysis. For the current study, institutional review board approval was obtained.

Measures

Satisfaction with the use of medical services in the ED was measured on a four-point Likert scale, from 1 ("very unsatisfied") to 4 ("very satisfied"). For the analysis, the four levels of the satisfaction variable were recoded into two levels: 1 and 2 were recoded as 0 ("unsatisfied") and 3 and 4 were recoded as 1 ("satisfied"). The categorical variables with more than three levels also were recoded as variables with two levels: marital status (married = 1; single, separated, divorced, or widowed = 0); educational level (high school or less than high school = 1; greater than college = 0); subjective health (very good, good, or moderate = 1; bad or very bad = 0); attitudes toward the quality of the medical service (very good or good = 1; relatively poor or not good at all = 0); attitudes toward the medical system (generally well-operated and has strengths = 1; needs extensive reform and has many problems = 0); national health insurance (non-Medicaid = 1; Medicaid = 0); type of hospital (specialized tertiary hospital or general hospital = 1 [tertiary hospital]; secondary hospital or other = 0); mode of arrival (personal vehicle = 1; other = 0); and reason for visit (illness = 1; other = 0).

Data analysis

For patients and companions, separate logistic regression analyses were conducted by using IBM SPSS Statistics v. 21 for Windows (IBM Corporation, Armonk, NY, USA) and P-values of ≤0.05 were considered to be statistically significant. The first logistic regression was undertaken to examine the significant factors in each domain of Andersen's model. The second analysis included all the factors simultaneously in the regression model to determine the relative contributions to satisfaction with ED use.

RESULTS

Demographic characteristics

Data from 923 patients and 882 companions were included in the analysis. Approximately 75% of the patients and companions were satisfied with their ED use. The perceived social class was relatively low both in the patients and the companions: 3.37, compared with 4.05, in the patients and companions, respectively. Independent t-tests for the continuous variables and χ^2-tests for the categorical variables were used in order to examine the difference or association between the patients and companions (see Table 1). The companions were slightly more dissatisfied with the service, but this did not differ between the patients and the companions ($\chi^2(1) = 1.437$, $P = 0.231$). The mean age was significantly higher in the patients, compared to the companions (t (1488.28) = 24.18, $P < 0.001$). The patients were frequently female, while the companions were more likely to be male ($\chi^2(1) = 96.27$, $P < 0.001$). The mean frequencies of visiting the ED were higher in the patients, compared to the companions (t (942.88) = 7.748, $P < 0.001$), indicating that patients might visit the ED without an accompanying companion.

Predictors of satisfaction with emergency department medical services for patients and companions

Table 2 shows the result of the separate analyses to examine the predictors that influence satisfaction with the medical services in the ED. For patients, the model included those predisposing factors that significantly predicted satisfaction ($P = 0.048$, $R^2 = 0.022$). Those who were older ($P = 0.026$, odds ratio [OR] = 1.015) were 1.5% more likely to be satisfied than those who were younger and female patients ($P = 0.042$, OR =

Table 1 Respondents' characteristics (n = 1805)

Variable	Patients (n = 923)		Companions (n = 882)		t/χ^2 P
	Frequency (%)	Mean (±SD)	Frequency (%)	Mean (±SD)	
Satisfaction					0.231
Satisfied	722 (78.2)		669 (75.9)		
Unsatisfied	201 (21.8)		213 (24.1)		
Age		59.30 (18.09)		32.16 (28.26)	0.000
Sex					0.000
Male	374 (40.5)		561 (63.6)		
Female	549 (59.5)		321 (36.4)		
Chronic disease					0.000
Yes	772 (83.6)		477 (54.1)		
No	151 (16.4)		405 (45.9)		
Marital status					0.000
Married	652 (70.6)		321 (36.4)		
Not married	271 (29.4)		561 (63.6)		
Employed					0.823
Yes	401 (43.6)		222 (43.0)		
No	518 (56.4)		294 (57.0)		
Education level					0.203
Less than or equal to high school	175 (19.0)		147 (16.7)		
College and graduate	748 (81.0)		735 (83.3)		
Subjective health status					0.018
Good	580 (62.8)		204 (72.6)		
Bad	313 (35.1)		77 (27.4)		
Perceived social class (1 = lowest, 10 = highest)		3.37 (1.64)		4.05 (1.55)	0.000
Attitudes toward quality of medical service					0.693
Excellent	648 (73.6)		197 (72.4)		
Not good	232 (26.4)		75 (27.6)		
Attitudes toward medical system					0.374
Generally operated well	526 (64.0)		151 (60.9)		
Has many problems	296 (36.0)		97 (39.1)		
Income per household per year (Won)		3039.09 (2426.64)		4292.39 (2880.15)	0.000
National health insurance					0.000
Medicaid	157 (17.2)		80 (9.1)		
Non-Medicaid	755 (82.8)		801 (90.9)		
Type of hospital					0.002
Specialized or tertiary hospital	585 (63.4)		620 (70.3)		
Secondary hospital (≥30 beds) or other	338 (36.6)		262 (29.7)		
Mode of arrival					0.000
Rescue center (119) or ambulance	228 (24.7)		140 (15.9)		
Personal transportation	695 (75.3)		741 (84.1)		
Time taken (min)		19.18 (22.57)		18.71 (21.97)	0.373
Delayed treatment					0.306
Yes	22 (2.4)		28 (3.2)		
No	901 (97.6)		854 (69.8)		
Type of service received					0.562
Surgery or test	104 (11.3)		107 (12.2)		
Non-surgical treatment	818 (88.7)		773 (87.8)		
Frequency of visiting the ED		4.90 (12.37)		1.73 (1.29)	0.000

Table 1 Continued

Variable	Patients (n = 923) Frequency (%)	Patients (n = 923) Mean (±SD)	Companions (n = 882) Frequency (%)	Companions (n = 882) Mean (±SD)	t/χ^2 P
Reason for visit					0.609
Injury or intoxication	240 (26.0)		262 (29.9)		
Illness	682 (74.0)		615 (70.1)		

ED, emergency department; SD, standard deviation.

Table 2 Separate logistic regression analyses of the three domains of the Andersen model for the variables predicting satisfaction with services in the emergency department (ED) (n = 1805)

Variable	Patients B	Patients SE B	Patients Exp (B)	Companions B	Companions SE B	Companions Exp (B)
Predisposing factors						
Age	0.015	0.007	1.015*	0.001	0.011	1.001
Female	0.382	0.188	1.466*	0.606	0.421	1.832
Married	0.015	0.198	1.015	0.928	0.477	2.529
Having a chronic disease	–0.004	0.275	0.996	–0.098	0.368	0.907
Less than or equal to high school	0.309	0.254	1.363	0.715	0.362	2.044*
Employed	0.426	0.189	1.531*	0.148	0.407	1.160
Subjective health	0.078	0.196	1.081	–0.464	0.417	0.629
Perceived social class	–0.032	0.061	0.969	–0.037	0.113	0.964
Attitude toward health service quality	0.172	0.219	1.187	0.326	0.363	1.386
Attitude toward health service system	0.279	0.204	1.322	–0.252	0.342	0.777
	R^2 = 0.022, P = 0.048			R^2 = 0.041, P = 0.420		
Enabling factors						
Income	0.000	0.000	1.000	0.000	0.000	1.000
Non-Medicaid	–0.107	0.270	0.898	–0.744	0.339	0.475*
Tertiary hospital	–0.146	0.180	0.864	0.111	0.177	1.117
Personal vehicle	0.335	0.189	1.398	0.345	0.212	1.413
Time taken	–0.002	0.003	0.998	–0.009	0.003	0.991**
Delayed treatment	0.532	0.468	1.702	0.384	0.435	1.468
Frequency of visiting the ED	0.078	0.034	1.081*	–0.109	0.062	0.897
	R^2 = 0.037, P < 0.001			R^2 = 0.027, P = 0.001		
Need factors						
Visit due to an illness	0.328	0.178	1.389	–0.264	0.181	0.768
Non-surgical treatment	0.470	0.233	1.600*	0.055	0.249	1.056
	R^2 = 0.009, P = 0.014			R^2 = 0.002, P = 0.335		

*P < 0.05 and **P < 0.01.

1.466) were 46.6% more likely to be satisfied, compared to men. The patients who were employed were 53.1% more likely to be satisfied with the service, compared to the unemployed patients.

Although the model did not predict satisfaction for the companions (P = 0.420, R^2 = 0.041), education was related to satisfaction. Those companions who had completed high school or lower were 1.044-fold more likely to be satisfied than those who had completed more than a graduate level of education (P = 0.048, OR = 2.044). Marital status tended toward significance as a predictor of satisfaction (P= 0.052, OR = 2.529). The models for enabling factors were significant for the patient and companion (P < 0.001 and R^2 = 0.037, P = 0.001 and R^2 = 0.027, respectively). The patients who visited the ED more frequently were 8.1% more satisfied with the service (P = 0.020, OR = 1.081). The type of health insurance and amount of time taken at the ED were significant predictors of satisfaction in the companions. The individuals who were not Medicaid-holders were 52.5% less likely to be satisfied with the ED service (P = 0.028, OR = 0.475), as were the 0.9%

of individuals who had spent a long time there ($P = 0.006$, OR = 0.991). Regarding the need factor, the model for the patients was significant ($P = 0.014$, $R^2 = 0.009$), while it was not significant for the companions ($P = 0.335$, $R^2 = 0.002$). The type of service that the patients received at the ED was a predictor of satisfaction for the patients only; the patients who did not receive surgical treatment were 60% more likely to be satisfied with the service ($P = 0.044$, OR = 1.600).

Table 3 presents the contributions of the factors according to the three domains of Andersen's model for the patients and companions who used the ED medical services. The model for the patients significantly predicted satisfaction ($P < 0.001$, $R^2 = 0.064$). The patients who were female ($P = 0.018$, OR = 1.581), employed ($P = 0.002$, OR = 1.844), and who visited the ED more frequently ($P = 0.013$, OR = 1.105) were more satisfied with the service. The model for the companions was not significant ($P = 0.174$, $R^2 = 0.121$), but the amount of time taken and the reason for the visit contributed to the satisfaction of the companions. Those individuals who spent a longer time in the ED ($P = 0.032$, OR = 0.987) were less likely to be satisfied. The companions who visited the ED due to patient illness were 1.532-fold more likely to be satisfied, compared to those who received services due to injuries ($P = 0.015$, OR = 2.532).

DISCUSSION

Based on Andersen's behavioral model, the current study investigated the individual determinants that influence satisfaction with the ED medical service by using a large national data file in Korea. According to each of the model's three domains, separate logistic regression analyses indicated that, of the predisposing factors, being older, female, and employed contributed to greater patient satisfaction with the service, while the companions with a lower education level were more satisfied. Regarding the enabling factors, the patients who visited the ED more frequently and those who had non-surgical treatment were more satisfied with the service. For the companions, Medicaid and the amount of time that was taken in the ED were significant predictors of ED satisfaction: the companions who accompanied Medicaid-holders and who had a shorter time in the ED were more likely to be satisfied. Regarding the need factor, the patients who received non-surgical treatment were more satisfied with the service, whereas the need factor did not contribute to the satisfaction of the companions. When all the factors were entered simultaneously into the analysis, several significant factors differentiated the two groups of patients and companions. The patients who were female, employed, and who visited the ED more frequently were more satisfied

Table 3 Logistic regression (all factors)

	Patients			Companions		
Variable	*B*	SE *B*	Exp (*B*)	*B*	SE *B*	Exp (*B*)
Age	0.006	0.008	1.006	–0.002	0.012	0.998
Female	0.458	0.194	1.581*	0.247	0.475	1.280
Married	–0.172	0.211	0.842	0.977	0.525	2.657
Having a chronic disease	0.105	0.278	1.110	0.074	0.399	1.077
Less than or equal to high school	0.310	0.256	1.364	0.617	0.379	1.853
Employed	0.612	0.200	1.844**	–0.138	0.470	0.871
Subjective health	–0.202	0.212	0.817	–0.433	0.498	0.649
Perceived social class	0.051	0.072	1.052	0.142	0.146	1.152
Attitude toward health service quality	0.218	0.227	1.244	0.563	0.395	1.756
Attitude toward health service system	0.162	0.208	1.176	–0.642	0.386	0.526
Income	0.000	0.000	1.000	0.000	0.000	1.000
Non-Medicaid	0.151	0.320	1.163	–1.379	0.935	0.252
Tertiary hospital	–0.105	0.196	0.900	0.183	0.357	1.201
Personal vehicle	0.220	0.214	1.246	0.554	0.420	1.740
Time taken	0.002	0.005	1.003	–0.013	0.006	0.987*
Delayed treatment	0.362	0.586	1.436	–0.445	1.183	0.641
Frequency of visiting the ED	0.100	0.040	1.105*	–0.202	0.126	0.817
Visit due to an illness	0.244	0.203	1.277	0.929	0.383	2.532*
Non-surgical treatment	0.281	0.267	1.324	–0.356	0.484	0.700

*$P < 0.05$ and **$P < 0.01$. ED, emergency department; SE, standard error.

with the service; the companions who spent a shorter amount of time in the ED and visited the ED due to patient illness, rather than injury, were more satisfied with the service.

Predisposing factors were defined as individual characteristics that were present prior to the onset of the illness and people with these characteristics were more likely to use the health services (Andersen & Newman, 2005). In the current study, three predisposing factors—age, sex, and economic activity—contributed to the satisfaction of the patients according to separate and combined logistic regression analyses (Tables 2–3). Andersen and Newman noted that these factors alone are not considered to be reasons for healthcare use but they are thought to interact with other factors, such as different types and amount of illness. The finding of this study was consistent with this claim: age was significant in the separate analysis, but it was no longer significant when all the variables in the three domains were combined into the model. This implies that predisposing factors interact with the components in other domains, rather than independently playing a part in healthcare use.

The female patients were consistently more satisfied in both the separate and combined analyses. This finding contradicts the findings of other studies that have been conducted in the ED (Boudreaux *et al.,* 2000, 2004; Crow *et al.,* 2002; Ekwall *et al.,* 2009) but is consistent with other research in different settings. For example, the female patients were more satisfied with the care in an outpatient clinic (DiMatteo & Hays, 1980). One reason could be a certain tendency for women to express satisfaction with medical care more readily than men (DiMatteo & Hays; Hulka, Kupper, Daly, Cassel, & Schoen, 1975; Ware, Davies-Avery, & Stewart, 1977). The female patients who are satisfied with the service might respond to a questionnaire more readily, while the male patients might not respond when satisfied. Additionally, the employed patients were more satisfied with the services. Interestingly, income was not associated with satisfaction. Little is known about the relationship between employment and the satisfaction level. It is speculated that, regardless of their income level, patients who are employed might be more tolerant toward services, but the mechanism remains unclear as to why patients with greater economic activity are more satisfied with the services. Further study is needed to explain the link between the two factors.

The satisfaction level was higher in the patients who were frequent visitors to the ED, which is inconsistent with the findings of another study (Tucker, 2002). One of the reasons for this discordance could be related to different participant characteristics and study purposes. In Tucker's study, the survey was conducted in order to determine overall patient satisfaction with health care in military facilities and was not targeted to general civilians and satisfaction with the ED. Frequent visitors might be more familiar with the ED environment and have a better understanding of emergency systems, such as triage, which might contribute to their increased satisfaction level. In other words, patients who rarely visit the ED are less satisfied with the service because they might lack knowledge of the system. Those patients might not understand why they need to wait longer for treatment, compared to those who are behind them. As a result of the unfamiliar circumstances of the ED, new patients also might be more anxious until they receive treatment. More attention needs to be paid to new visitors to the ED. Nurses can provide information about the ED system while patients are waiting, which might alleviate anxiety about the ED visit, resulting in an increased satisfaction level.

The waiting time has been reported as an important factor in the satisfaction of patients with the ED (Boudreaux *et al.,* 2000; Dinh *et al.,* 2013; Maitra & Chikhani, 1991; Morgan *et al.,* 2000), but the amount of time did not contribute to satisfaction for the patients in the current study. In contrast, the amount of time taken for treatment was consistently significant among the companions in both the separate and the combined analyses. This finding is consistent with another study (Magaret *et al.,* 2002) that showed that higher satisfaction in companions (parents) was related to a shorter waiting time, whereas patient satisfaction was associated with pain resolution. There could be a discordance between the actual time and the perceived time. The actual waiting time is the amount of time that visitors physically wait for the treatment, which reflects an objective measurement. In contrast, the perceived waiting time involves a more subjective perspective. Many studies have shown the perceived waiting time as more significant for satisfaction with the ED than the actual waiting time (Boudreaux & O'Hea, 2004; Boudreaux *et al.*; Bursch *et al.,* 1993; Hedges *et al.,* 2002; Mowen *et al.,* 1992; Sun *et al.,* 2000; Thompson & Yarnold, 1995).

Active communication with healthcare providers regarding the medical service process might help visitors to perceive their waiting time as shorter. For example, communication and relationships with healthcare providers were the most significant predictors of satisfaction with services in the ED across settings (Crow *et al.,* 2002) and patients who had successful communication with the doctors about the reasons for admission and

who were given test results regarding their admission were more satisfied with healthcare service in the ED (Downey & Zun, 2010; Johnson, Castillo, Harley, & Guss, 2012; Locke, Stefano, Koster, Taylor, & Greenspan, 2011). The attitudes of healthcare providers toward the patient also might play a role in influencing satisfaction. Healthcare providers' (nurses and doctors) attitudes and perceived waiting times are associated with patient satisfaction with the ED (Hall & Press, 1996). Thompson, Yarnold, Williams, and Adams (1995) found that the top five factors that influenced patient satisfaction were the perceived waiting time (rather than the actual waiting time), caring nurses, ED staff organization, caring doctors, and the information that was given. Therefore, it is important to keep ED visitors informed, as it might help them to feel cared for and satisfied.

Limitations of the study

The current study has a number of weaknesses. First, the cross-sectional design limits the inference of a causal relationship between satisfaction and the factors in the three domains. It could be difficult to conclude that the factors that were significant in the present study caused the satisfaction with ED use. Second, the simple Likert scale that was used to measure the satisfaction level might not reflect the multifaceted and complicated concept of satisfaction. Given that the responses were self-reported, the findings might not be generalizable to other individuals who were not included in this study and a recall bias could occur because the respondents were asked to describe their satisfaction level with the ED medical services that had been received in the past 6 months. Additionally, in the data there was a lack of information available about the ED structure and processes that might influence the satisfaction of the patients and companions.

The nurse plays a significant role in influencing the satisfaction of both patients and companions. Particularly in the ED, where it might look like a battlefield to strangers, visitors might feel more stressed and anxious while they wait for treatment and the results of examinations. In this study, the male patients and less frequent visitors showed a lower level of satisfaction. As the ED system is based on triage, little attention might be paid to the visitors with the problems that are considered as less urgent for health professionals. Or, the nurse might not have enough time to take care of the individual characteristics of the visitors. It is one of the important roles of the nurse to evaluate the system and optimizations to enhance patient flow in order to address the significant factors (i.e. sex and frequency of ED visits) that are associated with satisfaction with the ED service. For instance, the nurse could provide more detailed explanations to the male patients, those who are visiting the ED for the first time, and the companions who have been waiting for a long time in the ED, which could lead to running the ED flow more effectively. Therefore, the nurse needs to communicate more actively with the visitors, including the companions, with the characteristics that are related to lower satisfaction with the ED service and to inform them about the procedures in the ED.

CONCLUSIONS

The current study investigated the determinants that influence satisfaction with services in the ED. Different factors contributed to satisfaction with the services for the patients and their companions. In order to increase satisfaction levels and improve quality of care in the ED, it is necessary to consider more specific approaches that reflect the different perspectives of visitors to the ED. As medical systems have rapidly changed, the expectations and satisfaction of the customers also might have changed. Longitudinal studies could provide valuable information on this trend in order to determine the changes over time.

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CONFLICT OF INTEREST

The authors have no conflict of interest.

AUTHOR CONTRIBUTIONS

All the authors contributed significantly and all the authors were in agreement with the content of the manuscript.

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