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A mixed-methods investigation of health consumers' perception and experience of participation in patient safety activities

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Abstract

Objectives

This study aimed to examine the factors influencing patient safety behaviors and to describe health customers' experiences of patient participation in the healthcare system.

Design

A mixed-methods sequential explanatory design was employed using a survey and focus group interviews with health consumers.

Setting

The study was conducted in South Korea using the online survey tool.

Participants

Survey data were collected from 493 adults, aged 19 years or older, who had visited hospitals within the most recent one year. Focus group interviews were conducted in 2 groups of 6 participants each among those of the survey participants who agreed to participate in interviews.

Main outcome measures

The survey measured the extent of willingness to participate, recognition of the importance of participation, and experience of engaging in patient safety activities using a 4-point Likert scale.

Results

The findings demonstrated a relatively strong perception of the importance of participation (Mean±SD;3.27±0.51) and low level of experience of participation (Mean±SD;2.13±0.63). Significant variables which were associated with the experience of participation included the type and frequency of visits to medical institutions, and the participant's willingness to participate. Content analysis of qualitative interview data revealed the following three themes: barriers to patient participation, facilitators of patient participation, and educational

needs for improving patient participation.

Conclusions

Health consumers' perception and experience of participation in patient-safety activities varied considerably. Our study provides an understanding of the factors affecting actual patient participation in patient safety activities. To improve patient participation, it is necessary to create a healthcare environment in which patients can speak comfortably and to provide an education program reflecting the patients' needs.

Strengths and limitations of this study

- This study was the first study to examine patient participation in patient safety activities in South Korea and provided evidence on what factors affect actual patient safety activities using mixed-methods.
- Most studies on patient participation were descriptive studies, but this study performed a regression analysis and a focus group interview to identify factors that affect patient participation in patient safety activities.
- The results of this study can be used to develop the content of patient participation program and contribute to create a healthcare environment for patient-centered care.
- The sample in this study was recruited through websites and social media, so the generalizability of the findings is limited.

INTRODUCTION

Patient participation in health care is one strategy for improving patient safety. Patients who are more involved in their care tend to experience better health outcomes. Research shows that patients' taking an active role in their health care has positive impacts on patient safety, such as preventing errors,[1] safer medication management,[2] better self-management behavior,[3] and decreased use of healthcare services.[4]

Therefore, several international organizations have emphasized empowering patients as a key factor in ensuring patient safety and have developed educational materials to enhance patient safety and quality of care.[5-9] For example, the Agency for Healthcare Research and Quality has developed guidelines for patients to prevent errors and obtain safer care during hospitalization and surgery, and while taking medications.[7] The Joint Commission launched the Speak Up campaign to help patients and their family caregivers play active roles in care.[8] The National Patient Safety Foundation has created a checklist of actions patients can take to reduce harm.[9]

Despite the growing recognition and encouragement of patients' active role in healthcare, little is known about the factors that influence patient participation in patient safety activities. Several studies have investigated patients' willingness to participate in safety-related behaviors.[10-12] One study assessing patients' comfort level in performing error-prevention behaviors, showed that patients were comfortable asking general questions about medication and medical care but less comfortable asking healthcare providers about handwashing.[13] However, these previous studies focused more on patients' inclination to perform safety practices, and there have been few studies on what factors affect patients' actual participation behaviors and experiences. Moreover, gathering information on the factors facilitating or hindering patient participation is important. Evidence on these factors can reduce the gap between the patients' intention and actual experience of patient

participation in patient safety activities because intention does not necessarily lead to actual participation behaviors. To examine the factors influencing actual participation in various safety practices or to investigate the relationship between intention and actual behavior, the need for a qualitative focus group interview or a mixed method using quantitative and qualitative approaches has been suggested [10 11].

Thus, we undertook this study to: (1) investigate health consumers' willingness to participate in safety activities, their recognition of the importance of their participation, and their experience of participating in patient safety activities; (2) examine the factors influencing the experience of engaging in healthcare behaviors to improve patient safety; and (3) describe healthcare consumers' experience of patient participation in the healthcare system.

METHODS

Study design

This study used a mixed-methods sequential explanatory design including a survey and focus group interviews.

Participants and data collection

To investigate health consumers' perception and experience of participation in patient safety activities, we conducted an online survey between January 25 and February 3, 2018, in South Korea. The target population comprised adults aged 19 years or older who had visited a medical institution within the most recent one year. We recruited participants through two websites (Korea Alliance of Patients' Organizations (http://www.koreapatient.com/), and Resources for Enhancing Safety, Competency, and Utilization for Education (http://patientsafety.snu.ac.kr/) and social media. The websites posted a description of the

study and the link to the online survey. The survey was implemented using the Qualtrics online survey tool (https://www.qualtrics.com). A total of 493 participants completed the survey, and we excluded from the analysis the data of 1 respondent who reported being 18 years old. The total sample size exceeded the minimum of 103 required for multiple linear regression, based on Cohen's statistical method (significance level $\alpha = 0.05$, $1-\beta = 0.80$, effect size 0.15, predictors 7).

Among the survey respondents, with those who agreed to participate in a focus group, focus group interviews were conducted March 20-22, 2018. The interviews were conducted in 2 groups of 6 participants each, for 2 hours with each group. The key interview questions were as follows: “What do you think about patient participation as it relates to patient safety?”, “In your opinion, how important is it to you to participate in your care process and patient safety activities when you visit the hospital and receive medical care or treatment?”, “To what extent do you think you can participate in patient safety activities as a patient or their caregiver?”, and “How do you think patient involvement in patient safety activities could affect patient safety?”.

Measures

Patient participation was measured using a tool developed to measure the inclination to engage in patient safety practices.[10] We added 3 items from the relevant literature [13 14 15] (bringing a friend or family member to a doctor’s appointment; telling healthcare workers about any drug allergies; reporting errors to a national reporting system if they notice errors in the hospital). Thus, the final survey tool comprised 13 items, and the questions included a list of 13 specific safety-related behaviors through which patients can engage while undergoing care in medical institutions. The survey questions were grouped into the

following three sections: the extent of willingness to participate in safety activities, recognition of the importance of participation, and experience of engaging in such activities.

Four-point Likert scales were used to assess the extent of health consumers' willingness to participate (1=not at all, 2=somewhat likely, 3=likely, 4=very likely) and recognition of the importance of participation (1=not very important, 2=not important, 3=important, 4=very important) in patient safety activities.

Participants were asked to indicate how often they had experienced each patient safety activity in the hospital using a 4-point Likert scale (1=not at all, 2=sometimes, 3=often, 4=always).

The reliability of the finalized questionnaire was evaluated using Cronbach's alpha coefficient. The Cronbach's alpha values of the three sections were 0.814, 0.900, and 0.884.

Statistical analysis

The quantitative data were analyzed using SPSS 24.0 (IBM Corp., Armonk, NY, USA). Participants' general characteristics and the scores of participants' willingness to participate, recognition of the importance of participation, and participation experience were summarized using descriptive statistics. An independent t-test and one-way ANOVA were used to identify differences in willingness to participate, recognition of the importance of participation, and experience of patient participation by general characteristics. For correlations between willingness to participate, recognition of the importance of participation, and experience of participation, Pearson's correlation coefficients were used. Multiple linear regression analysis was performed to identify variables associated with experience of patient participation.

The qualitative data were analyzed using conventional content analysis.[16] All interviews were recorded and transcribed. The collected data were written immediately after the interview, and the field notes were used for analysis. One researcher led the first analysis by

reading the transcript repeatedly, and two researchers performed a second review. Then they extracted codes, categories, and themes together during content analysis.

RESULTS

Participant characteristics

A total of 492 completed surveys were included in the analysis. The mean age of the respondents was 31.7 years, 74.8% of respondents were female, most had graduated from college or above (n=373, 75.8%), and most were unmarried (n=310, 63.0%). The monthly income of most participants (n=174, 35.4%) was less than 850,000 won. The most frequently visited medical institutions were clinics or public health centers (n=343, 69.7%), and more than 60% of the participants had visited medical institutions less than 10 times within the most recent one year. Most of the participants (n=414, 84.1%) reported going alone when they visited medical institutions, and 65% of the participants had experienced patient safety incidents. The vast majority of the participants (n=483, 98.2%) did not know the fact that they could report patient safety incidents to the national reporting and learning system themselves (Table 1).

Participation in patient safety activities

This study's findings on patient safety activities included a relatively high average score for recognition of the importance of participation (3.27±0.51), but the score for experience of participation was relatively low (2.13±0.63). Respondents' experience of engaging in patient safety activities varied considerably. Some respondents reported that they always ask about the details of a procedure and the reason for a procedure before it is performed (30.5%), ask for an explanation of care that they were not told about by their doctor or nurse (22.0%), and call when they have not received the results of a medical test they underwent (23.8%). Fewer

respondents had the experience of asking healthcare workers if they had washed their hands (2.7%), bringing a friend or family member to a doctor's appointment (5.1%), or asking for healthcare workers to confirm patient identity before performing a procedure (6.3%) (Table 2).

The scores of respondents' willingness to participate differed significantly by education level (t=-2.19, p=.029), the type of accompanying caregivers (F=2.45, p =.045), and whether they had experienced patient safety incidents or not (t=-2.19, p=.029). The scores on recognizing the importance of participation showed significant differences according to gender (t=-3.53, p<.001) and education level (t=-2.27, p=.024). The scores of participation experience differed significantly by gender (t=-2.49, p=.013), the type of medical institutions frequently visited (F=5.12, p =.002), the type of accompanying caregivers (F=3.29, p =.011), and previous experience of patient safety incidents (t=-3.34, p=.001) (Table 3).

Factors influencing experience of patient participation

The respondents' experience of patient participation showed a significant positive correlation with willingness to participate (r=.63, p<.001), and their recognition of the importance of participation (r=.23, p<.001). In addition, participants' recognition of the importance of participation showed a significantly positive correlation with willingness to participate (r=.34, p<.001).

Multiple linear regression was used to examine the relationship of the experience of patient participation with socio-demographic variables (gender, the type of medical institution they primarily use, frequency of visits to medical institutions, type of accompanying caregivers, and experience of patient safety incidents), recognition of the importance of participation, and willingness to participate, with experiences of patient participation (Table 4).

The result of the multiple linear regression showed that the patient who frequently visited a hospital (β=0.117, *p*=.001) and a general or advanced general hospital (β=0.077, *p*=.035) rather than a clinic or public health center, visited medical institutions more than 25 times in the most recent one year (β=0.095, *p*=.013) rather than less than 5 times, and had a high score on willingness to participate (β=0.600, *p*<.001) was expected to have more experience of participating in patient safety activities.

Focus group interviews: Health consumers' experience of patient participation in hospital care

Twelve health consumers participated in the interview. Four interviewees were male and eight were female. The average age was 40 years (range, 29 to 55 years). Ten interviewees had visited medical institutions more than 5 times in last year and six interviewees had experienced patient safety incidents. Content analysis produced nine categories extracted under three themes (Table 5).

Barriers to patient participation

The first theme involved barriers to patient participation and consisted of three categories. Patient participation in patient safety behaviors was influenced by various factors, and they could mainly be classified into three categories: the complexity and professionalism of the healthcare environment, hierarchical relationship between the patient and medical staff, and hesitation to participate. All participants stated that the processes and procedures for receiving care were very complex in hospitals, and the time allocated to see a doctor for treatment and care is very limited. The participants reported that patients and their caregivers' access to medical information was very restricted.

A hierarchy existed between doctors and patients. Focus group members mentioned that

they felt they had not received satisfactory explanations from health care professionals, but they also felt they could not ask a follow-up or repeat question, even if they wanted to. The participants felt that most of the medical staff were authoritarian. When a patient asked a doctor a question, the doctor was often annoyed and did not explain or share his or her treatment plan. Focus group participants reported that their hesitation to participate was also related to this hierarchical relationship between the patient and the medical staff.

The participants were worried about having any disadvantages in their care if they pointed out healthcare providers' behaviors which could threaten patient safety. In addition, the experience of failing in an attempt to participate undermined their willingness and made them reluctant to get involved.

Facilitators of patient participation

The second theme was related to facilitators of patient participation and consisted of two categories: trust and empathy between the patient and healthcare provider, and perception of the importance of patient participation. In order to improve patient safety in the care process, it was an important step that patients established a trustworthy relationship with healthcare providers. Explaining the details of treatment, listening to patients, and paying attention to patients were important factors for promoting patient participation.

Some focus group members reported that patient participation in their care process resulted in a different treatment outcome. The participants were actively involved in their care process through patient safety behaviors such as asking for information. They reported that their previous experience of a patient safety incident and their perception of the importance of patient safety activities affected being more active patients. Also, some participants perceived that safer care was provided when they participated in their care process.

Educational needs for improving patient participation

The third theme we detected in our analysis was the need for education. Participants stated the need for "a variety of information on disease treatment", "a list of questions they should ask", "information on patient rights and responsibilities", and "a smartphone app for patient participation". There were various topics on which participants wanted to be educated such as disease, diagnosis, treatment, examination, medication, and error reporting. Participants thought it was important to know their rights by being informed about what patients have to do or what patients can do. They also thought it was important for patients to know what questions should be asked. The participants emphasized the necessity of obtaining comprehensible answers when asking questions of healthcare providers. They also thought that helpful information should be given to patients in a comprehensive and timely manner using an efficient medium of communication. In order to actively engage in their treatment process and understand the purpose of treatment while being in the hospital, they emphasized the need to know what is going on.

DISCUSSION

This is the first study to investigate patient participation in patient safety activities in South Korea from the health consumer's viewpoint. This study provided evidence on what factors affect actual patient safety behaviors.

This study found that the average score for experience of participation in patient safety behaviors was lower than those of willingness to participate and recognition of the importance of participation. The frequency of health consumers' experience of participation in patient safety activities varied considerably. Among patient safety activities, the most frequently performed were asking general questions such as "the details of surgery" and "an

explanation of what the patient doesn't understand". On the other hand, 'asking health care workers to wash their hands' was the patient safety behavior with the lowest average scores for intention and experience. These results were consistent with previous findings.[10] Specifically, asking healthcare workers wash their hands has been considered a challenging behavior,[11] with various potential explanations proposed in previous research. Patients themselves felt uncomfortable with asking about handwashing[13], and they were worried that healthcare workers might feel uncomfortable with this question.[11] In addition, patients thought that questioning healthcare providers about their behavior could imply criticizing their incompetence, and therefore they were reluctant to do so.[10] These findings might reflect that patients prefer to passively participate in their care but it also might be related to the healthcare environment where patients cannot actively communicate or raise questions and concerns with their clinicians. According to Fisher et al., nearly half of patients (48.6%) in their study had experienced a problem during hospitalization, and almost one-third (30.5%) of them reported they were not always comfortable speaking up.[17] Creating a healthcare environment in which patients can be comfortable raising their concerns may result in safer care and improved patient participation.[17] Therefore, in order for patients to perform actual patient participation activities, efforts should be made to create an environment where patients can comfortably express what they are worried about.

The results of this study showed that patients who were accompanied by caregivers had experienced more willingness to participate and participation than alone. Patient and family engagement for patient advocacy has become an important component of the healthcare system. This is because family members can take on many roles, such as participating in care coordination, and helping prevent specific unsafe events or medical errors by assessing care practices in terms of consistency, accuracy, and safety.[18 19] Patient and family engagement also increases the likelihood that patients can better communicate their

questions and concerns with the healthcare provider, which in turn can help patients better understand and follow the treatment plan.[20] Therefore, increased patient and family engagement is associated with improved patient outcomes and reduced utilization of healthcare services,[19] and it is recommended that medical institutions also encourage not only patients but also their family members to participate in safety activities. Thus, educating patients and their families together on patient participation should be considered. This could be a way of increasing the rate of actual patient safety activities in medical institutions.

The findings of our study showed that the types and the frequency of visiting medical institutions affected the experience of patient participation. According to Davis et al., [21] severity of the patients' illness, symptoms, and treatment plan were associated with patient participation. In addition, patients' prior experience of illness led to more willingness to participate.[21] This may be due to the fact that patients with more experience visiting medical institutions and those visiting more advanced institutions may have more severe illness and will be likely to be exposed to higher-risk situations such as testing, drugs, and surgery, all of which call for patient safety activities. It can also be inferred that patients who have experienced many hospital visits might perceive themselves as playing a more important role in the care process.

The results of the focus group interviews showed that patient participation in medical institutions appeared to be influenced by three factors: the healthcare environment, the relationship between the patient and the healthcare provider, and the patient's personal capacity. A complex care process, time constraints, and restricted access to medical information were healthcare environmental factors hindering patient participation. A qualitative study conducted with patients and nursing staff members found similar results: that patients felt that healthcare providers were too busy asking questions or talking.[22]

Patients and families may feel overwhelmed by the healthcare system and highly technical information.[18 23]

Most patients felt that the relationship between patients and healthcare providers was hierarchical, which was one of the barriers to participation. Patients can be motivated to participate in patient safety activities through open communication, empathy, and positive feedback from healthcare providers. According to Maurer et al.,[18] healthcare providers' reactions can be a barrier to patient participation, while their active invitation for patients to participate can be a facilitator. Thus, healthcare providers must support and guide patients to participate. Even if patients are willing to participate in safety activities, they might be uncertain about how to be involved. Although patients are on a continuum of care, they cannot be familiar with all parts of the care process. Therefore, healthcare providers may better involve patients in their care plan by communicating about care processes such as diagnosis and treatment with patients.

Healthcare providers must consider developing and implementing effective education for patients to increase patients' willingness to ask challenging questions, and to reduce the gap among perceived importance of participation, willingness to participate, and experience of patient participation. Patient education can help to increase patients' knowledge and positively affect their attitude toward safety practices.[24] In this study's findings, health consumers wanted education programs focusing on "a question list they can ask health professionals", "patient rights and responsibilities", and "a variety of information related to treatment including disease and diagnosis, and medication". Thus, to enhance patient participation in safety activities in medical institutions, development of an education program reflecting patients' educational needs is suggested. Our findings also suggest intervention studies educating patients through an easy-to-use mobile app. A mobile app can be a useful

tool for conveniently providing health consumers with information on patient participation and to enhance their knowledge about patient safety.

This study had several limitations. First, the study was based on health consumers' self-reports on their participation in patient safety practices, so these self-reported data may not accurately reflect their actual practices in medical institutions. Second, the sample was recruited through websites and social media, so the young and well-educated population might have accounted for a large proportion of the sample. Thus, it may not be generalizable to all patient groups.

CONCLUSION

Health consumers' patient safety activities in the hospital varied. Participants reported more experience with patient safety activities aimed to inform themselves, whereas they expressed less experience with more challenging patient safety actions, such as asking healthcare providers to wash their hands. There were differences among patients' perceived importance of their participation, willingness to participate, and their actual experience of participation in patient safety activities. Future research needs to be conducted to narrow these gaps using efficient educational methods. The results of this study can be used as a reference for developing educational content for patients. Healthcare providers may play an important role in encouraging patients to involve themselves in patient safety practices by offering education and encouragement to patients. Strategies are needed to give participation opportunities to patients during their care, and efforts should be made to create a healthcare environment in which patients and healthcare providers can participate together to improve patient safety.

Contributors

NL and SA conceived and designed the study. NL, SA and ML performed the cross-section study. NJ and SA carried out the statistical analysis. NJ, SA and ML conducted qualitative research. NL, SA and ML wrote the paper. NL, SA and ML reviewed and edited the manuscript. All authors read and approved the manuscript..

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Competing interests

None declared

Data availability statement

No data are available.

Ethics approval

This study was approved by the Institute Review Board of Seoul National University (No. No. 1801/003-007) and all study participants provided informed consent.

Patient consent for publication

Not required.

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Table 1. General Characteristics of Participants (*N*=492)

Characteristics	Categories	n (%)
Age	19-29	270 (54.9)
	30-39	123 (25.0)
	40-49	57 (11.6)
	50-	42 (8.5)
Gender	Female	368 (74.8)
	Male	124 (25.2)
Educational level	High school diploma or below	119 (24.2)
	Bachelor's degree or above	373 (75.8)
Marital status	Single	310 (63.0)
	Married	176 (35.8)
	Divorced	5 (1.0)
	Bereaved	1 (0.2)
Monthly income (KRW)	-<850,000	174 (35.4)
	850,000-<1500,000	51 (10.3)
	1500,000-<2500,000	91 (18.5)
	2500,000-<3500,000	77 (15.7)
	3500,000-<4500,000	43 (8.7)
	4500,000-<5500,000	23 (4.7)
	5500,000-<6500,000	7 (1.4)
	6500,000-	26 (5.3)
Types of medical institutions frequently visited	Clinic or public health center	343 (69.7)
	Hospital	68 (13.8)
	General or Advanced general hospital	79 (16.1)
	Others	2 (0.4)
Number of visits to medical institutions	-<5	165 (33.5)
	5-<10	176 (35.8)
	10-<15	80 (16.3)
	15-<20	40 (8.1)
	20-<25	15 (3.0)
	25-	16 (3.3)
Types of accompanying caregivers	Alone	414 (84.1)
	Spouse	19 (3.9)
	Children	23 (4.7)
	Parents (Father or Mother)	31 (6.3)
	Others	5 (1.0)
Experience of patient safety incidents	Yes	320 (65.0)
	No	172 (35.0)
Do you know the fact that you can directly report to the patient safety reporting and learning system?	Yes	9 (1.8)
	No	483 (98.2)

Table 2. Extent of Willingness to Participate, Recognition of Its Importance, and Experience of Participation in Patient Safety Activities (*N*=492)

Patient participation practices	Engaging in health care behaviors			Frequency of participation			
	Extent of willingness	Recognition of importance	Experience of participation	Always	Often	Sometimes	Not at all
	M±SD			n (%)			
Seeking a second opinion regarding an important healthcare decision	2.70±0.97	3.23±0.71	2.07±0.89	38 (7.7)	98 (19.9)	217 (44.1)	139 (28.3)
Asking healthcare workers to explain more fully something they just said that I do not understand	3.19±0.80	3.47±0.65	2.58±0.84	73 (14.8)	177 (36.0)	202 (41.1)	40 (8.1)
Bringing a friend or family member to a doctor's appointment so that they can help ask questions and understand what the doctor was telling me	2.19±0.90	2.73±0.84	1.84±0.86	25 (5.1)	75 (15.2)	187 (38.0)	205 (41.7)
Asking healthcare workers if they washed their hands	1.43±0.76	2.96±0.84	1.37±0.74	13 (2.7)	39 (7.9)	64 (13.0)	376 (76.4)
Telling healthcare workers about any drug allergies when they did not ask for this information	3.08±1.02	3.55±0.69	2.22±1.10	82 (16.7)	118 (24.0)	118 (24.0)	174 (35.4)
Asking healthcare workers to confirm your identity before performing a procedure	2.05±1.02	3.20±0.84	1.64±0.94	31 (6.3)	65 (13.2)	91 (18.5)	305 (62.0)
Asking healthcare workers about the details of a procedure and the	3.31±0.82	3.55±0.67	2.88±0.95	150 (30.5)	178 (36.2)	120 (24.4)	44 (8.9)

reason for a procedure before it is performed							
Asking healthcare workers to explain care, such as an X-ray or drawing blood, that I was not told about by my doctor or nurse	2.86±0.95	3.43±0.72	2.50±1.04	108 (22.0)	125 (25.4)	164 (33.3)	95 (19.3)
Calling a healthcare worker when I undergo medical tests ordered and no one calls me with the results	3.29±0.83	3.40±0.70	2.50±1.10	117 (23.8)	129 (26.2)	127 (25.8)	119 (24.2)
Taking a written list of all the medications I'm currently taking when going to the doctor	2.34±1.07	3.22±0.80	2.02±1.03	55 (11.2)	102 (20.7)	132 (26.8)	203 (41.3)
Questioning medications or pills if I did not recognize them and never took this medication in the past	2.82±0.98	3.33±0.77	2.35±1.05	85 (17.3)	131 (26.6)	149 (30.3)	127 (25.8)
Checking that I received the right drug and strength before leaving the pharmacy	2.30±1.10	3.22±0.81	2.09±1.09	76 (15.5)	86 (17.5)	134 (27.2)	196 (39.8)
Reporting the errors I noticed had occurred in the hospital to a national reporting system	2.51±0.96	3.20±0.80	1.70±0.99	40 (8.1)	71 (14.4)	84 (17.1)	297 (60.4)
Total	2.62±0.52	3.27±0.51	2.13±0.63				

Table 3. Difference in Extent of Willingness to Participate, Recognition of Its Importance, and Experience of Participation by General Characteristics

(*N*=492)

Sociodemographic characteristics	Subgroup	n (%)	Extent of Willingness		Recognition of Importance		Experience of Participation	
			M±SD	t or F(*p*)	M±SD	t or F(*p*)	M±SD	t or F(*p*)
Age group	19-29	270 (54.9)	2.58±0.51	1.28 (.281)	3.25±0.51	1.23 (.297)	2.10±0.63	1.45 (.227)
	30-39	123 (25.0)	2.66±0.52		3.33±0.50		2.11±0.59	
	40-49	57 (11.6)	2.69±0.52		3.29±0.43		2.25±0.65	
	50-	42 (8.5)	2.67±0.59		3.16±0.65		2.25±0.73	
Gender	Female	368 (74.8)	2.64±0.52	-1.72 (.086)	3.32±0.51	-3.53 (<.001)	2.18±0.64	-2.49 (.013)
	Male	124 (25.2)	2.55±0.52		3.13±0.51		2.01±0.59	
Educational level	High school diploma or below	119 (24.2)	2.53±0.50	-2.19 (.029)	3.18±0.53	-2.27 (.024)	2.05±0.58	-1.80 (.074)
	Bachelor's degree or above	373 (75.8)	2.65±0.53		3.30±0.50		2.16±0.65	
Marital status	Single	310 (63.0)	2.59±0.51	2.05 (.130)	3.26±0.50	0.05 (.948)	2.10±0.62	1.98 (.139)
	Married	176 (35.8)	2.68±0.54		3.28±0.54		2.21±0.65	
	Divorced & Bereaved	6 (1.2)	2.37±0.42		3.27±0.30		1.96±0.63	
Monthly income (KRW)	-<850,000	174 (35.4)	2.61±0.51	0.77 (.616)	3.23±0.51	0.82 (.570)	2.10±0.62	0.53 (.811)
	850,000-<1500,000	51 (10.3)	2.49±0.53		3.22±0.63		2.09±0.63	
	1500,000-<2500,000	91 (18.5)	2.66±0.53		3.31±0.52		2.19±0.68	
	2500,000-<3500,000	77 (15.7)	2.63±0.53		3.31±0.47		2.15±0.62	
	3500,000-<4500,000	43 (8.7)	2.72±0.51		3.39±0.43		2.18±0.64	
	4500,000-<5500,000	23 (4.7)	2.62±0.50		3.21±0.43		2.01±0.40	
	5500,000-<6500,000	7 (1.4)	2.53±0.65		3.13±0.61		2.07±0.86	
	6500,000-	26 (5.3)	2.63±0.58		3.23±0.50		2.26±0.71	

Types of medical institutions frequently visited	Clinic or public health center	343 (69.7)	2.60±0.51	1.41 (.240)	3.27±0.50	1.02 (.384)	2.06±0.60	5.12 (.002)
	Hospital	68 (13.8)	2.59±0.57		3.19±0.59		2.27±0.71	
	General or advanced general hospital	79 (16.1)	2.73±0.53		3.32±0.48		2.32±0.64	
	Others	2 (0.4)	2.38±0.33		3.54±0.54		2.46±0.76	
Number of visits to medical institutions	-<5	165 (33.5)	2.61±0.55	0.86 (.509)	3.26±0.43	0.55 (.738)	2.08±0.66	1.88 (.096)
	5-<10	176 (35.8)	2.60±0.49		3.26±0.53		2.10±0.61	
	10-<15	80 (16.3)	2.62±0.57		3.23±0.57		2.20±0.62	
	15-<20	40 (8.1)	2.67±0.46		3.39±0.59		2.20±0.56	
	20-<25	15 (3.0)	2.86±0.52		3.26±0.69		2.23±0.82	
	25-	16 (3.3)	2.69±0.42		3.30±0.37		2.51±0.48	
Types of accompanying caregivers	Alone	414 (84.1)	2.59±0.52	2.45 (.045)	3.25±0.52	1.09 (.362)	2.09±0.63	3.29 (.011)
	Spouse	19 (3.9)	2.81±0.54		3.35±0.55		2.47±0.61	
	Children	23 (4.7)	2.88±0.52		3.45±0.40		2.32±0.61	
	Parents	31 (6.3)	2.68±0.48		3.27±0.51		2.31±0.57	
	Others	5 (1.0)	2.72±0.41		3.45±0.48		2.46±0.62	
Experience of patient safety incidents	No	320 (65.0)	2.58±0.54	-2.19 (.029)	3.24±0.53	-1.88 (.061)	2.07±0.62	-3.34 (.001)
	Yes	172 (35.0)	2.69±0.49		3.33±0.48		2.26±0.63	

Table 4. Factors Influencing the Experience of Patient Participation (*N*=492)

Variables	Beta	*t*	*p* value
(Constant)		-0.110	0.913
Willingness to participate	0.600	16.413	<.001
Recognition of importance of patient participation	0.020	0.527	.595
Gender			
Male	Ref.		
Female	0.037	1.021	.308
Medical institutions frequently visited			
Clinic or public health center	ref.		
Hospital	0.117	3.287	.001
General or advanced general hospital	0.077	2.113	.035
Others	0.019	0.525	.600
Number of visits to medical institutions in last year			
-<5	Ref.		
5-<10	0.024	0.611	.542
10-<15	0.058	1.493	.136
15-<20	0.018	0.492	.623
20-<25	-0.003	-0.072	.942
25-	0.095	2.498	.013
Types of accompanying caregivers			
Alone	ref		
Spouse	0.062	1.766	.078
Children	0.008	0.218	.827
Parent	0.025	0.691	.490
Others	0.035	0.992	.322
Experience of patient safety incidents			
No	ref		
Yes	0.065	1.849	.065

F= 23.19 (p<.001); Adjusted R^2=0.42.

Table 5. Themes, categories, and codes

Theme	Category	Code	Quotes
Barriers to patient participation	Complexity and professionalism of the healthcare environment	Complex care procedures	It was exhausting for a patient to meet new medical staff every 2 or 3 minutes, and it was hard for me to share my problems deliberately. When talking to the final medical staff, a chief surgeon who was charge of my surgery, I was very fatigued so I couldn't think of what to say. (Participant 1, Group 1)
		Limited time to see a doctor	My doctor is too busy. I have almost no chance to talk to him, because usually another patient is waiting when I'm seeing the doctor. So I can't discuss things fully with my doctor though I'd like to ask questions and get answers. (Participant 2, Group 1) We just took it for granted that we only listened to a doctor very briefly in the hospital, because a very limited time was allocated to us. (Participant 6, Group 1)
		Limited access to medical information	Generally speaking, I think the medical system is too closed and patients are restricted from accessing their medical information. (Participant 6, Group 1) The medical system is so professional, and it is not accessible to me. (Participant 4, Group 2)
	Hierarchical relationship between the patient and medical staff	Authoritative attitude of medical staff	When I asked what I didn't understand one more time, the doctor responded with a high and angry tone. After experiencing that, although I didn't catch what he said, I didn't ask him and instead asked other medical staff because I already knew what his response would be if I asked again. (Participant 3, Group 2)

		Failure to share treatment plan with the patient	In the process of my treatment, I didn't feel a sense of care from any doctor or nurse. This is because they only checked over my data and wrote prescriptions, and asked about my current physical state. I had the same experience over and over. (Participant 4, Group 2)
		Lack of communication between medical staff and the patient	I haven't felt that I was able to fully ask questions or get satisfactory answers. (Participant 6, Group 1)
	Hesitation to participate	Concerns about having any disadvantages in treatment	Foremost, I'm afraid of having any disadvantage on my treatment, like snubbing me after I ask questions. (Participant 6, Group 2) Feeling on that he doesn't put an effort into, or pay attention during, my treatment. (Participant 4, Group 2)
		Experience of failing in an attempt to participate	When trying to participate in expressing my opinion as a patient, … If a doctor had explained whether my opinion was right or not, and its reason, even if my opinion was not right, I could have felt a sense of trust in him. Some doctors insisted that their treatment method was definitely right and then I no longer felt willing to participate. (Participant 2, Group 1)
Facilitators of patient participation	Rapport and empathy between a patient and a healthcare provider	Attention on a patient and endeavor to communicate	It is important for the two of us, a doctor and me, to have mutual trust and discuss my treatment plan together. (Participant 6, Group 1) One doctor abrasively listened to me, not my father-in-law, because he couldn't communicate well, and gave only a routine prescription. On the other hand, another doctor tried to talk directly to my father-in-law in detail, and then, to verify, asked me, "He seemed to express such-and-such. Did you find he had the

			same symptoms at home?" and explained his conclusions to me in detail. I was able to trust that doctor more. (Participant 1, Group 1)
	Perception of the necessity of patient participation	Perception of the importance of patient participation	The treatment outcome seems to be different depending on whether I participated in patient safety activities or not. (Participant 2, Group 1)
		Previous experience of a patient safety incident	I really wanted to hear: "Sorry, we made a mistake with the medication for your daughter. So, we took this kind of action after the incident." But they didn't apologize and didn't take any follow-up action. After this incident, I strongly realized the importance of patient safety and the family's participation. (Participant 6, Group 2)
Educational needs for improving patient participation	Providing a variety of information on disease treatment	Contextual information	I need information on what I can do and check specifically depending on the situation. (Participant 2, Group 2)
		Disease and diagnosis	I think it would be nice if I could get an app that suggests a potential diagnosis after inputting my age and symptoms and so on. Because I can ask a doctor, "In my opinion, my symptom is A, isn't it?" A doctor may miss the exact diagnosis owing to being busy, right? So, in that case, if I know the information on my symptoms and talk to him, then he can consider the diagnosis and go forward with his treatment plan in the right direction. (Participant 2, Group 1)
		Medication	When I get the medicine at the pharmacy, the information about that medicine is written on the medicine packet, and I think this is very useful for patients. (Participant 2, Group 2)
	Providing a list of questions	List of questions to ask for participation	I think it's pretty important to know what questions I can ask. If I have a list of things to look out for and

		check, it is easy for me to get more involved. (Participant 4, Group 1)
Providing information about patients' obligation and rights	Patients' obligation and rights	It would be great to have some manual or simple reminder on what I have to do in the hospital, informing me: "Oh, I could have done this. I could have asked for this. I should have talked about this to healthcare providers." (Participant 5, Group 1) I want to know what kinds of rights patients have. (Participant 6, Group 2)
Need for apps enabling patient participation	App with disease information	It would be nice if there were an app for obtaining appropriate information after I directly input my information, such as symptoms or diseases in it, instead of asking a nurse on call. (Participant 1, Group 2)
	App from which patients can find appropriate information by themselves	I thought it would be great if there were apps through which I could participate and get information for myself. (Participant 6, Group 1)
	App for error reporting	The most important thing is to report errors. An application should be developed that we can use to report errors. (Participant 2, Group 2)

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	#1-2
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	#2-3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	#4-5
Objectives	3	State specific objectives, including any prespecified hypotheses	#5
Methods			
Study design	4	Present key elements of study design early in the paper	#5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	#5-6
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	#5-6
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	#6-7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	#6-7
Bias	9	Describe any efforts to address potential sources of bias	NA
Study size	10	Explain how the study size was arrived at	#6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	#7-8
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	#7-8
		(*b*) Describe any methods used to examine subgroups and interactions	#7-8
		(*c*) Explain how missing data were addressed	#6
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	#5-6
		(*e*) Describe any sensitivity analyses	NA
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	#8
		(b) Give reasons for non-participation at each stage	NA
		(c) Consider use of a flow diagram	NA
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	#8-10
		(b) Indicate number of participants with missing data for each variable of interest	#6
Outcome data	15*	Report numbers of outcome events or summary measures	#8-10, #21-26
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	#8-10, #21-26
		(*b*) Report category boundaries when continuous variables were categorized	#8-10, #21-26
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	#10-12, #27-30
Discussion			
Key results	18	Summarise key results with reference to study objectives	#12-16
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	#16
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	#12-16
Generalisability	21	Discuss the generalisability (external validity) of the study results	#12-16
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	#17

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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A mixed-methods investigation of health consumers' perception and experience of participation in patient safety activities

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Abstract

Objectives

This study aimed to examine the factors influencing patient safety behaviors and to explore health customers' experiences of patient participation in the healthcare system.

Design

A mixed-methods sequential explanatory design was employed using a survey and focus group interviews with health consumers.

Setting

The study was conducted in South Korea using an online survey tool.

Participants

Survey data were collected from 493 Korean adults, aged 19 years or older, who had visited hospitals within the most recent one year. Focus group interviews were conducted in 2 groups of 6 participants each among those of the survey participants who agreed to participate in interviews.

Main outcome measures

The survey measured the extent of willingness to participate, recognition of the importance of participation, and experience of engaging in patient safety activities using a 4-point Likert scale. Qualitative data were collected through focus group interviews to explore health consumers' experience of patient participation in hospital care, and the data were analyzed using content analysis.

Results

The average score for experience of participation in patient safety behaviors was found to be lower than those of willingness to participate and recognition of the importance of participation. By integrating the results of the quantitative and qualitative data analysis, the

factors associated with the experience of engaging in healthcare behavior included patient-related factors, illness-related factors, factors involving relationship between patients and healthcare providers, and healthcare environment factors.

Conclusions

To improve patient participation, it is necessary to create a healthcare environment in which patients can speak comfortably and to provide an education program reflecting the patients' needs. Also, healthcare providers must consider patients as partners for patient safety. Shared decision-making procedures and patient-centered care and patient safety policies should be established in hospitals.

Strengths and limitations of this study

- This study was the first to examine patient participation in patient safety activities in South Korea and provided evidence on what factors affect actual patient safety activities using mixed methods.
- Most studies on patient participation have been descriptive studies, but this study performed a regression analysis and a focus group interview to identify factors that affect patient participation in patient safety activities, and finally, integrated the results of both quantitative and qualitative data.
- The results of this study can be used to develop the content of patient participation programs and contribute to creating a patient-centered healthcare environment.
- The sample in this study was recruited through websites and social media, so the generalizability of the findings is limited.

INTRODUCTION

Patient participation in health care is one strategy for improving patient safety. Patients who are more involved in their care tend to experience better health outcomes. Research shows that patients' taking an active role in their health care has positive impacts on patient safety, such as preventing errors,[1] safer medication management,[2] better self-management behavior,[3] and decreased use of healthcare services.[4]

The concept of patient participation is defined as the desire and capability to actively participate in care.[5] To enhance patient participation for patient safety, it is important to encourage patients to participate in patient safety activities while receiving care in medical institutions. The safety activities that patients could participate in can be classified into four types (speaking up, asking questions, finding health information, and engaging in the healthcare process). Patients can speak up if they have questions or concerns about their needs, preferences, and ideas (eg, asking a healthcare provider whether they have washed their hands can contribute to a patient's safe treatment).[6 7] Patients should ask questions and ask about their own health status if anything is unclear in their care process (eg, asking what the patient's health problem is),[8] seek information about their care (eg, asking for resources and websites where patients can learn),[6] and participate in all decisions about their treatment through a shared decision-making process (eg, the patient sharing their needs, symptoms, and wishes in order to make healthcare decisions together with their healthcare providers).[8 9]

Given the growing recognition and encouragement of patients' active role in health care, several international organizations have developed educational materials to increase patient participation to promote patient safety and quality of care.[10-14] In the United States, the Agency for Healthcare Research and Quality has developed guidelines for patients to prevent errors and obtain safer care,[12] the Joint Commission launched the Speak Up campaign to help

patients and their family caregivers play active roles in care,[13] and the National Patient Safety Foundation has created a checklist of actions patients can take to reduce harm.[14] The Canadian Patient Safety Institute in Canada has suggested strategies and evidence-based guidance on engaging patients in patient safety.[6] Also, the Australian Commission on Safety and Quality in Health care in Australia has developed a booklet to support patients being actively involved in their care.[11]

While the guidelines and materials for patients have been developed, there is a lack of evidence on the extent of patients' actual experience of participating in patient safety activities. Several studies have investigated patients' willingness to participate in safety-related behaviors by quantitative method using surveys.[15-17] However, these previous studies focused more on patients' inclination to perform safety practices, and there have been few studies on patients' actual participation experiences using quantitative data. One descriptive study assessing patients' experience in performing error-prevention behaviors while hospitalized, showed that patients experienced asking general questions about the purpose of medication (75.2%) and medical care (85.1%) but had less experience asking healthcare providers about handwashing (4.6%).[18] Patients who are more comfortable engaging in safety-related behaviors are more likely to participate in safety activities.[18]

Moreover, gathering information on what factors affect patient participation is important. Some studies have described patients' perception of participation in patient safety by qualitative method through interviews.[19-21] Some factors were found to negatively affect patients' participation in their care, such as fear of reprisals from staff, an inability to provide feedback to staff, and a perception that safety is generally not patients' priority.[19] On the other hand, feeling connected with their healthcare provider, having an opportunity to provide feedback on experiences of safety, and sharing responsibility positively affected patient

participation.[19-21] Evidence on these factors affecting patient participation can reduce the gap between the patients' intention and actual experience of patient participation in patient safety activities because intention does not necessarily lead to actual participation behaviors.

A mixed-methods design has the advantage of not only producing a measure of experience of participation but also deeply exploring patients' perspectives about patient participation. However, there is a lack of studies focusing on patient participation using mixed methods. To examine the factors influencing actual participation in various safety practices or to investigate the relationship between intention and actual behavior, the need for a qualitative focus group interview or a mixed method using quantitative and qualitative approaches has been suggested.[15 16]

Thus, in this study, we investigated health consumers' extent of willingness to participate in safety activities, their recognition of the importance of their participation, and their experience of participating in patient safety activities through a survey. We also explored healthcare consumers' experience of patient participation and factors influencing their experience of engaging in healthcare behaviors in depth.

METHODS

Study design

This study used a mixed-methods sequential explanatory design including a survey and focus group interviews. According to this design proposed by Creswell and Zhang,[22] we gathered and analyzed quantitative data first, and then used qualitative data collection and analyzed that qualitative data later to help explain the quantitative results.

Participants and data collection

To investigate health consumers' perception and experience of participation in patient safety activities, we conducted an online survey between January 25 and February 3, 2018, in South Korea. The target population comprised Korean-speaking Korean adults aged 19 years or older who had visited a medical institution within the most recent one year. We recruited participants through two websites, the Korea Alliance of Patients' Organizations (http://www.koreapatient.com/) and Resources for Enhancing Safety, Competency, and Utilization for Education (RESCUE, http://patientsafety.snu.ac.kr/), as well as through social media. The websites are produced by nonprofit organizations. The Korean Alliance of Patients' Organizations is a patient advocacy organization that claims the rights of patients to prevent errors and create a patient-centered environment. RESCUE is a health information website that provides educational materials and resources for patient safety. The websites posted a description of the study and the link to the online survey. The survey was implemented using the Qualtrics online survey tool (https://www.qualtrics.com). A total of 493 participants completed the survey, and we excluded from the analysis the data of 1 respondent who reported being 18 years old (Supplementary figure 1). The total sample size exceeded the minimum of 103 required for multiple linear regression, based on Cohen's statistical method (significance level $\alpha = 0.05$, $1-\beta = 0.80$, effect size 0.15, predictors 7).

We posted a description of the focus group interview on the website to recruit participants. Among the survey respondents, with those who agreed to participate in a focus group, focus group interviews were conducted March 20-22, 2018. The interviews were conducted in 2 groups of 6 participants each, for 2 hours with each group in a seminar room at a university. We divided them to the two groups according to their availability, gender, and ages. Each interview involved all of the researchers. Two researchers (NL or SA) of the

research team each facilitated one of the focus group interviews, and one researcher (ML) played a role as a note taker to produce accurate notes while assisting with the interviews. At the end of the interview, the interviewer summarized the conversation and repeated key information to request confirmation for data accuracy. The list of primary interview questions and safety activities in healthcare settings were sent to participants in advance to inform them on the areas of discussion to be covered. The key interview questions were as follows: "What do you think about patient participation as it relates to patient safety?", "In your opinion, how important is it to you to participate patient safety activities when you visit the hospital and receive medical care or treatment?", "To what extent do you think you can participate in patient safety activities as a patient or their caregiver?", "How do you think patient involvement in patient safety activities could affect patient safety?", and "Can you tell us specifically about your experiences in which you participated in the care or treatment process?"

Measures

Patient participation was measured using a tool developed to measure the inclination to engage in patient safety practices.[15] We added 3 items from the relevant literature[18 23 24] (bringing a friend or family member to a doctor's appointment; telling healthcare workers about any drug allergies; reporting errors to a national reporting system if they notice errors in the hospital). Thus, the final survey tool comprised 13 items, and the questions included a list of 13 specific safety-related behaviors through which patients can engage while undergoing care in medical institutions (Supplementary survey questionnaire). To explore the factors influencing patient participation, we grouped variables into the following three categories based on a literature review[15 18 23-25]: patient-related (willingness to participate,

recognition of the importance of patient participation, and socio-demographic variables), illness-related (number of visits to medical institutions and prior experience of patient safety incidents), and healthcare environment-related (types of medical institutions).

Four-point Likert scales were used to assess the extent of health consumers' willingness to participate (1=not at all, 2=somewhat likely, 3=likely, 4=very likely) and recognition of the importance of participation (1=not very important, 2=not important, 3=important, 4=very important) in patient safety activities. Participants were asked to indicate how often they had experienced each patient safety activity in the hospital using a 4-point Likert scale (1=not at all, 2=sometimes, 3=often, 4=always). The reliability of the finalized questionnaire was evaluated using Cronbach's alpha coefficient. The Cronbach's alpha values of the three sections were 0.814, 0.900, and 0.884.

Data analysis

The quantitative data were analyzed using SPSS 24.0 (IBM Corp., Armonk, NY, USA). Participants' general characteristics and the scores of participants' willingness to participate, recognition of the importance of participation, and participation experience were summarized using descriptive statistics. An independent t-test and one-way ANOVA were used to identify differences in willingness to participate, recognition of the importance of participation, and experience of patient participation by general characteristics. For correlations between willingness to participate, recognition of the importance of participation, and experience of participation, Pearson's correlation coefficients were used. Multiple linear regression analysis was performed to identify variables associated with experience of patient participation.

The qualitative data were analyzed using conventional content analysis.[26] All interviews were recorded and transcribed. The collected data were written immediately after the

interview, and the field notes were used for analysis. One researcher (SA) led the first analysis by reading the transcript repeatedly, and two researchers (NL, ML) performed a second review. Emergent themes were discussed in depth, then the researchers extracted codes, categories, and themes together during content analysis until agreement was reached.

Patient and Public involvement

Neither patients nor the public were involved in the design, development of the research questions, outcome measure, or conduct of this study. To further facilitate the recruitment of patients, advertisements were posted on the websites.

RESULTS

Participant characteristics

A total of 492 completed surveys were included in the analysis. The mean age of the respondents was 31.7 years (SD: 10.52), 74.8% of respondents were female, most had graduated from college or above (n=373, 75.8%), and most were unmarried (n=310, 63.0%). The monthly income of most participants (n=174, 35.4%) was less than 850,000 won. The most frequently visited medical institutions were clinics or public health centers (n=343, 69.7%), and more than 60% of the participants had visited medical institutions less than 10 times within the most recent one year. Most of the participants (n=414, 84.1%) reported going alone when they visited medical institutions, and 65% of the participants had experienced patient safety incidents. The vast majority of the participants (n=483, 98.2%) did not know the fact that they could report patient safety incidents to the national reporting and learning system themselves (Table 1).

Participation in patient safety activities

Among this study's findings on patient safety activities, average scores were as follows: recognition of the importance (3.27±0.51), the extent of willingness (2.62±0.52), and the experience of participation (2.13±0.63). Respondents' experience of engaging in patient safety activities varied considerably. Some respondents reported that they always ask about the details of a procedure and the reason for a procedure before it is performed (30.5%), ask for an explanation of care that they were not told about by their doctor or nurse (22.0%), and call when they have not received the results of a medical test they underwent (23.8%). Fewer respondents had the experience of asking healthcare workers if they had washed their hands (2.7%), bringing a friend or family member to a doctor's appointment (5.1%), or asking for healthcare workers to confirm patient identity before performing a procedure (6.3%) (Table 2).

The scores of respondents' willingness to participate differed significantly by education level (t=-2.19, p=.029), the type of accompanying caregivers (F=2.45, p =.045), and whether they had experienced patient safety incidents or not (t=-2.19, p=.029). The scores on recognizing the importance of participation showed significant differences according to gender (t=-3.53, p<.001) and education level (t=-2.27, p=.024). The scores of participation experience differed significantly by gender (t=-2.49, p=.013), the type of medical institutions frequently visited (F=5.12, p =.002), the type of accompanying caregivers (F=3.29, p =.011), and previous experience of patient safety incidents (t=-3.34, p=.001) (Table 3).

Factors influencing experience of patient participation

The respondents' experience of patient participation showed a significant positive correlation with willingness to participate (r=.63, p<.001), and their recognition of the

importance of participation (r=.23, p<.001). In addition, participants' recognition of the importance of participation showed a significantly positive correlation with willingness to participate (r=.34, p<.001).

Multiple linear regression was used to examine the relationship of the experience of patient participation with three sets of factors: patient-related, illness-related, and healthcare environment-related (Table 4). The result of the multiple linear regression showed that the patient who frequently visited a hospital (β=0.117, p=.001) and a general or advanced general hospital (β=0.077, p=.035) rather than a clinic or public health center, visited medical institutions more than 25 times in the most recent one year (β=0.095, p=.013) rather than less than 5 times, and had a high score on willingness to participate (β=0.600, p<.001) was expected to have more experience of participating in patient safety activities.

Focus group interviews: Health consumers' experience of patient participation in hospital care

Twelve health consumers participated in the interview. Four interviewees were male and eight were female. The average age was 40 years (range, 29 to 55 years). Ten interviewees had visited medical institutions more than 5 times in last year and six interviewees had experienced patient safety incidents. Content analysis produced five categories extracted under three themes (Table 5).

The results of the focus group interviews showed that patient participation in medical institutions appeared to be influenced by three types of factors: patient-related factors, factors involving the relationship between patients and healthcare providers, and healthcare environment factors.

Patient-related factors

Some focus group members reported that patient participation in their care process resulted in a different treatment outcome. The participants were actively involved in their care process through patient safety behaviors such as asking for information. Going to the hospital with family members was a motivating factor for patient participation. Their family members helped patients to ask questions, check their prescriptions, and remind them of what they should say to the doctor. In addition, participants reported that their previous experience of a patient safety incident and their perception of the importance of patient safety activities made them more active patients. However, the participants were worried about having any disadvantages in their care if they pointed out healthcare providers' behaviors which could threaten patient safety. This undermined their willingness to participate.

In order to understand the purpose of treatment and actively engage in their treatment process while being in the hospital, they emphasized the need to know what is going on. However, they did not have enough knowledge about their health care and felt it was difficult to understand their care process, including their medication, diagnosis, and treatment plan. Therefore, they could not share in the development of the treatment plan with their healthcare providers. Participants thought it was important to understand their health care by being informed about what patients have to do or what patients can do. There were various topics on which participants wanted to be educated such as disease, diagnosis, treatment, examination, and medication. Participants also thought it was important for patients to know what questions should be asked.

Factors involving the relationship between patients and healthcare providers

In order to participate in patient safety activities in the care process, it was important that

patients establish a supportive relationship with healthcare providers. Explaining the details of treatment, listening to patients, and paying attention to patients were important factors for promoting patient participation.

On the other hand, a hierarchy existed between doctors and patients. Focus group members mentioned that they felt they had not received satisfactory explanations from health care professionals, but they also felt they could not ask a follow-up or repeat question, even if they wanted to. When a patient asked a doctor a question, the doctor was often annoyed and did not explain or share his or her treatment plan. Focus group participants reported that their hesitation to participate was also related to this hierarchical relationship between patients and healthcare providers.

Healthcare environment factors

All participants stated that the processes and procedures for receiving care were very complex in hospitals, and the time allocated to see a doctor for treatment and care was very limited. Also, the type of healthcare delivery system, such as clinic or advanced hospital, affected the patients' willingness to participate in patient safety activities. Participants were more prepared with their health information when they visited a higher level of medical institution, and they also received more information from the medical institution.

By integrating the results of the quantitative and qualitative data analysis, this study showed that the factors influencing patient participation in medical institutions could be categorized into four factors: patient-related factors, illness-related factors, factors involving the relationship between patients and healthcare providers, and healthcare environment factors.

DISCUSSION

This is the first study to investigate patient participation in patient safety activities in South Korea from the health consumer's viewpoint. This study provided evidence on what factors affect actual patient safety behaviors.

This study found that the average score for experience of participation in patient safety behaviors was lower than those of willingness to participate and recognition of the importance of participation. The frequency of health consumers' experience of participation in patient safety activities varied considerably. Among patient safety activities, the most frequently performed were asking general questions such as "the details of surgery" and "an explanation of what the patient doesn't understand". On the other hand, "asking health care workers to wash their hands" was the patient safety behavior with the lowest average scores for intention and experience. These results were consistent with previous findings.[15] Specifically, asking healthcare workers wash their hands has been considered a challenging behavior,[16] with various potential explanations proposed in previous research. Patients themselves felt uncomfortable with asking about handwashing,[18] and they were worried that healthcare workers might feel uncomfortable with this question.[16] In addition, patients thought that questioning healthcare providers about their behavior could imply criticizing their incompetence, and therefore they were reluctant to do so.[15] In the qualitative interview of our study, we learned that patients worried about encountering any disadvantages in treatment if they were to question a healthcare provider when they found something were not right. These findings might reflect that patients prefer to passively participate in their care, but it also might be related to the healthcare environment where patients cannot actively communicate or raise questions and concerns with their clinicians.

The relationships among patients' perception of importance, their willingness, and their experience of patient participation were found to correlate in the quantitative results of this study. Likewise, the qualitative results showed that the perception of the importance of patient participation increased willingness and experience of patient participation. This finding is consistent with a previous study that explored barriers and facilitators to patient involvement in reporting safety experiences within care transfer.[19] When patients conceptualized patient safety, they were likely to provide feedback on safety experiences.[19] Patients who perceived that patient safety was not their responsibility preferred to adopt a passive role in their care.[19 27 28]

Our study found that patients' extent of knowledge on health care was an important influence on patient participation in safety activities. Patient education can help to increase patients' knowledge related to their health and positively affect their attitude toward safety practices.[29] Therefore, healthcare providers must consider developing and implementing effective education for patients. When healthcare providers develop education program or strategies to improve patient participation, a patient's abilities, needs, and preferences for participation must be taken into consideration.[30] In this study's findings, health consumers wanted education programs focusing on "a question list they can ask health professionals", "patient rights and responsibilities", and "a variety of information related to treatment including disease and diagnosis, and medication". Thus, our study's findings suggest developing an education program reflecting these educational needs.

The quantitative and qualitative results of this study showed that patients with caregivers had more willingness and motivation to participate in patient safety and were more involved in patient safety activities than unaccompanied patients were. Increased patient and family engagement is associated with improved patient outcomes and reduced utilization of

healthcare services,[31 32] and it is recommended that medical institutions also encourage not only patients but also their family members to participate in safety activities. This could be a way of increasing the overall frequency of actual patient safety activities and that of specific activities like "bringing a friend or family member to a doctor's appointment" in medical institutions.

Most patients felt that the relationship between patients and healthcare providers was hierarchical, which was one of the barriers to participation. According to a previous intervention study that developed a prototype consumer reporting system for medical errors, the contributing factors of medical mistakes included problems with communication and staff responsiveness to patients.[33] However, patients can be motivated to participate in patient safety activities through open communication with, positive feedback from, and supportive relationships with healthcare providers. According to Maurer et al.,[34] healthcare providers' negative reactions can be a barrier to patient participation, while their active invitation for patients to participate can be a facilitator. Thus, healthcare providers must support and guide patients to participate. Even if patients are willing to participate in safety activities, they might be uncertain about how to be involved. It is important that healthcare providers consider patients as partners for patient safety [35] and encourage them to speak up if they have a concern. However, according to Fisher et al., nearly half of patients (48.6%) in their study had experienced a problem during hospitalization, and almost one-third (30.5%) of them reported they were not always comfortable speaking up.[36] Creating a healthcare environment in which patients can be comfortable raising their concerns may result in safer care and improved patient participation.[36]

The findings of our study showed that the frequency of visiting medical institutions affected the experience of patient participation. According to Davis et al.,[25] severity of the

patients' illness, symptoms, and treatment plan were associated with patient participation. In addition, patients' prior experience of illness led to more willingness to participate.[25] This may be due to the fact that patients with more experience of visiting medical institutions may have more severe illness and will be likely to be exposed to higher-risk situations such as testing, drugs, and surgery, all of which call for patient safety activities. It can also be inferred that patients who have experienced many hospital visits might perceive themselves as playing a more important role in the care process.

A complex care process, time constraints, and different types of healthcare delivery systems were healthcare environmental factors influencing patient participation. A qualitative study conducted with patients and nursing staff members found similar results—that patients felt that healthcare providers were too busy asking questions or talking.[20] Patients and families may feel overwhelmed by the healthcare system and highly technical information.[34 37] Therefore, the organizational context within hospitals, including workflow processes and hospital polices, should be changed to be focused on patient-centered care and patient safety. Then a culture of safety should be established in hospitals.

This study had several limitations. First, the study was based on health consumers' self-reports on their participation in patient safety practices, so these self-reported data may not accurately reflect their actual practices in medical institutions. Second, convenience sampling was used to generate the sample, and was drawn from only two websites plus social media, so people who do not regularly use computers or social network services might not have participated in this study. Therefore, the young and well-educated population might have accounted for a large proportion of the sample. Thus, it may not be generalizable to all patient groups.

CONCLUSION

There were differences among patients' perceived importance of their participation, willingness to participate, and their actual experience of participation in patient safety activities. Future research needs to be conducted to narrow these gaps using efficient educational methods. Our study suggests that an education program be developed that reflects patients' educational needs, such as lists of questions and information on patient safety activities. The results of this study can be used as a reference for developing educational content for patients. Also, the findings from our study may be useful for updating patient participation guidelines.

Healthcare providers may play an important role in encouraging patients to involve themselves in patient safety practices by offering education and encouragement to patients. Strategies are needed to give participation opportunities to patients during their care. Shared decision-making procedures and patient-centered policies should be made to create a healthcare environment in which patients and healthcare providers can participate together to improve patient safety.

Contributors

NL and SA conceived and designed the study. NL, SA and ML performed the cross-section study. NL and SA carried out the statistical analysis. NL, SA and ML conducted qualitative research. NL, SA and ML wrote the paper. NL, SA and ML reviewed and edited the manuscript. All authors read and approved the manuscript.

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Competing interests

None declared

Data availability statement

No data are available.

Ethics approval

This study was approved by the Institute Review Board of Seoul National University (No. No. 1801/003-007) and all study participants provided informed consent.

Patient consent for publication

Not required.

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Table 1. General Characteristics of Participants (*N*=492)

Characteristics	Categories	M±SD	n (%)
Age	19-29	31.72±10.52	270 (54.9)
	30-39		123 (25.0)
	40-49		57 (11.6)
	50-		42 (8.5)
Gender	Female		368 (74.8)
	Male		124 (25.2)
Educational level	High school diploma or below		119 (24.2)
	Bachelor's degree or above		373 (75.8)
Marital status	Single		310 (63.0)
	Married		176 (35.8)
	Divorced		5 (1.0)
	Bereaved		1 (0.2)
Monthly income (KRW)	-<850,000		174 (35.4)
	850,000-<1500,000		51 (10.3)
	1500,000-<2500,000		91 (18.5)
	2500,000-<3500,000		77 (15.7)
	3500,000-<4500,000		43 (8.7)
	4500,000-<5500,000		23 (4.7)
	5500,000-<6500,000		7 (1.4)
	6500,000-		26 (5.3)
Types of medical institutions frequently visited	Clinic or public health center		343 (69.7)
	Hospital		68 (13.8)
	General or Advanced general hospital		79 (16.1)
	Others		2 (0.4)
Number of visits to medical institutions	-<5		165 (33.5)
	5-<10		176 (35.8)
	10-<15		80 (16.3)
	15-<20		40 (8.1)
	20-<25		15 (3.0)
	25-		16 (3.3)
Types of accompanying caregivers	Alone		414 (84.1)
	Spouse		19 (3.9)
	Children		23 (4.7)
	Parents (Father or Mother)		31 (6.3)
	Others		5 (1.0)
Experience of patient safety incidents	Yes		320 (65.0)
	No		172 (35.0)
Do you know the fact that you can directly report to the patient safety reporting and learning system?	Yes		9 (1.8)
	No		483 (98.2)

Table 2. Extent of Willingness to Participate, Recognition of Its Importance, and Experience of Participation in Patient Safety Activities (*N*=492)

Patient participation practices	Engaging in health care behaviors			Frequency of participation			
	Extent of willingness	Recognition of importance	Experience of participation	Always	Often	Sometimes	Not at all
	M±SD			n (%)			
Seeking a second opinion regarding an important healthcare decision	2.70±0.97	3.23±0.71	2.07±0.89	38 (7.7)	98 (19.9)	217 (44.1)	139 (28.3)
Asking healthcare workers to explain more fully something they just said that I do not understand	3.19±0.80	3.47±0.65	2.58±0.84	73 (14.8)	177 (36.0)	202 (41.1)	40 (8.1)
Bringing a friend or family member to a doctor's appointment so that they can help ask questions and understand what the doctor was telling me	2.19±0.90	2.73±0.84	1.84±0.86	25 (5.1)	75 (15.2)	187 (38.0)	205 (41.7)
Asking healthcare workers if they washed their hands	1.43±0.76	2.96±0.84	1.37±0.74	13 (2.7)	39 (7.9)	64 (13.0)	376 (76.4)
Telling healthcare workers about any drug allergies when they did not ask for this information	3.08±1.02	3.55±0.69	2.22±1.10	82 (16.7)	118 (24.0)	118 (24.0)	174 (35.4)
Asking healthcare workers to confirm your identity before performing a procedure	2.05±1.02	3.20±0.84	1.64±0.94	31 (6.3)	65 (13.2)	91 (18.5)	305 (62.0)
Asking healthcare workers about the details of a procedure and the	3.31±0.82	3.55±0.67	2.88±0.95	150 (30.5)	178 (36.2)	120 (24.4)	44 (8.9)

reason for a procedure before it is performed							
Asking healthcare workers to explain care, such as an X-ray or drawing blood, that I was not told about by my doctor or nurse	2.86±0.95	3.43±0.72	2.50±1.04	108 (22.0)	125 (25.4)	164 (33.3)	95 (19.3)
Calling a healthcare worker when I undergo medical tests ordered and no one calls me with the results	3.29±0.83	3.40±0.70	2.50±1.10	117 (23.8)	129 (26.2)	127 (25.8)	119 (24.2)
Taking a written list of all the medications I'm currently taking when going to the doctor	2.34±1.07	3.22±0.80	2.02±1.03	55 (11.2)	102 (20.7)	132 (26.8)	203 (41.3)
Questioning medications or pills if I did not recognize them and never took this medication in the past	2.82±0.98	3.33±0.77	2.35±1.05	85 (17.3)	131 (26.6)	149 (30.3)	127 (25.8)
Checking that I received the right drug and strength before leaving the pharmacy	2.30±1.10	3.22±0.81	2.09±1.09	76 (15.5)	86 (17.5)	134 (27.2)	196 (39.8)
Reporting the errors I noticed had occurred in the hospital to a national reporting system	2.51±0.96	3.20±0.80	1.70±0.99	40 (8.1)	71 (14.4)	84 (17.1)	297 (60.4)
Total	2.62±0.52	3.27±0.51	2.13±0.63				

Table 3. Difference in Extent of Willingness to Participate, Recognition of Its Importance, and Experience of Participation by General Characteristics
(*N*=492)

Sociodemographic characteristics	Subgroup	n (%)	Extent of Willingness		Recognition of Importance		Experience of Participation	
			M±SD	t or F(*p*)	M±SD	t or F(*p*)	M±SD	t or F(*p*)
Age group	19-29	270 (54.9)	2.58±0.51	1.28 (.281)	3.25±0.51	1.23 (.297)	2.10±0.63	1.45 (.227)
	30-39	123 (25.0)	2.66±0.52		3.33±0.50		2.11±0.59	
	40-49	57 (11.6)	2.69±0.52		3.29±0.43		2.25±0.65	
	50-	42 (8.5)	2.67±0.59		3.16±0.65		2.25±0.73	
Gender	Female	368 (74.8)	2.64±0.52	-1.72 (.086)	3.32±0.51	-3.53 (<.001)	2.18±0.64	-2.49 (.013)
	Male	124 (25.2)	2.55±0.52		3.13±0.51		2.01±0.59	
Educational level	High school diploma or below	119 (24.2)	2.53±0.50	-2.19 (.029)	3.18±0.53	-2.27 (.024)	2.05±0.58	-1.80 (.074)
	Bachelor's degree or above	373 (75.8)	2.65±0.53		3.30±0.50		2.16±0.65	
Marital status	Single	310 (63.0)	2.59±0.51	2.05 (.130)	3.26±0.50	0.05 (.948)	2.10±0.62	1.98 (.139)
	Married	176 (35.8)	2.68±0.54		3.28±0.54		2.21±0.65	
	Divorced & Bereaved	6 (1.2)	2.37±0.42		3.27±0.30		1.96±0.63	
Monthly income (KRW)	-<850,000	174 (35.4)	2.61±0.51	0.77 (.616)	3.23±0.51	0.82 (.570)	2.10±0.62	0.53 (.811)
	850,000-<1500,000	51 (10.3)	2.49±0.53		3.22±0.63		2.09±0.63	
	1500,000-<2500,000	91 (18.5)	2.66±0.53		3.31±0.52		2.19±0.68	
	2500,000-<3500,000	77 (15.7)	2.63±0.53		3.31±0.47		2.15±0.62	
	3500,000-<4500,000	43 (8.7)	2.72±0.51		3.39±0.43		2.18±0.64	
	4500,000-<5500,000	23 (4.7)	2.62±0.50		3.21±0.43		2.01±0.40	
	5500,000-<6500,000	7 (1.4)	2.53±0.65		3.13±0.61		2.07±0.86	

	6500,000-	26 (5.3)	2.63±0.58		3.23±0.50		2.26±0.71	
Types of medical institutions frequently visited	Clinic or public health center	343 (69.7)	2.60±0.51	1.41 (.240)	3.27±0.50	1.02 (.384)	2.06±0.60	5.12 (.002)
	Hospital	68 (13.8)	2.59±0.57		3.19±0.59		2.27±0.71	
	General or advanced general hospital	79 (16.1)	2.73±0.53		3.32±0.48		2.32±0.64	
	Others	2 (0.4)	2.38±0.33		3.54±0.54		2.46±0.76	
Number of visits to medical institutions	-<5	165 (33.5)	2.61±0.55	0.86 (.509)	3.26±0.43	0.55 (.738)	2.08±0.66	1.88 (.096)
	5-<10	176 (35.8)	2.60±0.49		3.26±0.53		2.10±0.61	
	10-<15	80 (16.3)	2.62±0.57		3.23±0.57		2.20±0.62	
	15-<20	40 (8.1)	2.67±0.46		3.39±0.59		2.20±0.56	
	20-<25	15 (3.0)	2.86±0.52		3.26±0.69		2.23±0.82	
	25-	16 (3.3)	2.69±0.42		3.30±0.37		2.51±0.48	
Types of accompanying caregivers	Alone	414 (84.1)	2.59±0.52	2.45 (.045)	3.25±0.52	1.09 (.362)	2.09±0.63	3.29 (.011)
	Spouse	19 (3.9)	2.81±0.54		3.35±0.55		2.47±0.61	
	Children	23 (4.7)	2.88±0.52		3.45±0.40		2.32±0.61	
	Parents	31 (6.3)	2.68±0.48		3.27±0.51		2.31±0.57	
	Others	5 (1.0)	2.72±0.41		3.45±0.48		2.46±0.62	
Experience of patient safety incidents	No	320 (65.0)	2.58±0.54	-2.19 (.029)	3.24±0.53	-1.88 (.061)	2.07±0.62	-3.34 (.001)
	Yes	172 (35.0)	2.69±0.49		3.33±0.48		2.26±0.63	

Table 4. Factors Influencing the Experience of Patient Participation (*N*=492)

Variables	Beta	*t*	*p* value
(Constant)		-0.110	0.913
Willingness to participate	0.600	16.413	<.001
Recognition of importance of patient participation	0.020	0.527	.595
Gender			
Male	Ref.		
Female	0.037	1.021	.308
Types of accompanying caregivers			
Alone	Ref.		
Spouse	0.062	1.766	.078
Children	0.008	0.218	.827
Parent	0.025	0.691	.490
Others	0.035	0.992	.322
Number of visits to medical institutions in last year			
-<5	Ref.		
5-<10	0.024	0.611	.542
10-<15	0.058	1.493	.136
15-<20	0.018	0.492	.623
20-<25	-0.003	-0.072	.942
25-	0.095	2.498	.013
Experience of patient safety incidents			
No	Ref.		
Yes	0.065	1.849	.065
Medical institutions frequently visited			
Clinic or public health center	Ref.		
Hospital	0.117	3.287	.001
General or advanced general hospital	0.077	2.113	.035
Others	0.019	0.525	.600

F= 23.19 (p<.001); Adjusted R^2=0.42.

Table 5. Themes, Categories, and Codes

Theme	Category	Code	Quotes
Patient-related factors	Willingness and motivation	Perception of the importance of patient participation	The treatment outcome seems to be different depending on whether I participated in patient safety activities or not. (Participant 2, Group 1) As soon as I realize I am speaking up and participating in my care, I feel that I'm an active patient. That changes the degree of participation. (Participant 1, Group 1)
		Accompanied by caregiver	My grandfather went to several hospitals and took medications from those hospitals which were the same medications he'd gotten from his primary hospital. He had no idea there were duplicates and took them all…After that I told him to get a paper prescription from the pharmacy and to bring medications which he got from other hospitals when he visits his primary hospital. I know that older people need to be accompanied by a family member when they go to the hospital. (Participant 1, Group 1) In medical settings, I thought that patient and family participation in the care process as a member of a healthcare team is important. Since my family could be anyone, a patient or a healthcare provider, I thought patient and family participation is necessary. (Participant 2, Group 2)
		Previous experience of a patient safety incident	I really wanted to hear: "Sorry, we made a mistake with the medication for your daughter. So, we took this kind of action after the incident." But they didn't apologize and didn't take any

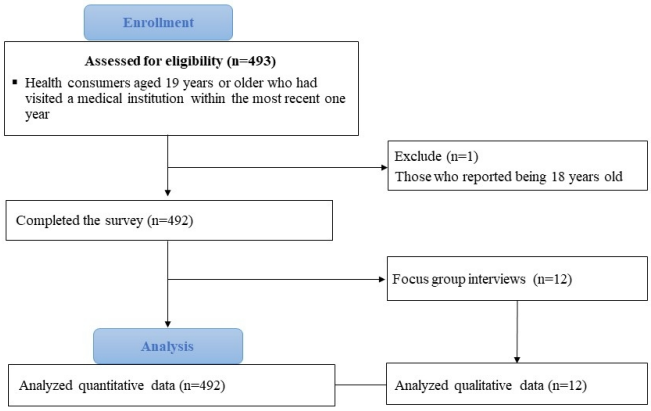
		follow-up action. After this incident, I strongly realized the importance of patient safety and the family's participation. (Participant 6, Group 2)
	Concerns about having any disadvantages in treatment	Foremost, I'm afraid of having any disadvantage on my treatment, like snubbing me after I ask questions. (Participant 6, Group 2) I had a feeling on that he doesn't put an effort into, or pay attention during, my treatment. (Participant 4, Group 2) The dentist always doesn't wash his hands. But I've already done my orthodontics and if I move to another dentist, it costs more. If I pointed out that he didn't wash his hands, I thought I would be disadvantaged, so I think I've never been able to tell him. (Participant 3, Group 1)
Knowledge and skill	Level of health literacy and extent of knowledge	When I asked my doctor about my medication, "I've heard there is this certain drug. Why didn't you prescribe this drug for me before?" And he replied, "The other one that I prescribed is better for your hormone levels." I couldn't understand what he said after that, so I couldn't ask more. (Participant 1, Group 1) He just explained in terms that he was used to. So, I had no idea about the terminology, if it was a diaphragm or something else. (Participant 6, Group 1) If I took the drug, my skin became thinner when taking a high dose of an anticancer drug. There were too many side effects. I felt outraged and became sad. "What a fool I am. I should have

			spoken up." Or I could have asked about the medication at another hospital. But the medical field is too professional for me. So I had no choice but to trust him. (Participant 2, Group 2)
		Educational needs to participate in their care process	I need information on what I can do and check specifically depending on the situation. (Participant 2, Group 2) I think it would be nice if I could get an app that suggests a potential diagnosis after inputting my age and symptoms and so on. Because I can ask a doctor, “In my opinion, my symptom is A, isn’t it?” A doctor may miss the exact diagnosis owing to being busy, right? So, in that case, if I know the information on my symptoms and talk to him, then he can consider the diagnosis and go forward with his treatment plan in the right direction. (Participant 2, Group 1) When I get the medicine at the pharmacy, the information about that medicine is written on the medicine packet, and I think this is very useful for patients. (Participant 2, Group 2) I think it's pretty important to know what questions I can ask. If I have a list of things to look out for and check, it is easy for me to get more involved. (Participant 4, Group 1) I want to know what kinds of rights patients have. (Participant 6, Group 2)
Factors involving the relationship between	Supportive relationships	Attention on a patient and endeavor to	One doctor abrasively listened to me, not my father-in-law, because he couldn’t communicate well, and gave only a routine prescription. On the other

patients and healthcare providers		communicate	hand, another doctor tried to talk directly to my father-in-law in detail, and then, to verify, asked me, "He seemed to express such-and-such. Did you find he had the same symptoms at home?" and explained his conclusions to me in detail. I was able to trust that doctor more. (Participant 1, Group 1) When the nurse simply said, "A certain virus was found. When are you available for your next appointment?", I was so worried because I had no idea what the virus was. So I asked the nurse to explain about the virus, and the nurse was willing to answer all of my questions. (Participant 1, Group 2)
	No opportunity to participate	Hierarchical relationship between the patient and healthcare provider	When I asked what I didn't understand one more time, the doctor responded with a high and angry tone. After experiencing that, although I didn't catch what he said, I didn't ask him and instead asked another healthcare provider because I already knew what his response would be if I asked again. (Participant 3, Group 2)
		Lack of communication between healthcare provider and the patient	I had a surgery for ovarian tumor removal. My doctor briefly explained that I could choose either laparoscopic surgery or laparotomy. And I was moved to the next room to schedule the surgery. The other doctor told me in the room that "even though laparoscopic surgery is covered by insurance, it is a little more expensive, while laparotomy is cheap." He just explained it this way. (Participant 1, Group 1) I haven't felt that I was able to fully ask questions or get satisfactory answers. (Participant 6, Group 1)

		Failure to share treatment plan with the patient	In the process of my treatment, I didn't feel a sense of care from any doctor or nurse. This is because they only checked over my data and wrote prescriptions, and asked about my current physical state. I had the same experience over and over. (Participant 4, Group 2) I asked my doctor what the care plan was. Then the doctor firmly said, rather than sharing the future treatment plan, "Do you want to go to another hospital?" (Participant 5, Group 2) When I try to give my opinion to try to participate from the patient's position, whether it is right or wrong…There are doctors who insist unconditionally, saying "No. The treatment that I am doing is right." In this case, I am not able to say anything, and I am no longer willing to participate. (Participant 2, Group 1)
Healthcare environment factors	Complexity of the healthcare environment	Complex care procedures	It was exhausting for a patient to meet a new healthcare provider every 2 or 3 minutes, and it was hard for me to share my problems deliberately. When talking to the final healthcare provider, a chief surgeon who was charge of my surgery, I was very fatigued so I couldn't think of what to say. (Participant 1, Group 1)
		Limited time to see a doctor	My doctor is too busy. I have almost no chance to talk to him, because usually another patient is waiting when I'm seeing the doctor. So I can't discuss things fully with my doctor, though I'd like to ask questions and get answers. (Participant 2, Group 1) We just took it for granted that we only

		listened to a doctor very briefly in the hospital, because a very limited time was allocated to us. (Participant 6, Group 1)
	Difference in patient participation by type of medical institutions	When I visit an advanced hospital for surgery or another examination, people who work there don't know about me. So I started to write down details such as when I was ill or where I had pain, and brought it with me before someone asked me about it. (Participant 5, Group 1) When I visited an advanced hospital, they gave me information about what drug it was and what side effect it had. However, the clinic did not give me this information. (Participant 3, Group 2)



Supplementary figure 1

338x190mm (96 x 96 DPI)

환자 참여 관련 설문조사

Ⅰ. 일반 특성

다음은 귀하의 개인적인 특성에 대한 질문입니다. 해당하는 항목에 표시하여 주십시오

1. 귀하의 연령은 만 몇 세입니까? 만_____ 세

2. 귀하의 성별을 표시해 주십시오

☐ 남 ☐ 여

3. 귀하의 교육 수준에 표시해 주십시오

☐ 무학 ☐ 초등학교 졸업 ☐ 중학교 졸업 ☐ 고등학교 졸업 ☐ 대학교 졸업 이상

4. 귀하의 결혼 상태에 표시해 주십시오.

☐ 미혼 ☐ 기혼 ☐ 이혼 ☐ 사별 ☐ 별거 ☐ 기타( )

5. 귀하의 함께 살고 있는 동거인에 표시해 주십시오.(다중선택 가능)

☐ 없음 ☐ 배우자 ☐ 자녀 ☐ 부모(부 또는 모) ☐ 형제 또는 자매

☐ 기타( )

6. 귀하의 한 달 평균 소득(용돈)은 얼마입니까?

☐ 85만원 미만 ☐ 85만원 이상~150만원 미만

☐ 150만원 이상 250만원 미만 ☐ 250만원 이상 350만원 미만

☐ 350만원 이상 450만원 미만 ☐ 450만원 이상 550만원 미만

☐ 550만원 이상 650만원 미만 ☐ 650만원 이상

7. 귀하가 주로 방문하는 의료기관에 표시해 주십시오

☐ 의원(외래환자 대상 의료기관)
☐ 병원(30병상 이상, 외래와 입원환자 대상 의료기관)
☐ 종합병원이나 상급종합병원
☐ 보건소
☐ 기타( )

8. 귀하의 의료기관 방문 횟수에 표시해 주십시오(지난 1년간)

☐ 5회 미만 ☐ 5회 이상 10회 미만 ☐ 10회 이상 15회 미만

☐ 15회 이상 20회 미만 ☐ 20회 이상 25회 미만 ☐ 25회 이상

9. 귀하는 의료기관 방문 시 주로 누구와 함께 방문하십니까?

☐ 혼자 ☐ 배우자 ☐ 자녀 ☐ 부모(부 또는 모)

☐ 형제 또는 자매 ☐ 친척 ☐ 친구 ☐ 기타( )

10. 귀하는 주로 건강관련 정보를 어디서 찾으십니까?

☐ 인터넷 ☐ 방송매체(TV, 라디오 등) ☐ 신문, 잡지 등의 기사

☐ 전문가(의사, 간호사, 영양사 등) ☐ 주위사람(가족, 친구 등) ☐ 기타

11. 병원에서 본인과 가족이 의료오류를 경험한 적이 있습니까?

☐ 있다 ☐ 없다

Ⅱ. 환자안전 보고학습시스템

1. 귀하는 환자나 보호자로서 병원에서 의료오류를 발견했을 때, 국가에서 운영하는 환자안전 보고학습시스템(http://www.kops.or.kr/portal)을 통해 직접 보고할 수 있다는 것을 알고 계십니까?

☐ 알고 있다 ☐ 모른다

2. 귀하는 병원에서 의료오류를 경험하거나 발견한다면, 국가 환자안전 보고학습시스템에 의료오류를 보고할 것 같습니까?

*환자안전 보고란? 환자안전사고의 예방 및 의료 질 향상을 위해 개별 의료기관의 환자안전 전담인력 또는 기관의 장, 보건의료인, 환자 및 보호자 등 보건의료서비스를 제공하거나 제공받는 사람이 인지한 환자안전사고 내용을 보고학습시스템(http://www.kops.or.kr/portal) 운영기관에 보고하는 것입니다.

전혀 보고하지 않을 것이다	가끔 보고할 것이다	종종 보고할 것이다	항상 보고할 것이다
1	2	3	4

다음은 환자참여에 대한 문항입니다.

설문은 **3개 영역, 각 13개 문항**으로 구성되어 있습니다.

동일한 문항으로
1)환자 참여 활동에 대한 의향, 2) **환자 참여 활동의 중요성**, 3) **환자 참여 활동 경험**을 측정합니다.

1) 환자 참여 활동의 의향은 본인의 건강관리와 관련하여 각 **환자 참여 행동을 얼마나 할 것 같은지**를 묻는 문항입니다.
2) 환자 참여 활동의 중요성은 각 항목의 환자 참여 행동의 환자 안전을 향상시키기 위해 **얼마나 중요하다고 생각하는지**를 묻는 문항입니다.
3) 환자 참여 활동의 경험은 각 항목의 **환자 참여 행동의 경험 정도**를 묻는 문항입니다.

해당하는 곳에 표시하여 주십시오.

Ⅲ. 환자 참여에 대한 의향

병원에 입원하거나 외래를 방문한 환자로서의 경험을 바탕으로 답하여 주십시오. 그런 경험이 없을 경우는 본인이 환자인 상황을 가정하여 답해 주시기 바랍니다. 귀하는 건강 관리와 관련하여 **다음과 같은 행동을 얼마나 할 것 같습니까?**

	전혀 그렇지 않을 것이다	다소 그럴 것이다	종종 그럴 것이다	매우 그럴 것이다
1. 치료의 결정을 할 때 추가적인 전문 의견이 듣고 싶은 경우 처음 진료를 받던 의사와 다른 의사에게 의견을 구한다.	1	2	3	4
2. 보건의료직원(예, 의사, 간호사)이 설명했으나 이해하지 못한 부분에 대해 좀 더 자세하게 설명해 줄 것을 요구한다.	1	2	3	4
3. 진료를 받으러 갈 때, 보건의료직원(예, 의사, 간호사)이 말하는 내용을 이해하고 질문하는 것을 도와줄 수 있도록 가족이나 친척(친구)을 데려간다.	1	2	3	4
4. 보건의료직원(예, 의사, 간호사)에게 진료나 처치 전에 손을 씻었는지 물어본다.	1	2	3	4
5. 보건의료직원(예, 의사, 간호사)이 약물 알레르기에 대해 물어보지 않더라도 약물 알레르기가 있으면 말한다.	1	2	3	4
6. 시술을 받기 전에 보건의료직원(예, 의사, 간호사)이 환자의 신원을 확인하지 않을 경우,확인하도록 요청한다.	1	2	3	4
7. 시술(수술)을 받기 전에 시술(수술)의 세부사항(예, 목적, 시간이 얼마나 걸리는지, 회복과정 등)에 대해 물어본다.	1	2	3	4
8. 의사나 간호사에게 설명 받지 않았던 검사(예, 엑스레이, 혈액검사)를 시행하려고 하면 검사 전 필요성과 자세한 설명을 요구한다	1	2	3	4
9. 검사를 받고 일정한 시간이 지난 후에도 검사결과를 듣지 못한 경우, 의료진이나 병원에 연락을 한다.	1	2	3	4
10. 진료를 받으러 갈 때 현재 복용하고 있는 모든 약물의 목록이나 약물을 가져간다.	1	2	3	4
11. 무슨 약인지 잘 모르겠고 복용한 적이 없는 약을 설명 없이 받았을 때, 약에 대해 물어본다.	1	2	3	4
12. 약국에서 나오기 전에 정확한 약물을 받았는지 확인한다.	1	2	3	4
13. 병원에서 의료오류를 경험하거나 발견한다면, 국가 환자안전 보고학습시스템에 의료오류를 보고한다.	1	2	3	4

IV. 환자 참여의 중요성

환자안전*을 향상시키기 위해 귀하는 건강 관리와 관련하여 **다음의 항목이 얼마나 중요하다고 생각하십니까?**

* 환자안전이란? 환자안전은 의료와 관련된 불필요한 위해의 위험을 최소한으로 낮추는 것을 의미합니다(WHO, 2009).

	매우 중요 하지 않다	중요 하지 않다	중요 하다	매우 중요 하다
1. 치료의 결정을 할 때 추가적인 전문 의견이 듣고 싶은 경우 처음 진료를 받던 의사와 다른 의사에게 의견을 구한다.	1	2	3	4
2. 보건의료직원(예, 의사, 간호사)이 설명했으나 이해하지 못한 부분에 대해 좀 더 자세하게 설명해 줄 것을 요구한다.	1	2	3	4
3. 진료를 받으러 갈 때, 보건의료직원(예, 의사, 간호사)이 말하는 내용을 이해하고 질문하는 것을 도와줄 수 있도록 가족이나 친척(친구)을 데려간다.	1	2	3	4
4. 보건의료직원(예, 의사, 간호사)에게 진료나 처치 전에 손을 씻었는지 물어본다.	1	2	3	4
5. 보건의료직원(예, 의사, 간호사)이 약물 알레르기에 대해 물어보지 않더라도 약물 알레르기가 있으면 말한다.	1	2	3	4
6. 시술을 받기 전에 보건의료직원(예, 의사, 간호사)이 환자의 신원을 확인하지 않을 경우,확인하도록 요청한다.	1	2	3	4
7. 시술(수술)을 받기 전에 시술(수술)의 세부사항(예, 목적, 시간이 얼마나 걸리는지, 회복과정 등)에 대해 물어본다.	1	2	3	4
8. 의사나 간호사에게 설명 받지 않았던 검사(예, 엑스레이, 혈액검사)를 시행하려고 하면 검사 전 필요성과 자세한 설명을 요구한다	1	2	3	4
9. 검사를 받고 일정한 시간이 지난 후에도 검사결과를 듣지 못한 경우, 의료진이나 병원에 연락을 한다.	1	2	3	4
11. 진료를 받으러 갈 때 현재 복용하고 있는 모든 약물의 목록이나 약물을 가져간다.	1	2	3	4
11. 무슨 약인지 잘 모르겠고 복용한 적이 없는 약을 설명없이 받았을 때, 약에 대해 물어본다.	1	2	3	4
12. 약국에서 나오기 전에 정확한 약물을 받았는지 확인한다.	1	2	3	4
13. 병원에서 의료오류를 경험하거나 발견한다면, 국가 환자안전 보고학습시스템에 의료오류를 보고한다.	1	2	3	4

V. 환자 참여 경험

귀하는 건강 관리와 관련하여 **다음 활동에 얼마나 자주 참여하십니까?**

	전혀 그렇지 않다	가끔 그렇다	자주 그렇다	항상 그렇다
1. 치료의 결정을 할 때 추가적인 전문 의견이 듣고 싶은 경우 처음 진료를 받던 의사와 다른 의사에게 의견을 구한다.	1	2	3	4
2. 보건의료직원(예, 의사, 간호사)이 설명했으나 이해하지 못한 부분에 대해 좀 더 자세하게 설명해 줄 것을 요구한다.	1	2	3	4
3. 진료를 받으러 갈 때, 보건의료직원(예, 의사, 간호사)이 말하는 내용을 이해하고 질문하는 것을 도와줄 수 있도록 가족이나 친척(친구)을 데려간다.	1	2	3	4
4. 보건의료직원(예, 의사, 간호사)에게 진료나 처치 전에 손을 씻었는지 물어본다.	1	2	3	4
5. 보건의료직원(예, 의사, 간호사)이 약물 알레르기에 대해 물어보지 않더라도 약물 알레르기가 있으면 말한다.	1	2	3	4
6. 시술을 받기 전에 보건의료직원(예, 의사, 간호사)이 환자의 신원을 확인하지 않을 경우,확인하도록 요청한다.	1	2	3	4
7. 시술(수술)을 받기 전에 시술(수술)의 세부사항(예, 목적, 시간이 얼마나 걸리는지, 회복과정 등)에 대해 물어본다.	1	2	3	4
8. 의사나 간호사에게 설명 받지 않았던 검사(예, 엑스레이, 혈액검사)를 시행하려고 하면 검사 전 필요성과 자세한 설명을 요구한다	1	2	3	4
9. 검사를 받고 일정한 시간이 지난 후에도 검사결과를 듣지 못한 경우, 의료진이나 병원에 연락을 한다.	1	2	3	4
12. 진료를 받으러 갈 때 현재 복용하고 있는 모든 약물의 목록이나 약물을 가져간다.	1	2	3	4
11. 무슨 약인지 잘 모르겠고 복용한 적이 없는 약을 설명 없이 받았을 때, 약에 대해 물어본다.	1	2	3	4
12. 약국에서 나오기 전에 정확한 약물을 받았는지 확인한다.	1	2	3	4
13. 병원에서 의료오류를 경험하거나 발견한다면, 국가 환자안전 보고학습시스템에 의료오류를 보고한다.	1	2	3	4

설문이 종료되었습니다.

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	#1-3
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	#2-3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	#4-5
Objectives	3	State specific objectives, including any prespecified hypotheses	#6
Methods			
Study design	4	Present key elements of study design early in the paper	#6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	#7-8
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	#7-8
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	#8-9
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	#8-9
Bias	9	Describe any efforts to address potential sources of bias	NA
Study size	10	Explain how the study size was arrived at	#7
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	#8-9
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	#9-10
		(*b*) Describe any methods used to examine subgroups and interactions	#8-9
		(*c*) Explain how missing data were addressed	#7
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	#7-8
		(*e*) Describe any sensitivity analyses	NA
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	#10
		(b) Give reasons for non-participation at each stage	NA
		(c) Consider use of a flow diagram	Supplementary figure 1
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	#10-12
		(b) Indicate number of participants with missing data for each variable of interest	#7
Outcome data	15*	Report numbers of outcome events or summary measures	#10-12, #25-30
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	#10-12, #25-30
		(*b*) Report category boundaries when continuous variables were categorized	#10-12, #25-30
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	#12-14, #31-36
Discussion			
Key results	18	Summarise key results with reference to study objectives	#15-18
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	#18
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	#15-18
Generalisability	21	Discuss the generalisability (external validity) of the study results	#15-18
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	#19

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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A mixed-methods investigation of health consumers' perception and experience of participation in patient safety activities

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A mixed-methods investigation of health consumers' perception and experience of participation in patient safety activities

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Word count: 4,416 word

Abstract

Objectives

This study aimed to examine the factors influencing patient safety behaviors and to explore health customers' experiences of patient participation in the healthcare system.

Design

A mixed-methods sequential explanatory design was employed using a survey and focus group interviews with health consumers.

Setting

The study was conducted in South Korea using an online survey tool.

Participants

Survey data were collected from 493 Korean adults, aged 19 years or older, who had visited hospitals within the most recent one year. Focus group interviews were conducted in 2 groups of 6 participants each among those of the survey participants who agreed to participate in focus groups.

Main outcome measures

The survey measured the recognition of the importance of participation, extent of willingness to participate, and experience of engaging in patient safety activities using a 4-point Likert scale. Qualitative data were collected through focus group interviews to explore health consumers' experience of patient participation in hospital care, and the data were analyzed using content analysis.

Results

The average score for experience of participation in patient safety behaviors (2.13±0.63) was found to be lower than those of recognition of the importance of participation (3.27±0.51) and willingness to participate (2.62±0.52). By integrating the results of the quantitative and

qualitative data analysis, the factors associated with the experience of engaging in healthcare behavior included patient-related factors, illness-related factors, factors involving relationship between patients and healthcare providers, and healthcare environment factors.

Conclusions

To improve patient participation, it is necessary to create a healthcare environment in which patients can speak comfortably and to provide an education program reflecting the patients' needs. Also, healthcare providers must consider patients as partners for patient safety. Shared decision-making procedures and patient-centered care and patient safety policies should be established in hospitals.

Strengths and limitations of this study

- This study was the first to examine patient participation in patient safety activities in South Korea and provided evidence on what factors affect actual patient safety activities using mixed methods.
- Most studies on patient participation have been descriptive studies, but this study performed a regression analysis and focus group interviews to identify factors that affect patient participation in patient safety activities, and finally, integrated the results of both quantitative and qualitative data.
- The results of this study can be used to develop the content of patient participation programs and contribute to creating a patient-centered healthcare environment.
- The sample in this study was recruited through websites and social media, so the generalizability of the findings is limited.

INTRODUCTION

Patient participation in health care is one strategy for improving patient safety. Patients who are more involved in their care tend to experience better health outcomes. Research shows that patients' taking an active role in their health care has positive impacts on patient safety, such as preventing errors,[1] safer medication management,[2] better self-management behavior,[3] and decreased use of healthcare services.[4]

The concept of patient participation is defined as the desire and capability to actively participate in care.[5] To enhance patient participation for patient safety, it is important to encourage patients to participate in patient safety activities while receiving care in medical institutions. The safety activities that patients could participate in can be classified into four types (speaking up, asking questions, finding health information, and engaging in the healthcare process). Patients can speak up if they have questions or concerns about their needs, preferences, and ideas (eg, asking a healthcare provider whether they have washed their hands can contribute to a patient's safe treatment).[6 7] Patients should ask questions and ask about their own health status if anything is unclear in their care process (eg, asking what the patient's health problem is),[8] seek information about their care (eg, asking for resources and websites where patients can learn),[6] and participate in all decisions about their treatment through a shared decision-making process (eg, the patient sharing their needs, symptoms, and wishes in order to make healthcare decisions together with their healthcare providers).[8 9]

Given the growing recognition and encouragement of patients' active role in health care, several international organizations have developed educational materials to increase patient participation to promote patient safety and quality of care.[10-14] In the United States, the Agency for Healthcare Research and Quality has developed guidelines for patients to prevent errors and obtain safer care,[12] the Joint Commission launched the Speak Up campaign to help

patients and their family caregivers play active roles in care,[13] and the National Patient Safety Foundation has created a checklist of actions patients can take to reduce harm.[14] The Canadian Patient Safety Institute in Canada has suggested strategies and evidence-based guidance on engaging patients in patient safety.[6] Also, the Australian Commission on Safety and Quality in Health care in Australia has developed a booklet to support patients being actively involved in their care.[11]

While the guidelines and materials for patients have been developed, there is a lack of evidence on the extent of patients' actual experience of participating in patient safety activities. Several studies have investigated patients' willingness to participate in safety-related behaviors by quantitative method using surveys.[15-17] However, these previous studies focused more on patients' inclination to perform safety practices, and there have been few studies on patients' actual participation experiences using quantitative data. One descriptive study assessing patients' experience in performing error-prevention behaviors while hospitalized, showed that patients experienced asking general questions about the purpose of medication (75.2%) and medical care (85.1%) but had less experience asking healthcare providers about handwashing (4.6%).[18] Patients who are more comfortable engaging in safety-related behaviors are more likely to participate in safety activities.[18]

Moreover, gathering information on what factors affect patient participation is important. Some studies have described patients' perception of participation in patient safety by qualitative method through interviews.[19-21] Some factors were found to negatively affect patients' participation in their care, such as fear of reprisals from staff, an inability to provide feedback to staff, and a perception that safety is generally not patients' priority.[19] On the other hand, feeling connected with their healthcare provider, having an opportunity to provide feedback on experiences of safety, and sharing responsibility positively affected patient

participation.[19-21] Evidence on these factors affecting patient participation can reduce the gap between the patients' intention and actual experience of patient participation in patient safety activities because intention does not necessarily lead to actual participation behaviors.

A mixed-methods design has the advantage of not only producing a measure of experience of participation but also deeply exploring patients' perspectives about patient participation. However, there is a lack of studies focusing on patient participation using mixed methods. To examine the factors influencing actual participation in various safety practices or to investigate the relationship between intention and actual behavior, the need for a qualitative focus group interview or a mixed method using quantitative and qualitative approaches has been suggested.[15 16]

Thus, in this study, we investigated health consumers' recognition of the importance of their participation, their extent of willingness to participate in safety activities, and their experience of participating in patient safety activities through a survey. We also explored healthcare consumers' experience of patient participation and factors influencing their experience of engaging in healthcare behaviors in depth.

METHODS

Study design

This study used a mixed-methods sequential explanatory design including a survey and focus group interviews. According to this design proposed by Creswell and Zhang,[22] we gathered and analyzed quantitative data first, and then used qualitative data collection and analyzed that qualitative data later to help explain the quantitative results.

Participants and data collection

To investigate health consumers' perception and experience of participation in patient safety activities, we conducted an online survey between January 25 and February 3, 2018, in South Korea. The target population comprised Korean-speaking Korean adults aged 19 years or older who had visited a medical institution within the most recent one year. We recruited participants through two websites, the Korea Alliance of Patients' Organizations (http://www.koreapatient.com/) and Resources for Enhancing Safety, Competency, and Utilization for Education (RESCUE, http://patientsafety.snu.ac.kr/), as well as through social media. The websites are produced by nonprofit organizations. The Korean Alliance of Patients' Organizations is a patient advocacy organization that claims the rights of patients to prevent errors and create a patient-centered environment. RESCUE is a health information website that provides educational materials and resources for patient safety. The websites posted a description of the study and the link to the online survey. The survey was implemented using the Qualtrics online survey tool (https://www.qualtrics.com). A total of 493 participants completed the survey, and we excluded from the analysis the data of 1 respondent who reported being 18 years old (Supplementary figure 1). The total sample size exceeded the minimum of 103 required for multiple linear regression, based on Cohen's statistical method (significance level $\alpha = 0.05$, $1-\beta = 0.80$, effect size 0.15, predictors 7).

We posted a description of the focus group interview on the website to recruit participants. Among the survey respondents, with those who agreed to participate in a focus group, focus group interviews were conducted March 20-22, 2018. The focus group interviews were conducted in 2 groups of 6 participants each, for 2 hours with each group in a seminar room at a university. We divided them to the two groups according to their availability, gender, and ages. Each interview involved all of the researchers. Two researchers

(NL or SA) of the research team each facilitated one of the focus group interviews, and one researcher (ML) played a role as a note taker to produce accurate notes while assisting with the focus groups. At the end of the interview, the interviewer summarized the conversation and repeated key information to request confirmation for data accuracy. The list of primary interview questions and safety activities in healthcare settings were sent to participants in advance to inform them on the areas of discussion to be covered. The key interview questions were as follows: "What do you think about patient participation as it relates to patient safety?", "In your opinion, how important is it to you to participate patient safety activities when you visit the hospital and receive medical care or treatment?", "To what extent do you think you can participate in patient safety activities as a patient or their caregiver?", "How do you think patient involvement in patient safety activities could affect patient safety?", and "Can you tell us specifically about your experiences in which you participated in the care or treatment process?"

Measures

Patient participation was measured using a tool developed to measure the inclination to engage in patient safety practices.[15] We added 3 items from the relevant literature[18 23 24] (bringing a friend or family member to a doctor's appointment; telling healthcare workers about any drug allergies; reporting errors to a national reporting system if they notice errors in the hospital). Thus, the final survey tool comprised 13 items, and the questions included a list of 13 specific safety-related behaviors through which patients can engage while undergoing care in medical institutions (Supplementary survey questionnaire). To explore the factors influencing patient participation, we grouped variables into the following three categories based on a literature review[15 18 23-25]: patient-related (recognition of the importance

of patient participation, willingness to participate, and socio-demographic variables), illness-related (number of visits to medical institutions and prior experience of patient safety incidents), and healthcare environment-related (types of medical institutions).

Four-point Likert scales were used to assess the recognition of the importance of participation (1=not very important, 2=not important, 3=important, 4=very important) in patient safety activities and extent of health consumers' willingness to participate (1=not at all, 2=somewhat likely, 3=likely, 4=very likely). Participants were asked to indicate how often they had experienced each patient safety activity in the hospital using a 4-point Likert scale (1=not at all, 2=sometimes, 3=often, 4=always). The reliability of the finalized questionnaire was evaluated using Cronbach's alpha coefficient. The Cronbach's alpha values of the three sections were 0.814, 0.900, and 0.884.

Data analysis

The quantitative data were analyzed using SPSS 24.0 (IBM Corp., Armonk, NY, USA). Participants' general characteristics and the scores of participants' recognition of the importance of participation, willingness to participate, and participation experience were summarized using descriptive statistics. An independent t-test and one-way ANOVA were used to identify differences in recognition of the importance of participation, willingness to participate, and experience of patient participation by general characteristics. For correlations between recognition of the importance of participation, willingness to participate, and experience of participation, Pearson's correlation coefficients were used. Multiple linear regression analysis was performed to identify variables associated with experience of patient participation.

The qualitative data were analyzed using conventional content analysis.[26] All focus group interviews were recorded and transcribed. The collected data were written immediately after the interview, and the field notes were used for analysis. One researcher (SA) led the first analysis by reading the transcript repeatedly, and two researchers (NL, ML) performed a second review. Emergent themes were discussed in depth, then the researchers extracted codes, categories, and themes together during content analysis until agreement was reached.

Patient and Public involvement

Neither patients nor the public were involved in the design, development of the research questions, outcome measure, or conduct of this study. To further facilitate the recruitment of patients, advertisements were posted on the websites.

RESULTS

Participant characteristics

A total of 492 completed surveys were included in the analysis. The mean age of the respondents was 31.7 years (SD: 10.52), 74.8% of respondents were female, most had graduated from college or above (n=373, 75.8%), and most were unmarried (n=310, 63.0%). The monthly income of most participants (n=174, 35.4%) was less than 850,000 won. The most frequently visited medical institutions were clinics or public health centers (n=343, 69.7%), and more than 60% of the participants had visited medical institutions less than 10 times within the most recent one year. Most of the participants (n=414, 84.1%) reported going alone when they visited medical institutions, and 65% of the participants had experienced patient safety incidents. The vast majority of the participants (n=483, 98.2%) did not know the fact that they could report patient safety incidents to the national reporting and

learning system themselves (Table 1).

Participation in patient safety activities

Among this study's findings on patient safety activities, average scores were as follows: recognition of the importance (3.27±0.51), the extent of willingness (2.62±0.52), and the experience of participation (2.13±0.63). Respondents' experience of engaging in patient safety activities varied considerably. Some respondents reported that they always ask about the details of a procedure and the reason for a procedure before it is performed (30.5%), ask for an explanation of care that they were not told about by their doctor or nurse (22.0%), and call when they have not received the results of a medical test they underwent (23.8%). Fewer respondents had the experience of asking healthcare workers if they had washed their hands (2.7%), bringing a friend or family member to a doctor's appointment (5.1%), or asking for healthcare workers to confirm patient identity before performing a procedure (6.3%) (Table 2).

The scores on recognizing the importance of participation showed significant differences according to gender (t=-3.53, p<.001) and education level (t=-2.27, p=.024). The scores of respondents' willingness to participate differed significantly by education level (t=-2.19, p=.029), the type of accompanying caregivers (F=2.45, p =.045), and whether they had experienced patient safety incidents or not (t=-2.19, p=.029). The scores of participation experience differed significantly by gender (t=-2.49, p=.013), the type of medical institutions frequently visited (F=5.12, p =.002), the type of accompanying caregivers (F=3.29, p =.011), and previous experience of patient safety incidents (t=-3.34, p=.001) (Table 3).

Factors influencing experience of patient participation

The respondents' experience of patient participation showed a significant positive correlation with recognition of the importance of participation (r=.23, p<.001), and their willingness to participate (r=.63, p<.001). In addition, participants' recognition of the importance of participation showed a significantly positive correlation with willingness to participate (r=.34, p<.001).

Multiple linear regression was used to examine the relationship of the experience of patient participation with three sets of factors: patient-related, illness-related, and healthcare environment-related (Table 4). The result of the multiple linear regression showed that the patient who frequently visited a hospital (β=0.117, p=.001) and a general or advanced general hospital (β=0.077, p=.035) rather than a clinic or public health center, visited medical institutions more than 25 times in the most recent one year (β=0.095, p=.013) rather than less than 5 times, and had a high score on willingness to participate (β=0.600, p<.001) was expected to have more experience of participating in patient safety activities.

Focus group interviews: Health consumers' experience of patient participation in hospital care

Twelve health consumers participated in the interview. Four interviewees were male and eight were female. The average age was 40 years (range, 29 to 55 years). Ten interviewees had visited medical institutions more than 5 times in last year and six interviewees had experienced patient safety incidents. Content analysis produced five categories extracted under three themes (Table 5).

The results of the focus group interviews showed that patient participation in medical institutions appeared to be influenced by three types of factors: patient-related factors, factors

involving the relationship between patients and healthcare providers, and healthcare environment factors.

Patient-related factors

Some focus group members reported that patient participation in their care process resulted in a different treatment outcome. The participants were actively involved in their care process through patient safety behaviors such as asking for information. Going to the hospital with family members was a motivating factor for patient participation. Their family members helped patients to ask questions, check their prescriptions, and remind them of what they should say to the doctor. In addition, participants reported that their previous experience of a patient safety incident and their perception of the importance of patient safety activities made them more active patients. However, the participants were worried about having any disadvantages in their care if they pointed out healthcare providers' behaviors which could threaten patient safety. This undermined their willingness to participate.

In order to understand the purpose of treatment and actively engage in their treatment process while being in the hospital, they emphasized the need to know what is going on. However, they did not have enough knowledge about their health care and felt it was difficult to understand their care process, including their medication, diagnosis, and treatment plan. Therefore, they could not share in the development of the treatment plan with their healthcare providers. Participants thought it was important to understand their health care by being informed about what patients have to do or what patients can do. There were various topics on which participants wanted to be educated such as disease, diagnosis, treatment, examination, and medication. Participants also thought it was important for patients to know what questions should be asked.

Factors involving the relationship between patients and healthcare providers

In order to participate in patient safety activities in the care process, it was important that patients establish a supportive relationship with healthcare providers. Explaining the details of treatment, listening to patients, and paying attention to patients were important factors for promoting patient participation.

On the other hand, a hierarchy existed between doctors and patients. Focus group members mentioned that they felt they had not received satisfactory explanations from health care professionals, but they also felt they could not ask a follow-up or repeat question, even if they wanted to. When a patient asked a doctor a question, the doctor was often annoyed and did not explain or share his or her treatment plan. Focus group participants reported that their hesitation to participate was also related to this hierarchical relationship between patients and healthcare providers.

Healthcare environment factors

All participants stated that the processes and procedures for receiving care were very complex in hospitals, and the time allocated to see a doctor for treatment and care was very limited. Also, the type of healthcare delivery system, such as clinic or advanced hospital, affected the patients' willingness to participate in patient safety activities. Participants were more prepared with their health information when they visited a higher level of medical institution, and they also received more information from the medical institution.

By integrating the results of the quantitative and qualitative data analysis, this study showed that the factors influencing patient participation in medical institutions could be

categorized into four factors: patient-related factors, illness-related factors, factors involving the relationship between patients and healthcare providers, and healthcare environment factors.

DISCUSSION

This is the first study to investigate patient participation in patient safety activities in South Korea from the health consumer's viewpoint. This study provided evidence on what factors affect actual patient safety behaviors.

This study found that the average score for experience of participation in patient safety behaviors was lower than those of recognition of the importance of participation and willingness to participate. The frequency of health consumers' experience of participation in patient safety activities varied considerably. Among patient safety activities, the most frequently performed were asking general questions such as "the details of surgery" and "an explanation of what the patient doesn't understand". On the other hand, "asking health care workers to wash their hands" was the patient safety behavior with the lowest average scores for intention and experience. These results were consistent with previous findings.[15] Specifically, asking healthcare workers wash their hands has been considered a challenging behavior,[16] with various potential explanations proposed in previous research. Patients themselves felt uncomfortable with asking about handwashing,[18] and they were worried that healthcare workers might feel uncomfortable with this question.[16] In addition, patients thought that questioning healthcare providers about their behavior could imply criticizing their incompetence, and therefore they were reluctant to do so.[15] In the qualitative interview of our study, we learned that patients worried about encountering any disadvantages in treatment if they were to question a healthcare provider when they found something were not

right. These findings might reflect that patients prefer to passively participate in their care, but it also might be related to the healthcare environment where patients cannot actively communicate or raise questions and concerns with their clinicians.

The relationships among patients' perception of importance, their willingness, and their experience of patient participation were found to correlate in the quantitative results of this study. Likewise, the qualitative results showed that the perception of the importance of patient participation increased willingness and experience of patient participation. This finding is consistent with a previous study that explored barriers and facilitators to patient involvement in reporting safety experiences within care transfer.[19] When patients conceptualized patient safety, they were likely to provide feedback on safety experiences.[19] Patients who perceived that patient safety was not their responsibility preferred to adopt a passive role in their care.[19 27 28]

Our study found that patients' extent of knowledge on health care was an important influence on patient participation in safety activities. Patient education can help to increase patients' knowledge related to their health and positively affect their attitude toward safety practices.[29] Therefore, healthcare providers must consider developing and implementing effective education for patients. When healthcare providers develop education program or strategies to improve patient participation, a patient's abilities, needs, and preferences for participation must be taken into consideration.[30] In this study's findings, health consumers wanted education programs focusing on "a question list they can ask health professionals", "patient rights and responsibilities", and "a variety of information related to treatment including disease and diagnosis, and medication". Thus, our study's findings suggest developing an education program reflecting these educational needs.

The quantitative and qualitative results of this study showed that patients with caregivers had more willingness and motivation to participate in patient safety and were more involved in patient safety activities than unaccompanied patients were. Increased patient and family engagement is associated with improved patient outcomes and reduced utilization of healthcare services,[31 32] and it is recommended that medical institutions also encourage not only patients but also their family members to participate in safety activities. This could be a way of increasing the overall frequency of actual patient safety activities and that of specific activities like "bringing a friend or family member to a doctor's appointment" in medical institutions.

Most patients felt that the relationship between patients and healthcare providers was hierarchical, which was one of the barriers to participation. According to a previous intervention study that developed a prototype consumer reporting system for medical errors, the contributing factors of medical mistakes included problems with communication and staff responsiveness to patients.[33] However, patients can be motivated to participate in patient safety activities through open communication with, positive feedback from, and supportive relationships with healthcare providers. According to Maurer et al.,[34] healthcare providers' negative reactions can be a barrier to patient participation, while their active invitation for patients to participate can be a facilitator. Thus, healthcare providers must support and guide patients to participate. Even if patients are willing to participate in safety activities, they might be uncertain about how to be involved. It is important that healthcare providers consider patients as partners for patient safety [35] and encourage them to speak up if they have a concern. However, according to Fisher et al., nearly half of patients (48.6%) in their study had experienced a problem during hospitalization, and almost one-third (30.5%) of them reported they were not always comfortable speaking up.[36] Creating a healthcare environment

in which patients can be comfortable raising their concerns may result in safer care and improved patient participation.[36]

The findings of our study showed that the frequency of visiting medical institutions affected the experience of patient participation. According to Davis et al.,[25] severity of the patients' illness, symptoms, and treatment plan were associated with patient participation. In addition, patients' prior experience of illness led to more willingness to participate.[25] This may be due to the fact that patients with more experience of visiting medical institutions may have more severe illness and will be likely to be exposed to higher-risk situations such as testing, drugs, and surgery, all of which call for patient safety activities. It can also be inferred that patients who have experienced many hospital visits might perceive themselves as playing a more important role in the care process. Our study showed that over 60% of participants had visited medical institutions less than 10 times within the most recent one year. According to the national data reported by National Health Insurance Statistics,[37] the annual number of outpatient visits to medical institutions per capita is 17.72, which is calculated by dividing the number of outpatient visits of all citizens (health insurance patients) by the average annual population covered by health insurance. Considering this statistic, the participants of our study may be a relatively healthy population, so these characteristics of the participants may have affected the outcomes in this study. Therefore, further research is needed to examine the factors influencing experience of participation including diverse patients' illness-related characteristics such as health status and prior experience of illness.

A complex care process, time constraints, and different types of healthcare delivery systems were healthcare environmental factors influencing patient participation. A qualitative study conducted with patients and nursing staff members found similar results—that patients

felt that healthcare providers were too busy asking questions or talking.[20] Patients and families may feel overwhelmed by the healthcare system and highly technical information.[34 38] Therefore, the organizational context within hospitals, including workflow processes and hospital polices, should be changed to be focused on patient-centered care and patient safety. Then a culture of safety should be established in hospitals.

This study had several limitations. First, the study was based on health consumers' self-reports on their participation in patient safety practices, so these self-reported data may not accurately reflect their actual practices in medical institutions. Second, convenience sampling was used to generate the sample, and was drawn from only two websites plus social media, so people who do not regularly use computers or social network services might not have participated in this study. Therefore, the young, relatively healthy, and well-educated population might have accounted for a large proportion of the sample. Thus, it may not be generalizable to all patient groups. Future research is suggested to investigate the experience of participation using national data through a systematic sampling design.

CONCLUSION

There were differences among patients' perceived importance of their participation, willingness to participate, and their actual experience of participation in patient safety activities. Future research needs to be conducted to narrow these gaps using efficient educational methods. Our study suggests that an education program be developed that reflects patients' educational needs, such as lists of questions and information on patient safety activities. The results of this study can be used as a reference for developing educational content for patients. Also, the findings from our study may be useful for updating patient participation guidelines.

Healthcare providers may play an important role in encouraging patients to involve themselves in patient safety practices by offering education and encouragement to patients. Strategies are needed to give participation opportunities to patients during their care. Shared decision-making procedures and patient-centered policies should be made to create a healthcare environment in which patients and healthcare providers can participate together to improve patient safety.

Contributors

NL and SA conceived and designed the study. NL, SA and ML performed the cross-section study. NL and SA carried out the statistical analysis. NL, SA and ML conducted qualitative research. NL, SA and ML wrote the paper. NL, SA and ML reviewed and edited the manuscript. All authors read and approved the manuscript.

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Competing interests

None declared

Data availability statement

No data are available.

Ethics approval

This study was approved by the Institute Review Board of Seoul National University (No. No. 1801/003-007) and all study participants provided informed consent.

Patient consent for publication

Not required.

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Table 1. General Characteristics of Participants (*N*=492)

Characteristics	Categories	n (%)
Age (M±SD, 31.72±10.52)	19-29	270 (54.9)
	30-39	123 (25.0)
	40-49	57 (11.6)
	50-	42 (8.5)
Gender	Female	368 (74.8)
	Male	124 (25.2)
Educational level	High school diploma or below	119 (24.2)
	Bachelor's degree or above	373 (75.8)
Marital status	Single	310 (63.0)
	Married	176 (35.8)
	Divorced	5 (1.0)
	Bereaved	1 (0.2)
Monthly income (KRW)	-<850,000	174 (35.4)
	850,000-<1500,000	51 (10.3)
	1500,000-<2500,000	91 (18.5)
	2500,000-<3500,000	77 (15.7)
	3500,000-<4500,000	43 (8.7)
	4500,000-<5500,000	23 (4.7)
	5500,000-<6500,000	7 (1.4)
	6500,000-	26 (5.3)
Types of medical institutions frequently visited	Clinic or public health center	343 (69.7)
	Hospital	68 (13.8)
	General or Advanced general hospital	79 (16.1)
	Others	2 (0.4)
Number of visits to medical institutions	-<5	165 (33.5)
	5-<10	176 (35.8)
	10-<15	80 (16.3)
	15-<20	40 (8.1)
	20-<25	15 (3.0)
	25-	16 (3.3)
Types of accompanying caregivers	Alone	414 (84.1)
	Spouse	19 (3.9)
	Children	23 (4.7)
	Parents (Father or Mother)	31 (6.3)
	Others	5 (1.0)
Experience of patient safety incidents	Yes	320 (65.0)
	No	172 (35.0)
Do you know the fact that you can directly report to the patient safety reporting and learning system?	Yes	9 (1.8)
	No	483 (98.2)

Table 2. Recognition of Importance of Participation, Extent of Willingness to Participate, and Experience of Participation in Patient Safety Activities (*N*=492)

Patient participation practices	Engaging in health care behaviors			Frequency of participation			
	Recognition of importance	Extent of willingness	Experience of participation	Always	Often	Sometimes	Not at all
	M±SD			n (%)			
Seeking a second opinion regarding an important healthcare decision	3.23±0.71	2.70±0.97	2.07±0.89	38 (7.7)	98 (19.9)	217 (44.1)	139 (28.3)
Asking healthcare workers to explain more fully something they just said that I do not understand	3.47±0.65	3.19±0.80	2.58±0.84	73 (14.8)	177 (36.0)	202 (41.1)	40 (8.1)
Bringing a friend or family member to a doctor's appointment so that they can help ask questions and understand what the doctor was telling me	2.73±0.84	2.19±0.90	1.84±0.86	25 (5.1)	75 (15.2)	187 (38.0)	205 (41.7)
Asking healthcare workers if they washed their hands	2.96±0.84	1.43±0.76	1.37±0.74	13 (2.7)	39 (7.9)	64 (13.0)	376 (76.4)
Telling healthcare workers about any drug allergies when they did not ask for this information	3.55±0.69	3.08±1.02	2.22±1.10	82 (16.7)	118 (24.0)	118 (24.0)	174 (35.4)
Asking healthcare workers to confirm your identity before performing a procedure	3.20±0.84	2.05±1.02	1.64±0.94	31 (6.3)	65 (13.2)	91 (18.5)	305 (62.0)
Asking healthcare workers about the details of a procedure and the	3.55±0.67	3.31±0.82	2.88±0.95	150 (30.5)	178 (36.2)	120 (24.4)	44 (8.9)

reason for a procedure before it is performed							
Asking healthcare workers to explain care, such as an X-ray or drawing blood, that I was not told about by my doctor or nurse	3.43±0.72	2.86±0.95	2.50±1.04	108 (22.0)	125 (25.4)	164 (33.3)	95 (19.3)
Calling a healthcare worker when I undergo medical tests ordered and no one calls me with the results	3.40±0.70	3.29±0.83	2.50±1.10	117 (23.8)	129 (26.2)	127 (25.8)	119 (24.2)
Taking a written list of all the medications I'm currently taking when going to the doctor	3.22±0.80	2.34±1.07	2.02±1.03	55 (11.2)	102 (20.7)	132 (26.8)	203 (41.3)
Questioning medications or pills if I did not recognize them and never took this medication in the past	3.33±0.77	2.82±0.98	2.35±1.05	85 (17.3)	131 (26.6)	149 (30.3)	127 (25.8)
Checking that I received the right drug and strength before leaving the pharmacy	3.22±0.81	2.30±1.10	2.09±1.09	76 (15.5)	86 (17.5)	134 (27.2)	196 (39.8)
Reporting the errors I noticed had occurred in the hospital to a national reporting system	3.20±0.80	2.51±0.96	1.70±0.99	40 (8.1)	71 (14.4)	84 (17.1)	297 (60.4)
Total	3.27±0.51	2.62±0.52	2.13±0.63				

Table 3. Difference in Recognition of Importance of Participation, Extent of Willingness to Participate, and Experience of Participation by General Characteristics
(*N*=492)

Sociodemographic characteristics	Subgroup	n (%)	Recognition of Importance		Extent of Willingness		Experience of Participation	
			M±SD	t or F(*p*)	M±SD	t or F(*p*)	M±SD	t or F(*p*)
Age group	19-29	270 (54.9)	3.25±0.51	1.23 (.297)	2.58±0.51	1.28 (.281)	2.10±0.63	1.45 (.227)
	30-39	123 (25.0)	3.33±0.50		2.66±0.52		2.11±0.59	
	40-49	57 (11.6)	3.29±0.43		2.69±0.52		2.25±0.65	
	50-	42 (8.5)	3.16±0.65		2.67±0.59		2.25±0.73	
Gender	Female	368 (74.8)	3.32±0.51	-3.53 (<.001)	2.64±0.52	-1.72 (.086)	2.18±0.64	-2.49 (.013)
	Male	124 (25.2)	3.13±0.51		2.55±0.52		2.01±0.59	
Educational level	High school diploma or below	119 (24.2)	3.18±0.53	-2.27 (.024)	2.53±0.50	-2.19 (.029)	2.05±0.58	-1.80 (.074)
	Bachelor's degree or above	373 (75.8)	3.30±0.50		2.65±0.53		2.16±0.65	
Marital status	Single	310 (63.0)	3.26±0.50	0.05 (.948)	2.59±0.51	2.05 (.130)	2.10±0.62	1.98 (.139)
	Married	176 (35.8)	3.28±0.54		2.68±0.54		2.21±0.65	
	Divorced & Bereaved	6 (1.2)	3.27±0.30		2.37±0.42		1.96±0.63	
Monthly income (KRW)	-<850,000	174 (35.4)	3.23±0.51	0.82 (.570)	2.61±0.51	0.77 (.616)	2.10±0.62	0.53 (.811)
	850,000-<1500,000	51 (10.3)	3.22±0.63		2.49±0.53		2.09±0.63	
	1500,000-<2500,000	91 (18.5)	3.31±0.52		2.66±0.53		2.19±0.68	
	2500,000-<3500,000	77 (15.7)	3.31±0.47		2.63±0.53		2.15±0.62	
	3500,000-<4500,000	43 (8.7)	3.39±0.43		2.72±0.51		2.18±0.64	
	4500,000-<5500,000	23 (4.7)	3.21±0.43		2.62±0.50		2.01±0.40	
	5500,000-<6500,000	7 (1.4)	3.13±0.61		2.53±0.65		2.07±0.86	

	6500,000-	26 (5.3)	3.23±0.50		2.63±0.58		2.26±0.71	
Types of medical institutions frequently visited	Clinic or public health center	343 (69.7)	3.27±0.50	1.02 (.384)	2.60±0.51	1.41 (.240)	2.06±0.60	5.12 (.002)
	Hospital	68 (13.8)	3.19±0.59		2.59±0.57		2.27±0.71	
	General or advanced general hospital	79 (16.1)	3.32±0.48		2.73±0.53		2.32±0.64	
	Others	2 (0.4)	3.54±0.54		2.38±0.33		2.46±0.76	
Number of visits to medical institutions	-<5	165 (33.5)	3.26±0.43	0.55 (.738)	2.61±0.55	0.86 (.509)	2.08±0.66	1.88 (.096)
	5-<10	176 (35.8)	3.26±0.53		2.60±0.49		2.10±0.61	
	10-<15	80 (16.3)	3.23±0.57		2.62±0.57		2.20±0.62	
	15-<20	40 (8.1)	3.39±0.59		2.67±0.46		2.20±0.56	
	20-<25	15 (3.0)	3.26±0.69		2.86±0.52		2.23±0.82	
	25-	16 (3.3)	3.30±0.37		2.69±0.42		2.51±0.48	
Types of accompanying caregivers	Alone	414 (84.1)	3.25±0.52	1.09 (.362)	2.59±0.52	2.45 (.045)	2.09±0.63	3.29 (.011)
	Spouse	19 (3.9)	3.35±0.55		2.81±0.54		2.47±0.61	
	Children	23 (4.7)	3.45±0.40		2.88±0.52		2.32±0.61	
	Parents	31 (6.3)	3.27±0.51		2.68±0.48		2.31±0.57	
	Others	5 (1.0)	3.45±0.48		2.72±0.41		2.46±0.62	
Experience of patient safety incidents	No	320 (65.0)	3.24±0.53	-1.88 (.061)	2.58±0.54	-2.19 (.029)	2.07±0.62	-3.34 (.001)
	Yes	172 (35.0)	3.33±0.48		2.69±0.49		2.26±0.63	

Table 4. Factors Influencing the Experience of Patient Participation (*N*=492)

Variables	Beta	*t*	*p* value
(Constant)		-0.110	0.913
Recognition of importance of patient participation	0.020	0.527	.595
Willingness to participate	0.600	16.413	<.001
Gender			
Male	Ref.		
Female	0.037	1.021	.308
Types of accompanying caregivers			
Alone	Ref.		
Spouse	0.062	1.766	.078
Children	0.008	0.218	.827
Parent	0.025	0.691	.490
Others	0.035	0.992	.322
Number of visits to medical institutions in last year			
-<5	Ref.		
5-<10	0.024	0.611	.542
10-<15	0.058	1.493	.136
15-<20	0.018	0.492	.623
20-<25	-0.003	-0.072	.942
25-	0.095	2.498	.013
Experience of patient safety incidents			
No	Ref.		
Yes	0.065	1.849	.065
Medical institutions frequently visited			
Clinic or public health center	Ref.		
Hospital	0.117	3.287	.001
General or advanced general hospital	0.077	2.113	.035
Others	0.019	0.525	.600

F= 23.19 (p<.001); Adjusted R^2=0.42.

Table 5. Themes, Categories, and Codes

Theme	Category	Code	Quotes
Patient-related factors	Willingness and motivation	Perception of the importance of patient participation	The treatment outcome seems to be different depending on whether I participated in patient safety activities or not. (Participant 2, Group 1) As soon as I realize I am speaking up and participating in my care, I feel that I'm an active patient. That changes the degree of participation. (Participant 1, Group 1)
		Accompanied by caregiver	My grandfather went to several hospitals and took medications from those hospitals which were the same medications he'd gotten from his primary hospital. He had no idea there were duplicates and took them all…After that I told him to get a paper prescription from the pharmacy and to bring medications which he got from other hospitals when he visits his primary hospital. I know that older people need to be accompanied by a family member when they go to the hospital. (Participant 1, Group 1) In medical settings, I thought that patient and family participation in the care process as a member of a healthcare team is important. Since my family could be anyone, a patient or a healthcare provider, I thought patient and family participation is necessary. (Participant 2, Group 2)
		Previous experience of a patient safety incident	I really wanted to hear: "Sorry, we made a mistake with the medication for your daughter. So, we took this kind of action after the incident." But they didn't apologize and didn't take any

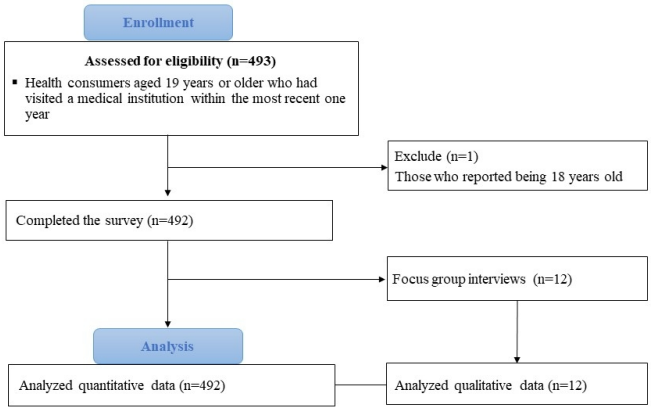
		follow-up action. After this incident, I strongly realized the importance of patient safety and the family's participation. (Participant 6, Group 2)
	Concerns about having any disadvantages in treatment	Foremost, I'm afraid of having any disadvantage on my treatment, like snubbing me after I ask questions. (Participant 6, Group 2) I had a feeling on that he doesn't put an effort into, or pay attention during, my treatment. (Participant 4, Group 2) The dentist always doesn't wash his hands. But I've already done my orthodontics and if I move to another dentist, it costs more. If I pointed out that he didn't wash his hands, I thought I would be disadvantaged, so I think I've never been able to tell him. (Participant 3, Group 1)
Knowledge and skill	Level of health literacy and extent of knowledge	When I asked my doctor about my medication, "I've heard there is this certain drug. Why didn't you prescribe this drug for me before?" And he replied, "The other one that I prescribed is better for your hormone levels." I couldn't understand what he said after that, so I couldn't ask more. (Participant 1, Group 1) He just explained in terms that he was used to. So, I had no idea about the terminology, if it was a diaphragm or something else. (Participant 6, Group 1) If I took the drug, my skin became thinner when taking a high dose of an anticancer drug. There were too many side effects. I felt outraged and became sad. "What a fool I am. I should have

			spoken up." Or I could have asked about the medication at another hospital. But the medical field is too professional for me. So I had no choice but to trust him. (Participant 2, Group 2)
		Educational needs to participate in their care process	I need information on what I can do and check specifically depending on the situation. (Participant 2, Group 2) I think it would be nice if I could get an app that suggests a potential diagnosis after inputting my age and symptoms and so on. Because I can ask a doctor, “In my opinion, my symptom is A, isn’t it?” A doctor may miss the exact diagnosis owing to being busy, right? So, in that case, if I know the information on my symptoms and talk to him, then he can consider the diagnosis and go forward with his treatment plan in the right direction. (Participant 2, Group 1) When I get the medicine at the pharmacy, the information about that medicine is written on the medicine packet, and I think this is very useful for patients. (Participant 2, Group 2) I think it's pretty important to know what questions I can ask. If I have a list of things to look out for and check, it is easy for me to get more involved. (Participant 4, Group 1) I want to know what kinds of rights patients have. (Participant 6, Group 2)
Factors involving the relationship between	Supportive relationships	Attention on a patient and endeavor to	One doctor abrasively listened to me, not my father-in-law, because he couldn’t communicate well, and gave only a routine prescription. On the other

patients and healthcare providers		communicate	hand, another doctor tried to talk directly to my father-in-law in detail, and then, to verify, asked me, "He seemed to express such-and-such. Did you find he had the same symptoms at home?" and explained his conclusions to me in detail. I was able to trust that doctor more. (Participant 1, Group 1) When the nurse simply said, "A certain virus was found. When are you available for your next appointment?", I was so worried because I had no idea what the virus was. So I asked the nurse to explain about the virus, and the nurse was willing to answer all of my questions. (Participant 1, Group 2)
	No opportunity to participate	Hierarchical relationship between the patient and healthcare provider	When I asked what I didn't understand one more time, the doctor responded with a high and angry tone. After experiencing that, although I didn't catch what he said, I didn't ask him and instead asked another healthcare provider because I already knew what his response would be if I asked again. (Participant 3, Group 2)
		Lack of communication between healthcare provider and the patient	I had a surgery for ovarian tumor removal. My doctor briefly explained that I could choose either laparoscopic surgery or laparotomy. And I was moved to the next room to schedule the surgery. The other doctor told me in the room that "even though laparoscopic surgery is covered by insurance, it is a little more expensive, while laparotomy is cheap." He just explained it this way. (Participant 1, Group 1) I haven't felt that I was able to fully ask questions or get satisfactory answers. (Participant 6, Group 1)

		Failure to share treatment plan with the patient	In the process of my treatment, I didn't feel a sense of care from any doctor or nurse. This is because they only checked over my data and wrote prescriptions, and asked about my current physical state. I had the same experience over and over. (Participant 4, Group 2) I asked my doctor what the care plan was. Then the doctor firmly said, rather than sharing the future treatment plan, "Do you want to go to another hospital?" (Participant 5, Group 2) When I try to give my opinion to try to participate from the patient's position, whether it is right or wrong…There are doctors who insist unconditionally, saying "No. The treatment that I am doing is right." In this case, I am not able to say anything, and I am no longer willing to participate. (Participant 2, Group 1)
Healthcare environment factors	Complexity of the healthcare environment	Complex care procedures	It was exhausting for a patient to meet a new healthcare provider every 2 or 3 minutes, and it was hard for me to share my problems deliberately. When talking to the final healthcare provider, a chief surgeon who was charge of my surgery, I was very fatigued so I couldn't think of what to say. (Participant 1, Group 1)
		Limited time to see a doctor	My doctor is too busy. I have almost no chance to talk to him, because usually another patient is waiting when I'm seeing the doctor. So I can't discuss things fully with my doctor, though I'd like to ask questions and get answers. (Participant 2, Group 1) We just took it for granted that we only

		listened to a doctor very briefly in the hospital, because a very limited time was allocated to us. (Participant 6, Group 1)
	Difference in patient participation by type of medical institutions	When I visit an advanced hospital for surgery or another examination, people who work there don't know about me. So I started to write down details such as when I was ill or where I had pain, and brought it with me before someone asked me about it. (Participant 5, Group 1) When I visited an advanced hospital, they gave me information about what drug it was and what side effect it had. However, the clinic did not give me this information. (Participant 3, Group 2)



Supplementary figure 1

338x190mm (96 x 96 DPI)

환자 참여 관련 설문조사

Ⅰ. 일반 특성

다음은 귀하의 개인적인 특성에 대한 질문입니다. 해당하는 항목에 표시하여 주십시오

1. 귀하의 연령은 만 몇 세입니까? 만_____ 세

2. 귀하의 성별을 표시해 주십시오

☐ 남 ☐ 여

3. 귀하의 교육 수준에 표시해 주십시오

☐ 무학 ☐ 초등학교 졸업 ☐ 중학교 졸업 ☐ 고등학교 졸업 ☐ 대학교 졸업 이상

4. 귀하의 결혼 상태에 표시해 주십시오.

☐ 미혼 ☐ 기혼 ☐ 이혼 ☐ 사별 ☐ 별거 ☐ 기타( )

5. 귀하의 함께 살고 있는 동거인에 표시해 주십시오.(다중선택 가능)

☐ 없음 ☐ 배우자 ☐ 자녀 ☐ 부모(부 또는 모) ☐ 형제 또는 자매

☐ 기타( )

6. 귀하의 한 달 평균 소득(용돈)은 얼마입니까?

☐ 85만원 미만 ☐ 85만원 이상~150만원 미만

☐ 150만원 이상 250만원 미만 ☐ 250만원 이상 350만원 미만

☐ 350만원 이상 450만원 미만 ☐ 450만원 이상 550만원 미만

☐ 550만원 이상 650만원 미만 ☐ 650만원 이상

7. 귀하가 주로 방문하는 의료기관에 표시해 주십시오

☐ 의원(외래환자 대상 의료기관)
☐ 병원(30병상 이상, 외래와 입원환자 대상 의료기관)
☐ 종합병원이나 상급종합병원
☐ 보건소
☐ 기타( )

8. 귀하의 의료기관 방문 횟수에 표시해 주십시오(지난 1년간)

☐ 5회 미만 ☐ 5회 이상 10회 미만 ☐ 10회 이상 15회 미만

☐ 15회 이상 20회 미만 ☐ 20회 이상 25회 미만 ☐ 25회 이상

9. 귀하는 의료기관 방문 시 주로 누구와 함께 방문하십니까?

☐ 혼자 ☐ 배우자 ☐ 자녀 ☐ 부모(부 또는 모)

☐ 형제 또는 자매 ☐ 친척 ☐ 친구 ☐ 기타( )

10. 귀하는 주로 건강관련 정보를 어디서 찾으십니까?

☐ 인터넷 ☐ 방송매체(TV, 라디오 등) ☐ 신문, 잡지 등의 기사

☐ 전문가(의사, 간호사, 영양사 등) ☐ 주위사람(가족, 친구 등) ☐ 기타

11. 병원에서 본인과 가족이 의료오류를 경험한 적이 있습니까?

☐ 있다 ☐ 없다

Ⅱ. 환자안전 보고학습시스템

1. 귀하는 환자나 보호자로서 병원에서 의료오류를 발견했을 때, 국가에서 운영하는 환자안전 보고학습시스템(http://www.kops.or.kr/portal)을 통해 직접 보고할 수 있다는 것을 알고 계십니까?

☐ 알고 있다 ☐ 모른다

2. 귀하는 병원에서 의료오류를 경험하거나 발견한다면, 국가 환자안전 보고학습시스템에 의료오류를 보고할 것 같습니까?

*환자안전 보고란? 환자안전사고의 예방 및 의료 질 향상을 위해 개별 의료기관의 환자안전 전담인력 또는 기관의 장, 보건의료인, 환자 및 보호자 등 보건의료서비스를 제공하거나 제공받는 사람이 인지한 환자안전사고 내용을 보고학습시스템(http://www.kops.or.kr/portal) 운영기관에 보고하는 것입니다.

전혀 보고하지 않을 것이다	가끔 보고할 것이다	종종 보고할 것이다	항상 보고할 것이다
1	2	3	4

다음은 환자참여에 대한 문항입니다.

설문은 **3개 영역, 각 13개 문항**으로 구성되어 있습니다.

동일한 문항으로
1)환자 참여 활동에 대한 의향, 2) **환자 참여 활동의 중요성**, 3) **환자 참여 활동 경험**을 측정합니다.

1) 환자 참여 활동의 의향은 본인의 건강관리와 관련하여 각 **환자 참여 행동을 얼마나 할 것 같은지**를 묻는 문항입니다.
2) 환자 참여 활동의 중요성은 각 항목의 환자 참여 행동의 환자 안전을 향상시키기 위해 **얼마나 중요하다고 생각하는지**를 묻는 문항입니다.
3) 환자 참여 활동의 경험은 각 항목의 **환자 참여 행동의 경험 정도**를 묻는 문항입니다.

해당하는 곳에 표시하여 주십시오.

Ⅲ. 환자 참여에 대한 의향

병원에 입원하거나 외래를 방문한 환자로서의 경험을 바탕으로 답하여 주십시오. 그런 경험이 없을 경우는 본인이 환자인 상황을 가정하여 답해 주시기 바랍니다. 귀하는 건강 관리와 관련하여 **다음과 같은 행동을 얼마나 할 것 같습니까?**

	전혀 그렇지 않을 것이다	다소 그럴 것이다	종종 그럴 것이다	매우 그럴 것이다
1. 치료의 결정을 할 때 추가적인 전문 의견이 듣고 싶은 경우 처음 진료를 받던 의사와 다른 의사에게 의견을 구한다.	1	2	3	4
2. 보건의료직원(예, 의사, 간호사)이 설명했으나 이해하지 못한 부분에 대해 좀 더 자세하게 설명해 줄 것을 요구한다.	1	2	3	4
3. 진료를 받으러 갈 때, 보건의료직원(예, 의사, 간호사)이 말하는 내용을 이해하고 질문하는 것을 도와줄 수 있도록 가족이나 친척(친구)을 데려간다.	1	2	3	4
4. 보건의료직원(예, 의사, 간호사)에게 진료나 처치 전에 손을 씻었는지 물어본다.	1	2	3	4
5. 보건의료직원(예, 의사, 간호사)이 약물 알레르기에 대해 물어보지 않더라도 약물 알레르기가 있으면 말한다.	1	2	3	4
6. 시술을 받기 전에 보건의료직원(예, 의사, 간호사)이 환자의 신원을 확인하지 않을 경우,확인하도록 요청한다.	1	2	3	4
7. 시술(수술)을 받기 전에 시술(수술)의 세부사항(예, 목적, 시간이 얼마나 걸리는지, 회복과정 등)에 대해 물어본다.	1	2	3	4
8. 의사나 간호사에게 설명 받지 않았던 검사(예, 엑스레이, 혈액검사)를 시행하려고 하면 검사 전 필요성과 자세한 설명을 요구한다	1	2	3	4
9. 검사를 받고 일정한 시간이 지난 후에도 검사결과를 듣지 못한 경우, 의료진이나 병원에 연락을 한다.	1	2	3	4
10. 진료를 받으러 갈 때 현재 복용하고 있는 모든 약물의 목록이나 약물을 가져간다.	1	2	3	4
11. 무슨 약인지 잘 모르겠고 복용한 적이 없는 약을 설명 없이 받았을 때, 약에 대해 물어본다.	1	2	3	4
12. 약국에서 나오기 전에 정확한 약물을 받았는지 확인한다.	1	2	3	4
13. 병원에서 의료오류를 경험하거나 발견한다면, 국가 환자안전 보고학습시스템에 의료오류를 보고한다.	1	2	3	4

IV. 환자 참여의 중요성

환자안전*을 향상시키기 위해 귀하는 건강 관리와 관련하여 **다음의 항목이 얼마나 중요하다고 생각하십니까?**

* 환자안전이란? 환자안전은 의료와 관련된 불필요한 위해의 위험을 최소한으로 낮추는 것을 의미합니다(WHO, 2009).

	매우 중요 하지 않다	중요 하지 않다	중요 하다	매우 중요 하다
1. 치료의 결정을 할 때 추가적인 전문 의견이 듣고 싶은 경우 처음 진료를 받던 의사와 다른 의사에게 의견을 구한다.	1	2	3	4
2. 보건의료직원(예, 의사, 간호사)이 설명했으나 이해하지 못한 부분에 대해 좀 더 자세하게 설명해 줄 것을 요구한다.	1	2	3	4
3. 진료를 받으러 갈 때, 보건의료직원(예, 의사, 간호사)이 말하는 내용을 이해하고 질문하는 것을 도와줄 수 있도록 가족이나 친척(친구)을 데려간다.	1	2	3	4
4. 보건의료직원(예, 의사, 간호사)에게 진료나 처치 전에 손을 씻었는지 물어본다.	1	2	3	4
5. 보건의료직원(예, 의사, 간호사)이 약물 알레르기에 대해 물어보지 않더라도 약물 알레르기가 있으면 말한다.	1	2	3	4
6. 시술을 받기 전에 보건의료직원(예, 의사, 간호사)이 환자의 신원을 확인하지 않을 경우,확인하도록 요청한다.	1	2	3	4
7. 시술(수술)을 받기 전에 시술(수술)의 세부사항(예, 목적, 시간이 얼마나 걸리는지, 회복과정 등)에 대해 물어본다.	1	2	3	4
8. 의사나 간호사에게 설명 받지 않았던 검사(예, 엑스레이, 혈액검사)를 시행하려고 하면 검사 전 필요성과 자세한 설명을 요구한다	1	2	3	4
9. 검사를 받고 일정한 시간이 지난 후에도 검사결과를 듣지 못한 경우, 의료진이나 병원에 연락을 한다.	1	2	3	4
11. 진료를 받으러 갈 때 현재 복용하고 있는 모든 약물의 목록이나 약물을 가져간다.	1	2	3	4
11. 무슨 약인지 잘 모르겠고 복용한 적이 없는 약을 설명없이 받았을 때, 약에 대해 물어본다.	1	2	3	4
12. 약국에서 나오기 전에 정확한 약물을 받았는지 확인한다.	1	2	3	4
13. 병원에서 의료오류를 경험하거나 발견한다면, 국가 환자안전 보고학습시스템에 의료오류를 보고한다.	1	2	3	4

V. 환자 참여 경험

귀하는 건강 관리와 관련하여 **다음 활동에 얼마나 자주 참여하십니까?**

	전혀 그렇지 않다	가끔 그렇다	자주 그렇다	항상 그렇다
1. 치료의 결정을 할 때 추가적인 전문 의견이 듣고 싶은 경우 처음 진료를 받던 의사와 다른 의사에게 의견을 구한다.	1	2	3	4
2. 보건의료직원(예, 의사, 간호사)이 설명했으나 이해하지 못한 부분에 대해 좀 더 자세하게 설명해 줄 것을 요구한다.	1	2	3	4
3. 진료를 받으러 갈 때, 보건의료직원(예, 의사, 간호사)이 말하는 내용을 이해하고 질문하는 것을 도와줄 수 있도록 가족이나 친척(친구)을 데려간다.	1	2	3	4
4. 보건의료직원(예, 의사, 간호사)에게 진료나 처치 전에 손을 씻었는지 물어본다.	1	2	3	4
5. 보건의료직원(예, 의사, 간호사)이 약물 알레르기에 대해 물어보지 않더라도 약물 알레르기가 있으면 말한다.	1	2	3	4
6. 시술을 받기 전에 보건의료직원(예, 의사, 간호사)이 환자의 신원을 확인하지 않을 경우,확인하도록 요청한다.	1	2	3	4
7. 시술(수술)을 받기 전에 시술(수술)의 세부사항(예, 목적, 시간이 얼마나 걸리는지, 회복과정 등)에 대해 물어본다.	1	2	3	4
8. 의사나 간호사에게 설명 받지 않았던 검사(예, 엑스레이, 혈액검사)를 시행하려고 하면 검사 전 필요성과 자세한 설명을 요구한다	1	2	3	4
9. 검사를 받고 일정한 시간이 지난 후에도 검사결과를 듣지 못한 경우, 의료진이나 병원에 연락을 한다.	1	2	3	4
12. 진료를 받으러 갈 때 현재 복용하고 있는 모든 약물의 목록이나 약물을 가져간다.	1	2	3	4
11. 무슨 약인지 잘 모르겠고 복용한 적이 없는 약을 설명 없이 받았을 때, 약에 대해 물어본다.	1	2	3	4
12. 약국에서 나오기 전에 정확한 약물을 받았는지 확인한다.	1	2	3	4
13. 병원에서 의료오류를 경험하거나 발견한다면, 국가 환자안전 보고학습시스템에 의료오류를 보고한다.	1	2	3	4

설문이 종료되었습니다.

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	#1-3
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	#2-3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	#4-6
Objectives	3	State specific objectives, including any prespecified hypotheses	#6
Methods			
Study design	4	Present key elements of study design early in the paper	#6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	#7-8
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	#7-8
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	#8-9
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	#8-9
Bias	9	Describe any efforts to address potential sources of bias	NA
Study size	10	Explain how the study size was arrived at	#7
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	#8-9
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	#9-10
		(*b*) Describe any methods used to examine subgroups and interactions	#8-9
		(*c*) Explain how missing data were addressed	#7
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	#7-8
		(*e*) Describe any sensitivity analyses	NA
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	#10-11
		(b) Give reasons for non-participation at each stage	NA
		(c) Consider use of a flow diagram	Supplementary figure 1
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	#10-12
		(b) Indicate number of participants with missing data for each variable of interest	#7
Outcome data	15*	Report numbers of outcome events or summary measures	#10-12, #25-30
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	#10-12, #25-30
		(*b*) Report category boundaries when continuous variables were categorized	#10-12, #25-30
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	#12-15, #31-36
Discussion			
Key results	18	Summarise key results with reference to study objectives	#15-19
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	#19
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	#15-19
Generalisability	21	Discuss the generalisability (external validity) of the study results	#15-19
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	#20

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.