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Hospital management priorities and key factors affecting overall perception of patient safety: a cross-sectional study

Original Article

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Abstract: **Objective:** Evaluating a staff's perception of safety culture is a critical factor in hospital management, and the knowledge of value and efficiency in hospitals is still inadequate. This study aimed to investigate the perceptions of safety culture among medical staffs and determine priorities for clear and better management.
Methods: A cross-sectional survey of 595 medical staff members was conducted at 2 tertiary hospitals in Western China using a hospital survey on patient safety culture (HSOPSC) and its value and efficiency in the hospital.
Results: The dimensions with a disadvantaged positive response were nonpunitive response to error (44.6%) and staffing (42.0%). Five dimensions can explain 37.7% of the variation in the overall perception of patient safety, and handoffs and transitions are the most important dimensions (standardized coefficients 0.295).
Conclusions: Hospital managers should pay more attention to nonpunitive management and staffing. Handoffs and transitions are the most important areas of potential improvement in patient safety in hospitals.

Keywords: *efficiency • human resource management • patient handoff • patient safety culture. value*

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1. Introduction

Evaluating a staff's perception of patient safety is a vital factor in hospital management. Studies of the awareness of a safety culture among medical staff are helpful to hospital managers.[1,2] Recently, a researcher suggested that knowledge-oriented objective learning may not lead to improvement, since the real challenge is to discover an effective means to address the shortcomings embedded in staff's attitudes and culture.[3] Others have claimed that staff members' subjective feelings of procedures and systems in hospitals are

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more important than their cognition level or background characteristics.[4,5] Understanding how procedures and systems function and how to prevent errors is beneficial; the overall perception of patient safety, a dimension of the hospital survey on patient safety culture (HSOPSC), measures this understanding.[6] More specifically, an understanding of the factors associated with increased staff perception of patient safety is important.[4,5] Other experts have emphasized that a successive measurement of safety culture and a tailored safety program could be effective.[7,8] Furthermore, the HSOPSC is widely used and has been improved to meet changing needs.[9]

Studies conducted in countries using the HSOPSC have produced varied results, and several critical points should be noted. Critical demographic variables can affect the viewpoints of medical staff on patient safety culture and understanding these variables in the local context is important.[10] The disadvantaged domains revealed by the HSOPSC vary by report, and evaluating these differences and measures is key to hospital management.[11,12] The dimensions of the HSOPSC contribute far more to the overall patient safety than do background characteristics, and controlling potential confounders can help prioritize actions.[5]

The value and efficiency are newly recognized aspects of patient safety culture in hospitals and knowledge and data pertaining to patient safety culture are limited. Most studies have centered on cost control, process improvements, and human resource management.[13,14] Few studies have investigated the value and efficiency culture from the viewpoint of medical staffs.[9,15,16] The high-value care culture survey (HVCCS) contains 4 dimensions, namely leadership and health system messaging and data transparency and access, and it targets future improvements in value-based care.[16] Furthermore, the agency for healthcare research and quality (AHRQ) developed supplemental items for the HSOPSC to test value and efficiency in hospitals.[9] These measures are valuable but have not been used widely.

The aim of this study is to investigate the perceptions of patient safety among medical staff. More specifically, the objectives are to (1) find priorities in hospital management and (2) find the key dimensions that can significantly affect patient safety.

2. Methods

2.1. Study design

The study was a cross-sectional study investigating the perceptions of hospital patient safety culture among medical staff in Western China.

2.2. Setting and sample

The survey was conducted in 2 tertiary hospitals in January and February, 2019. All staff members who worked in the 2 hospitals were included and asked to complete an online questionnaire within 2 weeks. Trainees and advanced training staff were excluded. A sufficient sample size was considered to be 10 times the number of variables, i.e., at least 300.

2.3. Measurements

2.3.1. Hospital survey on patient safety culture

The HSOPSC was developed by the AHRQ, and it is designed specifically for hospital staff and requests them to give their opinions on the patient safety culture at their hospitals.[6] The HSOPSC consists of 42 items and is designed to measure 10 dimensions and 2 outcomes (these outcomes being frequency of events reported and overall perceptions of patient safety). Overall perceptions of patient safety were considered to be an outcome; they were defined as “procedures and systems that are good at preventing errors and the absence of patient safety problems.”

The items of the HSOPSC are scored on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) or from 1 (never) to 5 (always). The Chinese version of the HSOPSC has good reliability.[17] Based on the work of Xiao,[17] 4 items were revised in this study, and Cronbach’s was 0.910.

2.3.2. Value and efficiency in hospitals

Value and efficiency in hospitals were measured using the value and efficiency supplemental item of the HOSPSC, which was developed and tested by the AHRQ to address a specific topic.[18] Its calculation method is the same as that of the HSOPSC.[6] The supplemental items include 4 dimensions and 2 additional measures, totaling 25 items. The Chinese version has good reliability and validity (Cronbach’s 0.942, Content Validity Index 0.964).[19]

2.3.3. Demographics record

Age, sex, education, marital status, profession, employment form, affiliated department, work experience, and titles were gathered and considered as demographic variables.

2.3.4. Background characteristics

The background characteristics measured include tenure at current hospital, tenure of current work area, the

question of whether the current position requires direct contact with patients, the number of working hours per week, and the number of event reports in the past 12 months.

2.3.5. Pre-experiment and data collection

Thirty participants who met the inclusion criteria completed the questionnaire and reported that they understood the survey items and could choose their answer easily (the completion time ranged from 250 to 1552 s). They were asked to complete the questionnaire within 2 weeks by using a network link or QR code after permission had been obtained. Special guidelines were provided to the participants, and IP-address monitoring was used to prevent individuals from completing the survey multiple times. We collected 612 data points through the *Wen Juan Xin* website and eliminated 17 unqualified data points after reviewing the data. A total of 595 (97.2%) qualified data points were included, and the completion time was 789 S (574–1091 s). The staff response rates in the 2 hospitals were 56.6% and 78.3%.

2.3.6. Statistical analysis

IBM SPSS Statistics 20.0 was used for data analysis. The unweighted averages of individual items were used to build dimension scores. Frequency and percentage were used to describe the categorical variables. Continuous variables were described by their means and standard deviations. Multiple linear regression analysis (enter) was used to screen the variables. We used a *P*-value of 0.050 as the threshold for determining significance.

2.3.7. Ethical considerations

The guidelines offered necessary information to users, including the research purpose, voluntary participation, and a guarantee of anonymity. Although this survey received ethical exemptions, the participants were also informed that they had the right to decline participation at any time.

3. Results

3.1. Participant demographics and background characteristics

The age range of the 595 respondents was 20–59 (34.190 ± 8.143) years, 85.9% were women, 41.2% had a bachelor's degree or higher, 68.9% were married, 59.7% were nurses, and 21.8% were doctors. Most respondents had direct contact with patients (88.6%). (Tables 1 and 2)

3.2. Multiple linear regression analysis of the overall perception of patient safety

The included variables were controlled and screened by 6 steps, and 5 variables were found to play an outstanding and positive role. The final standardized

Questionnaire/dimension	Min–Max mean (SD)	Average positive response (%)	
		Our study	AHRQ report
HSOPSC			
Supervisor/manager expectations and actions promoting patient safety	1.000–5.000 3.775 (0.750)	65.4	80
Organizational learning – continuous improvement	1.000–5.000 4.146 (0.668)	81.9	72
Teamwork within units	1.000–5.000 4.244 (0.719)	82.6	82
Communication openness	1.000–5.000 3.397(0.781)	49.6	66
Feedback and communication about error	1.000–5.000 4.038 (0.730)	72.1	69
Nonpunitive response to error	1.000–5.000 3.243(0.912)	44.6	47
Staffing	1.000–5.000 3.176 (0.773)	42.0	53
Management support for patient safety	1.000–5.000 3.878(0.780)	69.9	72
Teamwork across units	1.000–5.000 3.715 (0.778)	62.0	62
Handoffs and transitions	1.000–5.000 3.650 (0.844)	59.9	48
Overall perceptions of patient safety	1.000–5.000 3.747(0.693)	64.2	66
Value and efficiency in hospital			
Empowerment to improve efficiency	1.000–5.000 3.702 (0.908)	61.1	64
Efficiency and waste reduction	1.000–5.000 3.944 (0.825)	70.3	69
Patient centeredness and efficiency	1.000–5.000 4.004 (0.777)	74.4	73
Supervisor, manager, or clinical leader support for improving efficiency and reducing waste	1.000–5.000 3.767 (0.843)	63.3	78
Overall ratings	–	63.3	61
Patient centered	–	55.7	67
Effective	–	64.4	65
Timely	–	68.4	58
Efficient	–	64.6	52

Note: AHRQ, agency for healthcare research and quality; HSOPSC, hospital survey on patient safety culture.

Table 1. HSOPSC scores and value and efficiency in hospitals.

Survey items	Positive response (%)	AHRQ 2017
I received training on how to identify waste and inefficiencies in my work	45.4	48
I helped to map a workflow process to identify waste time, materials, steps in a process, etc.	36.0	37
I shadowed/followed patients in this hospital to identify ways to improve their care experience	56.6	18
I looked at visual displays or graphs to see how well my unit was performing	38.8	63
I made a suggestion to management about improving an inefficient work process	39.8	64
I made a suggestion to management about improving patients' care experiences	42.5	56
I served on a team or committee to make a work process more efficiency	40.3	37
I monitored data to figure out how well an activity to improve efficiency was working	44.4	29

Note: AHRQ, agency for healthcare research and quality.

Table 2. Experience with activities to improve efficiency.

model is shown here: (multiple correlation coefficient (R) 0.618, R^2 0.382, adjusted R^2 0.377, F 72.815, $P < 0.001$). Further details are presented in the supplementary data.

The overall perception of patient safety (0.295 handoffs and transitions) (0.168 staffing) (0.167 supervisor/manager expectations and actions promoting patient safety) (0.129 efficiency and waste reduction) (0.124 organizational learning – continuous improvement).

4. Discussion

This survey studied 595 medical staff members' perceptions of patient safety culture using the HSOPSC and its supplemental items. Two dimensions of the HSOPSC, namely nonpunitive response to error and staffing, received low scores. Staff perceptions of the value and efficiency of the hospitals received high scores, but there is an obvious shortage of activities aimed at improving efficiency. The overall perception of patient safety is a core topic in this analysis. Five critical dimensions of safety culture are important and can positively affect the overall perception of patient safety. The scored values of participant demographic and background characteristics were less significant when compared with these 5 critical dimensions. Above all, the results help determine future directions to improve patient safety.

Nonpunitive management in hospitals is vital for patient safety, and it makes staff feel that they can report adverse events and receive support when needed.[6] The more the number of events reported, the more chances there are to observe issues and improve the medical service system.[20,21] Positive responses to nonpunitive response to error varied from 14% to 49%,[11,22,23] and this core concern of management may be a comprehensiveness problem.[24] Studies have shown that nonpunitive response to error relates to the culture of culpability, effective communication, feedback to errors, engaged leadership, second victim focus, nursing peer review, and culture in general.[24–26]

The results for staffing suggest that hospital staff members feel that they are hardly able to handle their workload and work hours, which could have a negative effect on patient care.[6] A study proved that workload and work time correlate with staff health and patient outcomes.[27,28] Experientially, various programs of workforce management, teamwork, or team communication may aid in staffing, but more creative pathways are needed to change the subjective feelings of staff.

Promoting staff participation in efficiency activities is necessary. This study indicated a deficiency in the dissemination of efficiency activities among staff and other workers. According to the AHRQ reports, there is an obvious shortage in staff education on identifying waste and inefficiencies at work,[18] such as by understanding how to make a good suggestion, how to evaluate their work by visual display, and so on. Moreover, low training participation reveals the presence not only of problems in education but also problems with teamwork across units, problems pertaining to open communication, and problems concerning supervisor expectations and support.[22,29] Improving efficiency requires various efforts, and it is of value to create a high-value person-centered care culture.[16,30]

Five dimensions of patient safety can explain 37.7% of the variation in the overall perception of patient safety, with handoffs and transitions being the most important factors. Consistent with other studies, the results suggest that communicating care information across hospital units and during shift changes is an important process.[31,32] Many methods can help to make handoffs and transitions safer and more effective.[33,34] Continuous improvement in these processes should be emphasized.

Furthermore, staffing, supervisor expectations, actions promoting patient safety, efficiency and waste reduction, and organizational learning – continuous improvement have positive effects on the overall perception of patient safety. Therefore, improving these 4 factors is a priority. For example, supervisors should consider staff suggestions to improve patient safety; staff and others should try to find additional ways to reduce non-productive time in their work, including elimination of unnecessary tests and procedures for patients.

5. Conclusions

The present study measured value, efficiency, and patient safety culture views of the medical staffs of 2 hospitals. Hospital managers should pay more attention to nonpunitive management and staffing. Handoffs and transitions are the most important areas for improving patient safety in hospitals.

Limitations

Only 2 hospitals were included in this study, and further study in other hospitals is needed to ascertain the differences in culture and management levels. The staff perceptions of value and efficiency were qualified, but it is difficult to explain the low positive responses for activities to improve efficiency. Qualitative methods may help find reasons or explanations for these findings. Each dimension should receive a positive score higher than 50%; if a dimension does not, it should be improved. Specifically, this does not mean that a factor receiving a negative score is more important than factors receiving positive scores. Therefore, in our final model, tradeoffs between dimensions were considered, which is useful for choosing an important dimension for a special purpose. However, only 37.7% of the variation in outcome could be explained, and other associations should be investigated.

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Ethical approval

Ethical issues are not involved in this paper.

Conflicts of interest

All contributing authors declare that no conflicts of interest exist.

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