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Research Article

Patient Safety Culture and Speaking Up Among Health Care Workers

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SUMMARY

Purpose: Although previous research showed the importance of safety culture on health care workers' speaking up behaviors, it is not clear how particular safety culture domains are associated with the speaking up behaviors of hospital staff. Also, researchers have suggested that health care workers' speaking up behaviors vary by profession, but there has been limited research into such differences. Thus, this study examined differences in perceptions of patient safety culture and the promotive and prohibitive speaking up behaviors of health care workers by profession and investigated the relationships between patient safety culture and the two types of speaking up behaviors.

Methods: A descriptive correlational study was conducted using secondary data collected through an online survey of health care workers at a private, nonprofit, tertiary-level teaching hospital in South Korea. The sample ($N = 831$) consisted of nurses (54.0%), physicians (13.0%), and other licensed and unlicensed hospital personnel (33.0%). Analyses of variance were conducted to examine differences in study variables by profession. Hierarchical regression analyses were conducted to evaluate the effects of the seven patient safety culture factors on promotive and prohibitive voice after controlling for tenure and profession.

Results: Perceptions of safety culture and promotive voice behaviors were higher for physicians compared with nurses. Communication openness, reporting patient adverse events, and unit supervisors' and hospital managements' support for patient safety were significant predictors of both types of voice behaviors.

Conclusion: Hospital administrators and unit managers should create a supportive environment where staff feel free to voice their concerns and suggestions. They should also pay attention to the varying perspectives held by different groups of hospital workers and their different voice behaviors. Knowing which dimensions of patient safety culture are most strongly related to health care workers' voice behaviors can guide patient safety improvement activities in health care organizations.

Introduction

Patient safety has been recognized as a critical health care issue for almost two decades, but approximately one in 10 patients is still harmed while receiving hospital care in high-income countries [1]. Evidence has suggested that the willingness of staff to speak up proactively to improve patient safety is vital as it can not only prevent errors such as medication errors [2] but also provide opportunities for learning and improvements to health care systems [3]. Other terms that have been used to describe the concept of speaking up include employee voice behavior [4], safety voice [5], and assertive communication [6]. One of the most widely used

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definitions of speaking up in health care is "the raising of concerns by health care professionals for the benefit of patient safety and care quality upon recognizing or becoming aware of the risky or deficient actions of others within healthcare teams" [7], and thus, much empirical attention has been paid to problem-focused voice in health care research. However, organizational literature has suggested that there are two aspects to speaking up: promotive and prohibitive voice [8,9].

Promotive voice refers to employees' expressions of ideas or suggestions with the intention of improving existing work practices and procedures [8]. Prohibitive voice refers to employees' expressions of concerns regarding existing work practices, incidents, or behaviors that they consider to be damaging to the organization [8]. Both types of voice behaviors are critical within health care organizations for improving patient safety and quality of care. Speaking up has been recognized as an important predictor of patient safety outcomes, particularly in acute care hospital settings [10], and it is widely agreed that health care workers should speak up to express concerns or to challenge questionable behaviors and actions in the provision of care [11]. However, health care workers often choose to remain silent rather than voicing their suggestions or concerns even when they have witnessed patient safety threats, possibly because of fear of conflict, retribution, and reprisal [7,12]. To encourage health care workers to speak up, it is essential to identify factors associated with their speaking up behaviors.

One important factor that has been found to be related to the speaking up behaviors of health care professionals is safety culture [3]. Safety culture, a subset of an organizational culture, is defined as "the shared values, attitudes, and behaviors within an organization that direct attention toward patient safety and the minimization of patient harm" [13]. Because safety culture is a complex and multidimensional concept that comprises factors such as leadership, teamwork, learning culture, and communication [14], it is important to examine which dimensions of safety culture are most strongly related to the speaking up behaviors of health care workers [3]. Furthermore, researchers in previous studies have argued that different patterns of relationships between safety culture dimensions and different types of speaking up behaviors exist, but the links have not been well examined with various Korean health care workers [10]. Thus, it is necessary to identify how particular antecedents are associated with promotive and prohibitive behaviors of hospital staff in Korean health care contexts.

Previous literature on speaking up in health care also suggests that health care workers' speaking up behaviors can vary by profession (i.e., physicians, nurses, other health care workers) [3]. However, there has been limited research into such differences, and to our knowledge, no research has been conducted with Korean health care workers. Examining differences in perceptions of safety culture and speaking up behaviors among health care workers is especially important in an environment where seniority-based hierarchies are prevalent across society, in addition to the significant power differentials between physicians and other health care workers, all of which could affect the speaking up behaviors of health care workers [15,16]. In a culture with a seniority strongly determined by age or job longevity and power differentials between professions, speaking up could be more challenging for health care workers [15,16]. Moreover, as the concepts of both speaking up and patient safety culture originated in Western culture [15], it is important to examine how the concepts and their relationships are perceived by health care workers in Korean health care contexts.

In view of the limitations of previous research, this study examined (1) the differences in perceptions of patient safety culture and speaking up behaviors (i.e., promotive and prohibitive voice) by profession; and (2) the relationship between patient safety culture and the two types of voice among health care workers after accounting for tenure and profession.

Methods

Design and sample

This descriptive correlational study was conducted using secondary data collected at a private, nonprofit, tertiary-level teaching hospital with a total capacity of over 700 beds in Seoul, South Korea. The deidentified data were provided by a quality improvement manager of the hospital. This hospital has assessed perceptions of patient safety culture among their employees every 2 years to identify areas of strength and weakness with the goal of enhancing patient safety and quality of care throughout the organization. In January 2021, survey invitations comprising a secure online link were emailed to all hospital staff as part of one such biannual safety culture assessment in accordance with the Agency for Healthcare Research and Quality's instructions [17]. Participation in the study was voluntary, and a total of 915 responses were received. As a relatively small number of managers in various disciplines completed the survey, in this study, we only used data from staff employees, and the final sample size for this study was 831.

In prior patient safety culture studies, Korean health care professionals have reported that a punitive culture is prevalent in their organizations [18]. Because this could hinder the honest reporting of patient safety issues, in the original survey, demographic information such as age and gender of subjects that could be used to identify respondents was not included in the questionnaire. Because the original survey was part of biannual patient safety culture assessment in the hospital, participation was voluntary, and consent was implied by survey completion. Ethics approval for this secondary data analysis study was obtained from the Institutional Review Board of the Yonsei university health system (#4-2021-0297).

Measures

Outcome variables

The 10-item, 2-dimension scale developed by Liang et al. [8] was used to measure health care workers' ratings of their *promotive and prohibitive voice behaviors* on a 5-point response scale, ranging from 1 (strongly disagree) to 5 (strongly agree). A sample item for promotive voice is "I make constructive suggestions to improve the unit's operation." An example item for prohibitive voice is "I dare to point out problems when they appear in the unit, even if that would hamper relationships with other." The scale has shown good psychometric properties in previous research [8]. For this study sample, Cronbach's αs for promotive and prohibitive voice were 0.92 and 0.88, respectively. Exploratory factor analysis with principle components analysis supported the two-factor model, which explained 74.1% of the variance; factor loadings ranged from 0.58 to 0.85. The mean subscale scores were computed with higher scores indicating higher levels of promotive and prohibitive voice.

Safety culture variables

Eight patient safety culture factors (i.e., subscales) were measured using the Korean version of Hospital Survey on Patient Safety Culture 2.0 (K-HSOPSC 2.0), which has demonstrated its good reliability and validity [19]. The K-HSOPSC was adapted based on the Agency for Healthcare Research and Quality's Hospital Survey on Patient Safety Culture version 2.0 [20]. The number of items and an example item of the eight subscales are as follows. Organizational learning—continuous improvement was measured using three items; an example is "This unit regularly reviews work

processes to determine if changes are needed to improve patient safety." Response to error was assessed using four items, and a sample item is "In this unit, staff feel like their mistakes are held against them." Supervisor/clinical leader support for patient safety was measured using three items, and "My supervisor, manager, or clinical leader seriously considers staff suggestions for improving patient safety" is an example item. Communication about error was assessed using three items, and a sample item is "We are informed about errors that happen in this unit." Communication openness was assessed using four items, and "In this unit, staff are afraid to ask questions when something does not seem right" is a sample item. Hospital management support for patient safety was measured using three items, and "The actions of hospital management show that patient safety is a top priority" is a sample item. Teamwork was measured using three items, and an example is "In this unit, we work together as an effective team." Reporting patient safety events was measured using two items, and an example item is "When a mistake is caught and corrected before reaching the patient, how often is this reported?"

With possible scores ranging from 1 to 5 (for strongly disagree to strongly agree, or never to always), higher scores indicate a more positive perception of safety culture. For this study sample, Cronbach's alphas for the patient safety culture subscales were 0.68 (organizational learning), 0.77 (response to error), 0.78 (supervisor/clinical leaders support for patient safety), 0.84 (communication about error), 0.72 (communication openness), 0.71 (hospital management support for patient safety), 0.70 (teamwork), 0.84 (reporting patient adverse events), 0.92 (promotive voice), and 0.88 (prohibitive voice), all of which exceeded the minimum threshold of 0.60 [21].

Demographic variables

Information on profession, hospital tenure, and unit tenure were collected.

Data analysis

The study variables were screened for normality, homoscedasticity, and linearity before investigating their relationships. None of the study variables had exceeded the absolute value of 2 for skewness and kurtosis, indicating that the data did not significantly deviate from normality. Regression diagnoses, including residual plots and quantile-quantile plots, were further conducted to assess linearity and homoscedasticity. The plots showed no evidence of substantial deviations from regression assumptions. Descriptive statistics were used to summarize sample characteristics and study variables by group. Pearson bivariate correlations were computed for hospital tenure, unit tenure, patient safety culture dimensions, and voice behavior variables to examine their relationships. Next, a series of analyses of variance with *post hoc* tests was conducted to examine mean differences in study variables by profession. *Post hoc* tests using Bonferroni or Duncan methods were performed on the three professional groups to identify which particular group differences were significant. Hierarchical multiple regression analyses were then conducted to evaluate the effects of the eight patient safety culture factors on promotive and prohibitive voice, after controlling for hospital and unit tenure, and profession due to their probable associations with the outcome variables [8,22,23]. Statistical analysis was conducted with SPSS version 25 (Armonk, NY: IBM Corp), with a statistical significance level set at $p < 0.05$.

Results

Sample characteristics

The sample comprised 831 health care workers. As in previous safety culture studies, we categorized professions into three groups: nurse, physician, and others [24,25]. As shown in Table 1, about half (54.2%) of the sample were nurses, 12.5% were physicians, and the remaining participants (33.3%) were a mixture of unlicensed (e.g., transporter) and licensed (e.g., pharmacist, physical therapist, and laboratory technician) personnel. Physicians reported the shortest hospital tenure, whereas nurses reported the shortest unit tenure.

Differences in patient safety culture and speaking up by profession

Analyses of variance results indicated that were significant differences across professions for all eight patient safety culture dimensions and for promotive and prohibitive voice behaviors (Table 2). *Post hoc* analyses showed that, on average, physicians' scores were higher than nurses' scores for 8 of the 10 variables. The exceptions were reporting patient safety events and prohibitive voice, where only the others group was significantly higher than the nurse group.

Relationships between patient safety culture and speaking up

Table 3 presents the bivariate correlations between the key study variables. Hospital and unit tenure and all eight patient safety dimensions were positively associated with both promotive and prohibitive voice. Organizational learning and communication openness were most strongly associated with promotive voice ($r = 0.41$ and 0.39, respectively), whereas communication openness and teamwork were most strongly associated with prohibitive voice ($r = 0.43$ and 0.41, respectively).

Before conducting hierarchical multiple regression analyses, variance inflation factors between the predictor variables were examined. Variance inflation factors ranged from 1.09 to 2.36, all below the cut-off value of 10, indicating no potential multicollinearity. Moreover, the Durbin–Watson statistics of each model was approximately 2 (i.e., 1.95 for promotive voice and 1.90 for prohibitive voice), indicating that there exists no evidence of autocorrelation in the residuals from these two regression models.

Tables 4 and 5 present the results for the two-step hierarchical multiple regression analyses that were conducted for promotive voice and prohibitive voice. Hospital and unit tenure and profession were entered in Model 1 as control variables. Profession was dummy coded with nurses serving as the reference group. The eight safety culture factors were entered in Model 2.

The regression analyses yielded some differences in the predictors that were associated with promotive versus prohibitive voice. In Model 1, neither hospital tenure nor unit tenure was significantly associated with promotive voice, whereas hospital

Table 1 *Sample Characteristics (N = 831).*

	Nurses ($n = 450$, 54.2%)	Physicians ($n = 104$, 12.5%)	Other professions ($n = 277$, 33.3%)	All ($n = 831$)
Hospital tenure (yr), mean (SD) ($n = 766$)	12.41 (9.51)	6.18 (6.10)	13.30 (11.64)	11.92 (10.16)
Unit tenure (yr), mean (SD) ($n = 766$)	5.28 (5.54)	5.65 (5.96)	6.63 (7.94)	5.77 (6.50)

Note. SD = standard deviation.

Table 2 *Mean Differences in Patient Safety Culture Dimensions and Voice Behaviors by Profession (N = 831).*

Variable	Nurses[a] (n = 450), mean (SD)	Physicians[b] (n = 104), mean (SD)	Others[c] (n = 277), mean (SD)	F	p	*Post hoc* analyses (Bonferroni or Dunnett's tests)
Patient safety culture						
Organizational learning	3.26 (0.68)	3.65 (0.66)	3.49 (0.63)	19.74	<0.001	a < b, c
Response to error	2.82 (0.71)	3.39 (0.71)	3.13 (0.75)	32.73	<0.001	a < c < b
Supervisor/clinical leader support for patient safety	3.65 (0.66)	3.90 (0.67)	3.72 (0.72)	5.82	0.003	a < b
Communication about error	3.27 (0.75)	3.61 (0.87)	3.06 (0.86)	17.84	<0.001	c < a < b
Communication openness	3.18 (0.62)	3.51 (0.76)	3.18 (0.72)	11.00	<0.001	a, c < b
Hospital management support for patient safety	2.86 (0.72)	3.45 (0.89)	3.24 (0.69)	39.35	<0.001	a < b, c
Teamwork	3.50 (0.67)	3.91 (0.69)	3.70 (0.73)	18.00	<0.001	a < c < b
Reporting patient adverse events	3.31 (0.87)	3.53 (0.95)	3.55 (0.96)	6.98	0.001	a < c
Promotive voice	3.13 (0.68)	3.41 (0.84)	3.33 (0.65)	11.08	<0.001	a < b, c
Prohibitive voice	3.19 (0.65)	3.34 (0.76)	3.33 (0.60)	5.26	0.005	a < c

Note. Welch's *F* test and Dunnett's *post hoc* test were conducted for Communication openness, hospital management support for patient safety, teamwork, reporting patient adverse events, promotive voice, and prohibitive voice because the assumption of equal variance was not satisfied.
SD = standard deviation.

Table 3 *Correlations of Patient Safety Culture Dimensions and Voice Behavior (N = 831).*

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Hospital tenure (yr)	—											
2. Unit tenure (yr)	0.57**	—										
3. Organizational learning	−0.14**	−0.10**	—									
4. Response to error	−0.16**	−0.06	0.60**	—								
5. Supervisor/clinical leader support for patient safety	−0.22**	−0.13**	0.56**	0.56**	—							
6. Communication about error	−0.25**	−0.12**	0.24**	0.18**	0.32**	—						
7. Communication openness	−0.17**	−0.08*	0.46**	0.45**	0.52**	0.63**	—					
8. Hospital management support for patient safety	−0.06	−0.02	0.54**	0.56**	0.39**	0.09**	0.33**	—				
9. Teamwork	−0.14**	−0.10**	0.63**	0.55**	0.57**	0.28**	0.48**	0.43**	—			
10. Reporting patient adverse events	0.05	0.07	0.31**	0.28**	0.27**	0.32**	0.41**	0.29**	0.29**	—		
11. Promotive voice	0.08*	0.12**	0.41**	0.36**	0.36**	0.23**	0.39**	0.36**	0.37**	0.32**	—	
12. Prohibitive voice	0.14**	0.12**	0.37**	0.36**	0.38**	0.24**	0.43**	0.34**	0.41**	0.34**	0.71**	—

*$p < 0.05$. **$p < 0.01$.

Table 4 *Hierarchical Multiple Regression Models for Promotive Voice (N = 764).*

Predictors	Model 1				Model 2			
	B	SE	*β*	*p*	*B*	SE	*β*	*p*
Hospital tenure (yr)	<0.01	<0.01	0.04	0.325	0.01	<0.01	0.12	0.003
Unit tenure (yr)	0.01	0.01	0.08	0.070	0.01	<0.01	0.09	0.014
Profession[a]								
Physicians	0.28	0.08	0.14	<0.001	0.05	0.07	0.02	0.483
Others	0.18	0.06	0.12	0.001	0.08	0.05	0.05	0.123
Patient safety culture								
Organizational learning					0.16	0.05	0.15	0.001
Response to error					0.05	0.04	0.05	0.264
Supervisor/clinical leader support for patient safety					0.09	0.04	0.08	0.047
Communication about error					0.05	0.04	0.05	0.197
Communication openness					0.17	0.05	0.16	0.001
Hospital management support for patient safety					0.10	0.04	0.11	0.004
Teamwork					0.05	0.04	0.05	0.235
Reporting patient adverse events					0.07	0.03	0.10	0.007
R^2 (change in R^2)	0.04 (0.04)				0.30 (0.27)			
Adjusted R^2	0.03				0.29			
F (*p*)	7.18 (<0.001)				27.03 (<0.001)			
F change (*p*)	7.18 (<0.001)				35.65 (<0.001)			

Note. SE = standard error.
[a] Reference: nurses.

tenure was significantly related to prohibitive voice. In Model 2, hospital and unit tenure became statistically significant for promotive voice, whereas hospital tenure stayed as a significant predictor for prohibitive voice. Profession was statistically significant when entered in Model 1 for both promotive and prohibitive voice, indicating that physicians and others had higher scores than nurses, but the regression coefficients became nonsignificant in Model 2 when safety culture factors were entered.

Five of the eight safety culture factors were uniquely predictive of promotive voice, and five were uniquely predictive of prohibitive voice. After controlling for tenure and profession, communication openness ($\beta = 0.16$, $B = 0.17$, $p = 0.001$) was the strongest predictor of promotive voice, followed by organizational learning ($\beta = 0.15$,

Table 5 *Hierarchical Multiple Regression Models For Prohibitive Voice (N = 764).*

Predictors	Model 1				Model 2			
	B	SE	*β*	*p*	*B*	SE	*β*	*p*
Hospital tenure (yr)	0.01	<0.01	0.13	<0.01	0.01	<0.01	0.21	<0.001
Unit tenure (yr)	<0.01	<0.01	0.04	0.352	0.01	<0.01	0.05	0.184
Profession[a]								
Physicians	0.19	0.07	0.10	0.010	−0.03	0.06	−0.02	0.619
Others	0.11	0.05	0.08	0.036	0.02	0.04	0.01	0.666
Patient safety culture								
Organizational learning					0.01	0.04	0.01	0.802
Response to error					0.07	0.04	0.08	0.074
Supervisor/clinical leader support for patient safety					0.09	0.04	0.10	0.020
Communication about error					0.03	0.03	0.04	0.379
Communication openness					0.22	0.04	0.23	<0.001
Hospital management support for patient safety					0.08	0.03	0.10	0.012
Teamwork					0.13	0.04	0.14	0.001
Reporting patient adverse events					0.08	0.02	0.12	0.001
R^2 (change in R^2)	0.03 (0.03)				0.34 (0.31)			
Adjusted R^2	0.03				0.33			
F (*p*)	6.38 (<0.001)				32.20 (<0.001)			
F change (*p*)	6.38 (<0.001)				43.67 (<0.001)			

Note. SE = standard error.
[a] Reference: nurses.

$B = 0.16$, $p = 0.001$), hospital management support for patient safety ($\beta = 0.11$, $B = 0.10$, $p = .004$), reporting patient adverse events ($\beta = 0.10$, $B = 0.07$, $p = 0.007$), and supervisor/clinical leader support for patient safety ($\beta = 0.08$, $B = 0.09$, $p = 0.047$), based on the values of the standardized coefficients. For prohibitive voice, communication openness ($\beta = 0.23$, $B = 0.22$, $p < 0.001$) was the strongest predictor, followed by teamwork ($\beta = 0.14$, $B = 0.13$, $p = 0.001$), reporting patient adverse events ($\beta = 0.12$, $B = 0.08$, $p = 0.001$), hospital management support for patient safety ($\beta = 0.10$, $B = 0.08$, $p = 0.012$), and supervisor/clinical leader support for patient safety ($\beta = 0.10$, $B = 0.09$, $p = 0.020$) based on the values of the standardized coefficients.

Discussion

This study examined differences in perceptions of patient safety culture and two types of voice behaviors (i.e., promotive and prohibitive voice) among health care workers by their profession (nurse vs. physician vs. other health care workers). We also investigated the relationships between patient safety culture and the outcomes after accounting for hospital and unit tenure and profession of study participants. Knowing which dimensions of patient safety culture are most strongly related to health care workers' voice behaviors and differences in perceptions by profession can guide patient safety improvement activities in health care organizations.

In the present study, on average, nurses' scores were lower than physicians' scores for all safety culture variables and promotive voice. The exceptions were prohibitive voice and reporting patient adverse events, where only the others group was significantly higher than the nurse group. This finding is consistent with results from a Taiwanese study [26] and two studies in Swiss hospitals [27,28], showing that physicians reported higher levels of patient safety culture than nurses. These findings call for attention as nurses are in a unique position to monitor patient care and the hospital environment on a 24-hour basis, and thus, their perceptions of safety culture and patient safety may be more accurate or comprehensive than perceptions by other hospital personnel [28,29]. However, prior research [5] has shown that nurses are unwilling to speak up because of their feelings of ineffectiveness and powerlessness and embedded expectations that are related to the power dynamics and authority gradients in health care environments. Regardless of the type of voice behavior, it would be particularly challenging for health care workers in the lower levels of a hierarchy to voice their suggestions or concerns in countries where hierarchy, collectivism, and obedience are cultural values [15,16]. Thus, hospital administrators and nurse managers should make an effort to create an environment that supports and empowers nurses to voice their ideas and concerns [28].

This study found that all eight patient safety culture dimensions were positively associated with health care workers' promotive and prohibitive voice, similar to a recent US study where researchers found that those who had positive views on safety culture reported always voicing their concerns about patient safety [3]. The results from the hierarchical multiple regression analyses in the present study indicate the importance of communication openness, reporting of adverse events, and unit supervisors' and hospital managements' support for patient safety as important predictors of both types of voice behaviors. When health care workers perceive that the hospital leaders value patient safety and support open communication and reporting culture, they are more likely to make constructive suggestions (promotive voice) and voice their concerns (prohibitive voice) to improve operations in their unit or hospital, as well as patient safety. Other literature [30–32] has also suggested that supervisors' and hospital management's support for patient safety and communication openness would foster health care workers' engagement in behaviors that contribute to patient safety. Also, a culture that supports error reporting would provide opportunities to learn from mistakes, which enables continuous organizational learning [33]. Therefore, unit managers and hospital leaders should create an environment that is supportive for error reporting and receptive to employee input, for example, by inviting staff suggestions and concerns, actively listening to them, showing appreciation, and responding appropriately to such input [34,35]. Also, managers should understand that employee voice is not necessarily a voice of complaint but often indicates a desire to contribute to improvements in the organization [36] and thus should encourage their staff to speak up.

Limitations

To our knowledge, this study is the first to examine differences in perceptions of patient safety culture and promotive and prohibitive voice behaviors among health care workers by professions

and to investigate the associations between patient safety culture and the two types of voice behaviors in a Korean health care context. Although it contributes to the sparse literature on the relationship between an organizational characteristic (i.e., organizational safety culture in the present study) on employee voice [3,9], several limitations should be noted. First, the use of data from a single health care organization limits the generalizability of our study findings, and we cannot draw causal inferences when using cross-sectional data. We recommend that future studies aim to confirm the findings from this present study with by sampling from multiple health care settings and striving for a higher response rate. Second, because all data were collected using self-report questionnaires, the data are inherently subjective. Third, although we controlled for hospital and unit tenure, and profession due to their probable associations with promotive and prohibitive voice [8,22,23], unknown or unmeasured factors (e.g., assertiveness) could have contributed to the relationships found in the present study. Finally, we were not able to use data from managers due to relatively small sample size. However, as previous international literature suggests that health care workers' perceptions of patient safety culture [37,38] and speaking up behaviors can vary by position (i.e., staff vs. managers) [27], future research should examine whether similar differences can be found in Korean health care contexts.

Conclusion

This study provides new knowledge on patient safety culture and voice behaviors among health care workers. We found that, overall, nurses reported significantly less positive perceptions of patient safety culture and lower levels of promotive voice than other hospital personnel. This finding suggests that hospital administrators should pay attention to the varying perspectives held by different groups of hospital workers and their different behaviors. Considering only the average level of responses to surveys measuring patient safety culture or voice behaviors may obscure differences by profession, which have important implications for appropriate interventions. It was also notable that promotive voice and prohibitive voice were influenced by different patient safety culture dimensions, indicating that the two types of voice should be examined separately, and different interventions might be needed for each. Finally, as shown in this study, it is important for hospital leaders and unit supervisors to consider staff suggestions, address patient safety concerns, and support speaking up culture to encourage all members in health care organizations to voice their concerns and make constructive suggestions, which are all essential for improving patient safety.

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Conflict of Interest

The authors have no conflicts of interest to declare.

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