Establishing a Better Patient Safety Culture: An Empirical Study of the Perceptions of Physicians and Nurses in a Tertiary Hospital in China

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Abstract—Understanding physicians' and nurses' perceptions about patient safety could help healthcare organizations to service patients and enhance advantages in a competitive medical industry. Sexton et al.'s (2006) Safety Attitude Questionnaire (SAQ) was used in this study to assess physicians' and registered nurses' perceptions of patient safety culture in a tertiary hospital in China. A total of 195 valid questionnaires were collected (27 physicians and 168 nurses). The results show that strong and positive relationships among safety culture, teamwork climate, and working conditions are found. Additionally, perceptions of management and working conditions are significantly related. Our results suggest that hospital managers should develop a proper patient safety culture, including incentives for the creation of patient safety environment, long-term team-building activities, a quality working environment, and transparent communication among staff.

Keywords—*Patient Safety Culture; Safety Attitude Questionnaire; Physicians; Nurses*

I. INTRODUCTION

Patient safety culture has become an important and urgent issue faced by healthcare organizations in China in recent years. In 2015, China's National Health and Family Planning Commission Medical Service Guidance Center launched cases of patient safety with the Chinese Hospital Association [1]. In order to enhance the perceptions of patient safety among medical staff, patient safety education training was conducted in Beijing in 2015 [1]. In 2017, the reports of the 19th CPC National Congress on health and health care also emphasized that improving a comprehensive medical service is critically important to provide a high-quality and safe medical environment for patients [1],[2].

Understanding physicians' and nurses' perceptions about patient safety could help hospital managers to make specific patient safety policies and strategies. In fact, physicians and nurses are on the frontline of efforts to service patients in hospitals [3],[4],[5] and are more like to have direct contact with patients. However, little knowledge has simultaneously identified the perceptions of physicians and nurses in hospitals in China. In fact, physicians and nurses may face different tasks and stresses even in the same medical environment (e.g., divisions and operating room) and their perceptions of patient safety may vary [3],[4]. Therefore, it is critically important to understand the perceptions of the patient safety environment of both physicians and nurses to achieve a superior physician–patient relationship.

II. PATIENT SAFETY CULTURE

Various assessments of patient safety culture in healthcare organizations have been described, and include the Safety

Attitudes Questionnaire (SAQ), Culture of Safety Survey (CSS), and Hospital Survey on Patient Safety (HSOPS) [6-10]. The SAQ developed by Sexton et al. (2006) is broadly used and is considered to be one of the most effective instruments for measuring perceptions of patient safety culture among hospital staff in healthcare organizations. As shown in Table 1, the SAQ has 30 questions, which are divided into six dimensions, namely, teamwork climate, safety climate, perceptions of management, job satisfaction, stress recognition, and working conditions. There is ample evidence of variation in the factors that affect patient safety culture. For example, Huang et al. [3] investigated the environment of patient safety based on the perceptions of physicians and nurses in Taiwan and found that teamwork climate, safety climate, perceptions of management, and working conditions are the three most essential factors enhancing the patient safety climate. By collecting data with SAQ, Gabrani et al. [11] found that improving nurses' teamwork environment, job satisfaction, and perceptions of management can improve the patient safety culture in hospitals in Albania. Moreover, the support of management and stress management have been found to be of great importance for patient safety in public hospitals in Brazil [12]. Although studies support the role that patient safety culture plays in improving medical quality in healthcare organizations, little knowledge clearly recognizes the crucial factors stimulating patient safety culture in China. Particularly, few studies have simultaneously investigated the perceptions of physicians and nurses. Therefore, the SAQ is used as the basis of this study to measure physicians' and nurses' perceptions of patient safety culture.

Table 1: The Safety Attitudes Questionnaire

Teamwork Climate	1. Nurse input is well received in this clinical area
	2. In this clinical area, it is difficult to speak up if I perceive a problem with patient care[(r)]
	3. Disagreements in this clinical area are resolved appropriately (i.e. not who is right, but what is best for the patient)
	4. I have the support I need from other personnel to care for patients
	5. It is easy for personnel here to ask questions when there is something that they do not understand
	6. The physicians and nurses here work together as a well-coordinated team

Safety Climate	7. I would feel safe being treated here as a patient 8. Medical errors are handled appropriately in this clinical area 9. I know the proper channels to direct questions regarding patient safety in this clinical area 10. I receive appropriate feedback about my performance 11. In this clinical area, it is difficult to discuss errors[r] 12. I am encouraged by my colleagues to report any patient safety concerns I may have 13. The culture in this clinical area makes it easy to learn from the errors of others
Job Satisfaction	14. I like my job 15. Working here is like being part of a large family 16. This is a good place to work 17. I am proud to work in this clinical area 18. Morale in this clinical area is high
Stress Recognition	19. When my workload becomes excessive, my performance is impaired[r] 20. I am less effective at work when fatigued[r] 21. I am more likely to make errors in tense or hostile situations (e.g. emergency resuscitation, seizure) [r] 22. Fatigue impairs my performance during emergency situations[r]
Perceptions of Management	23. Managers supports my daily efforts 24. Managers do not knowingly compromise patient safety 25. I get adequate, timely information about events that might affect my work 26. The levels of staffing in this clinical area are sufficient to handle the number of patients
Working Conditions	27. Problem personnel are dealt with constructively 28. This hospital does a good job of training new personnel 29. All the necessary information for diagnostic and therapeutic decisions is routinely available to me 30. Trainees in my discipline are adequately supervised

Note: r: reversed question

III. RESEARCH METHODS

A. Research subjects

A total of 195 valid questionnaires were collected (27 physicians and 168 nurses) from a tertiary hospital in Wuhan City, China, in 2018. The subjects were asked to answer the SAQ survey to assess their perceptions of patient safety culture.

B. Instrument

As presented in Table 1, the SAQ originally developed by Sexton et al. [6] consists of 30 items in six dimensions, namely, teamwork climate, safety climate, job satisfaction, stress recognition, perceptions of management, and working conditions. Teamwork climate refers to how the respondents feel about mutual cooperation among their colleagues. Safety climate pertains to how the respondents feel about their hospital's commitment to safety. Job satisfaction reflects

whether the respondents have positive thoughts about their work experience. Stress recognition illustrates the respondents' feelings about work pressure. Perceptions of management describes how the respondents feel about managerial actions. Working conditions indicate respondents' feelings about the quality of their work environments [4],[7],[13]. Each item was assessed using a five-point Likert scale anchored at "strongly disagree" and "strongly agree." In addition, 4 items were scored in reverse to avoid response bias [14].

After screening the data, Pearson's correlation analysis was used to identify the strength and direction of the relationships among six dimensions of patient safety culture for physicians and nurses, respectively.

IV. RESEARCH RESULTS

A. Characteristics of respondents

Analysis of the sample profile indicates that most physicians are male (63.0%), their age ranges from 26 to 40 years old (77.7%), and all are educated at the bachelor's level. Overall, 48.1% of physicians had more than five years of relevant work experience in the hospital. On the other hand, females were the largest demographic for nurses, accounting for about 92.3% of respondents. The largest age group was that of 18- to 30-year-old participants, accounting for about 89.3%. The second largest age group was 26- to 30-year-old participants, accounting for 34.3%. About 79.8% of respondent nurses had a bachelor's degree, and most had 5–10 years of working experience, accounting for 47.6%.

B. Statistical Analysis

According to a reliability analysis, the Cronbach's α coefficient of most dimensions was greater than 0.7, indicating that the questionnaire is acceptable. For physicians, the mean value of the working conditions was the highest (4.21), indicating that physicians attach value to a quality working environment. For nurses, the mean value of the safety climate was the highest (4.21), indicating that nurses attach great importance to their patients' safety and health conditions. For both physicians and nurses, the lowest mean value was stress recognition, demonstrating that medical staff are under high work pressure. In addition to stress recognition, the average value of the other dimensions was between 4.00 and 4.16, demonstrating that both physicians and nurses have higher perceptions of patient safety culture.

Table 2: Descriptive Statistics of Patient Safety Culture Dimensions

	Physicians			Nurses		
	α	M	SD	α	M	SD
TC	0.806	4.20	0.652	0.751	4.13	0.577
SC	0.873	4.16	0.702	0.745	4.16	0.501
JB	0.928	4.12	0.841	0.914	4.05	0.724
SR	0.884	2.65	0.956	0.896	2.68	0.984
PM	0.646	4.00	0.686	0.709	4.14	0.506
WC	0.763	4.21	0.626	0.676	4.01	0.535

Note: TC: teamwork climate; SC: safety climate; JS: job satisfaction; SR: stress recognition; PM: perceptions of management; WC: working conditions

C. Correlation Analysis

Table 3 describes the correlations between the variables of patient safety culture dimensions for physicians. The results demonstrate that safety climate was highly significantly related to working conditions, teamwork climate, and job satisfaction.

In addition, perceptions of management were highly significantly related to job satisfaction and working conditions.

Table 3: Pearson's Correlation Analysis for Physicians (n=27)

	1	2	3	4	5	6
1.TC						
2.SC	0.809**					
3.JS	0.558**	0.774**				
4.SR	-0.107	0.060	-0.069			
5.PM	0.233	0.569**	0.756**	0.139		
6.WC	0.540**	0.809**	0.666**	0.058	0.698**	

Note:* p-value < 0.05; ** p-value < 0.01

Similarly, as shown in Table 2, the results of correlation analysis illustrated that safety climate was greatly correlated to teamwork climate and working conditions. Perceptions of management were also highly significantly related to working conditions and job satisfaction.

Table 4: Pearson's Correlation Analysis for Nurses (n=168)

	1	2	3	4	5	6
1.TC						
2.SC	0.712**					
3.JS	0.530**	0.609**				
4.SR	0.032	0.068	0.192*			
5.PM	0.573**	0.588**	0.668**	0.192*		
6.WC	0.510**	0.654**	0.623**	0.184*	0.749**	

Note:* p-value < 0.05; ** p-value < 0.01

V. DISCUSSIONS

First of all, safety climate is illustrated to be highly associated with the teamwork climate and working conditions. It is recommended that patient safety environment, long-term team-building activities, and a quality working environment should be prioritized when creating a better patient safety culture in healthcare organizations. Second, our results demonstrate that the perceptions of management are an important indicator for physicians and nurses in the relationship with working conditions. Novel funding support, better equipment and facilities, and transparent communication are suggested to enhance the development of patient safety culture. In fact, physicians and nurses are normally under high workload and other pressures in hospitals. Previous studies further state that physicians and nurses would move toward a positive patient safety culture if more resources, encouragement, and relaxation adoption were provided by their hospitals [4],[5].

CONCLUSION

In summary, the current study identifies the essential influences on the establishment of a patient safety culture. Safety climate is identified as a critical factor that is highly correlated with teamwork climate and working conditions from the perceptions of physicians and nurses. These results could help hospital managers to develop specific procedures that inspire awareness of safety issues to provide patient-oriented medical services.

Acknowledgment

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