

Attitudes toward patient safety among healthcare professionals at various levels

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Abstract

Background: Patient safety (PS) is a global public health concern, with millions affected by unsafe healthcare practices annually. Positive PS attitudes among healthcare workers (HCWs) are essential for improving patient outcomes and the overall quality of care. However, understanding and fostering a safety culture remain challenges, especially in low- and middle-income countries.

Methods: This study assessed PS attitudes among 120 primary healthcare (PHC) units. Participants included physicians, nurses, pharmacists, dentists, and technicians. A modified Chinese Safety Attitudes Questionnaire (CSAQ), encompassing seven dimensions, was utilized. Data were analyzed using descriptive statistics, independent t-tests, ANOVA, and regression analysis to identify predictors of PS attitudes.

Results: The study revealed low PS scores across both healthcare levels, with no domain scoring above 75%. Older age, male gender, marital status, advanced education, nursing roles, and prior PS training were significantly associated with higher PS scores. Regression analysis highlighted education level and job type as predictors of positive PS attitudes.

Conclusion: The findings emphasize the need for targeted interventions to improve PS attitudes. Strategies include ongoing training, fostering a non-punitive safety culture, and optimizing workloads. Further research should explore organizational factors influencing PS to enhance care quality across all healthcare levels.

Introduction

Patient safety (PS) is a critical global public health issue. The World Health Organization highlights that unsafe healthcare practices result in millions of patients suffering from disabling injuries or death annually (1).

PS refers to the prevention and mitigation of harm to patients caused by healthcare delivery processes (2). An organization's safety culture plays a pivotal role in shaping employee behavior in the workplace. This culture is reflected in the practices and attitudes that are considered acceptable and rewarded, influencing how safety measures are implemented. A positive safety culture is characterized by open communication based on trust, a collective recognition of safety as a priority, and confidence in the effectiveness of preventive strategies (3).

Despite its significance, relatively few organizations evaluate the extent to which their staff culture supports PS. Understanding current safety attitudes helps organizations pinpoint urgent PS challenges, assess the strengths and weaknesses of their safety culture, and foster continuous quality improvement (4).

Fostering positive PS attitudes requires targeted training, cultivating openness in workplace culture, hazard awareness, and behavioral change. This approach should include learning from errors through a non-punitive framework, where mistakes are treated as opportunities for growth and improvement (5).

In many Arab countries, PS is a prominent concern for health policymakers, necessitating a detailed examination of contributing factors. According to the Organisation for Economic Cooperation and Development, low- and middle-income countries face significant challenges, with approximately 2.6 million deaths annually linked to 134 million adverse events in hospitals (6, 7). Research in Africa has revealed limited data on the scope of PS culture, with studies indicating low positive PS ratings and increasing incidents of medical errors reported in various regions (8, 9). A study in the Eastern Mediterranean and Africa indicated that unsafe care impacts about 10% of patients, with most incidents being preventable (11).

Improving PS necessitates comprehensive knowledge and skills in areas like human factors and system management, as most preventable errors—such as medication and diagnostic errors or hospital-acquired infections—stem from these domains (12). Positive PS attitudes are essential for enhancing the physician-patient relationship and the overall quality of care provided. Regular assessment of these attitudes allows healthcare management to monitor progress and address gaps in PS practices. Research has emphasized the urgent need to enhance PS culture among healthcare providers, while additional studies are crucial for evaluating the attitudes and awareness of PS. Such findings can serve as a resource for decision-makers to develop strategies for addressing PS challenges across various healthcare levels.

Methods

This research participants included healthcare professionals such as physicians, dentists, pharmacists, nurses, and technicians who had been working at primary healthcare (PHC) units

Eligibility Criteria

Inclusion Criteria:

- Healthcare workers (HCWs) employed for more than six months in the study locations and willing to participate were included.

Exclusion Criteria:

- HCWs with less than six months of experience at the study sites or those on annual or medical leave during data collection were excluded.

Data Collection Tool

The study used the modified Chinese Safety Attitudes Questionnaire (CSAQ), developed by the Taiwan Joint Commission on Hospital Accreditation (15). This tool contains seven dimensions: teamwork climate, safety climate, job satisfaction, stress recognition, management perception, working conditions, and burnout. It includes 40 statements rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Negative statements were reverse-scored during analysis so that higher scores indicated more positive PS culture perceptions. Demographic information, such as age, gender, marital status, workplace, education level, job role, work shift, years of experience, and prior PS training, was also collected.

Statistical Analysis

Data were analyzed using SPSS version 25 (17). Results were presented as frequencies, percentages, means, and standard deviations. Independent samples t-tests and one-way ANOVA were used to compare PS attitudes across healthcare levels and analyze the relationship between participant characteristics and overall PS attitude scores. Predictors of PS attitudes were identified using linear regression analyses.

Results

This research involved 120 participants from primary healthcare (PHC). Among the PHC participants, there were 40 physicians, 32 nurses, 28 pharmacists, 12 dentists, and 8 technicians. The average age of PHC workers was 34.7 ± 6.5 years. The majority of respondents were female, married, had direct patient interaction, and had not attended any patient safety (PS) training. Over half of the respondents worked morning shifts and had been employed in their

current roles for six years or longer. Approximately one-third of the PHC workers had attained a university education and had between 5 and 10 years of work experience. (Table 1).

the participants' mean scores on the seven PS dimensions and the percentage of positive responses are shown. The "safety climate" scale had the highest positive response rate (49.59%), followed by "job satisfaction" (49.5%), "teamwork climate" (49.17%), "stress recognition" (41.8%), "burnout" (41%), "perception of management" (40.63%), and "working conditions" (40.6%).

Significant associations were found between the level of healthcare and the mean scores for several PS dimensions, including "teamwork climate," "perception of management," "job satisfaction," "working conditions," "stress recognition," and the overall modified Chinese Safety Attitudes Questionnaire (CSAQ) score ($p < 0.001$, 0.003 , < 0.001 , 0.002 , < 0.001 , and 0.001 , respectively). THC participants demonstrated significantly higher mean scores on these dimensions.

The total mean PS attitude score was notably higher in certain demographic groups: individuals aged 40 years or older (132.98 ± 25.12 ; $p < 0.001$), males (131.90 ± 30.65 ; $p = 0.009$), married participants (125.79 ± 20.64 ; $p = 0.014$), those holding MD-level education (143.50 ± 14.92 ; $p < 0.001$), nurses (131.00 ± 16.32 ; $p < 0.001$), and participants who had received PS training (130.52 ± 17.75 ; $p = 0.005$) (Table 4).

Regression analysis identified educational attainment and job type as significant predictors of PS attitudes among the HCWs. The non-significant R^2 value indicated a well-fitting model for assessing PS attitudes .

TABLE 1. Basic characteristics of the studied healthcare workers.

Item	Primary care ($n = 120$)	
	<i>n</i>	%
Mean \pm s.d.	34.7 ± 6.5	-
Male	16	13.3
Female	104	86.7
Single [‡]	24	20.0
Married	96	80.0
High school	26	21.7
University	52	43.3
Master's degree	32	26.7
Fellowship	4	3.3
MD degree	6	5.0
Physician	40	33.3
Nurse	32	26.7
Pharmacist	28	23.3
Dentist	12	10.0
Technician	8	6.7
Morning	76	63.3
Mixed	44	36.7
< 5	12	10.0
5 to <10	48	40.0
10 to < 15	32	26.7
≥ 15	28	23.3
≤ 1 year	6	5.0
2–5 years	32	26.7
≥ 6 years	82	68.3
Yes	30	25.0
No	90	75.0
Direct	92	76.6
Indirect	28	23.3

s.d., standard deviation; MD, doctor of medicine.

†, Single, divorced, widow.

TABLE 2. Patient safety scales' mean score and the percentages of positive responses of all participants.

Scale	Mean	s.d.	% of positive responses
Teamwork climate			
In this health unit/hospital, it is difficult to speak up if I perceive a problem with patient care.	3.28	1.22	43.3
The physicians and nurses here work together as a well-coordinated team.	2.68	1.21	25.0
Disagreements in this health unit/hospital are appropriately resolved.	3.32	1.28	55.0
Nurse input is well received in this clinical area.	3.35	1.13	56.7
I have the support I need from other personnel to care for patients.	3.65	0.99	69.2
It is easy for personnel in this office to ask questions when there is something that they do not understand.	3.23	1.18	45.8
Safety climate			
I am encouraged by my colleagues to report any patient safety concerns I may have.	3.33	1.01	52.0
The culture in this office makes it easy to learn from errors of others.	3.48	1.09	68.0
Medical errors are handled appropriately in this health unit/hospital.	3.27	0.96	43.0
I know the proper channels to direct questions regarding patient safety in this office.	3.28	1.04	48.0
I receive appropriate feedback about my performance.	3.3	0.99	47.0
I would feel safe being treated here as a patient.	3.1	1.17	48.3
In this office, it is difficult to discuss errors.	3.15	1.15	40.8
Perception of management			
Senior management of this office is doing a good job.	3.3	1.06	51.7
The management of this office supports my daily efforts.	3.12	1.04	36.7
I am provided with adequate, timely information about events in the hospital that might affect my work.	2.77	1.20	31.6
The levels of staffing in this office are sufficient to handle the number of patients.	3.04	1.14	42.5
Job satisfaction			
This health unit/hospital is a good place to work.	3.17	1.29	49.1
I am proud to work in this health unit/hospital.	3.29	1.03	47.5
Working in this place is like being part of a large family.	3.36	0.92	44.2
Morale in this clinical area is high.	3.39	1.08	53.3
I like my job.	3.33	1.15	53.4
Working condition			
This health unit/hospital does a good job of training new personnel.	3.85	1.05	75.0
This health unit/hospital constructively deals with problem physicians and employees.	3.05	1.18	45.0
All the necessary information for diagnostic and therapeutic decisions is routinely available to me.	2.66	1.06	21.6
Trainees in my discipline are adequately supervised.	3.02	0.99	20.8

Stress recognition			
When my workload becomes excessive, my performance is impaired.	3.09	1.16	41.7
I am more likely to make errors in tense or hostile situations.	3.17	1.15	43.3
Fatigue impairs my performance during emergency situations.	3.10	1.14	33.2
I am less effective at work when I am fatigued.	3.24	1.16	49.0
Burn out			
I feel like I'm at the end of my rope.	2.88	1.18	35.8
I feel burned out from my work.	3.19	1.12	43.3
I feel frustrated by my job.	3.18	1.19	45.8
I feel I'm working too hard on my job.	3.29	1.38	50.8
I feel emotionally drained from my work.	3.33	1.18	54.2
I feel used up at the end of the work day.	2.71	1.12	26.7
I feel fatigued when I get up in the morning and have to face another day on the job.	2.89	1.13	31.5
Working with people all day is really a strain for me.	3.18	1.16	45.9
Working with people directly puts too much stress on me.	2.94	1.13	35.0

Discussion

Patient safety (PS) is a critical component of healthcare quality. Healthcare organizations increasingly recognize the importance of cultivating a safety-oriented culture to enhance care delivery (18). This study revealed differences between primary and tertiary healthcare workers (HCWs) concerning their educational levels and years of experience, likely stemming from variations in the organizational structures of primary healthcare (PHC) units and hospitals. Only about 20% of HCWs had prior training in PS, underlining the necessity for establishing ongoing training programs to enhance PS awareness and practices among all HCWs. These findings align with research conducted by the Faculty of Medicine at Cairo University (2). The overall percentage of positive responses in this study indicated suboptimal scores ($\leq 75\%$) across six domains (40%–49.6%) and a notable increase in burnout (41.4%). Since a positive safety attitude is often linked to low burnout levels and effective stress management, these results suggest a pressing need for improvement in all PS domains. Physicians, nurses, and technicians displayed negative perceptions of PS, reflecting a general deficiency in safety practices in healthcare systems in developing nations, where PS often receives limited attention.

Compared to this study's overall PS scores, higher scores were reported in studies by the Agency for Healthcare Research and Quality (2014) (64%), Palestine (63.5%), Saudi Arabia (60%), private Lebanese hospitals (72.5%), and research in China (63%) and Kenya (65.8%) (9, 20, 21, 22). Discrepancies between these findings and this study's results may be attributed to limited awareness of PS culture, insufficient training programs, and a lack of institutional strategies for performance improvement.

The safety climate received the highest score among the domains in this study, emphasizing the value of fostering a non-punitive environment, establishing effective communication networks, offering training, and encouraging incident reporting. However, the relatively low score in this domain highlights the need for stronger leadership and improved infrastructure to better address errors and learn from adverse events.

The second-highest score was in job satisfaction, driven by participants' enjoyment of their work. This suggests that cultivating a workplace environment that fosters camaraderie and respect among staff can positively influence PS. On the other hand, the domains of management perception and working conditions scored lower, underscoring the need for initiatives such as mentoring new employees, maintaining accurate diagnostic and therapeutic records, and enhancing the overall work environment (23).

Significant differences were observed between PHCWs and tertiary HCWs in the mean scores for teamwork climate, management perception, job satisfaction, working conditions, and stress

recognition. The overall PS scores were notably higher at the tertiary level, mirroring findings from research in Turkey, where PS scores in PHC units were lower than in hospitals (24). Hospitals often address severe clinical cases, which necessitate specialized training and advanced safety protocols (25). This disparity highlights the insufficient emphasis on PS in PHC settings, where the volume of care is high but resources and guidelines are often limited (26).

Older HCWs in this study demonstrated higher PS attitude scores, potentially due to their extensive work experience, which fosters adaptability and greater job appreciation. Younger staff members, in contrast, may exhibit less sensitivity to safety issues, as indicated in prior studies by El Shafei, Zayed, and Abdi et al. (14, 24, 28). Male HCWs also scored higher than females, possibly due to differences in roles, responsibilities, and work duration between genders.

Participation in PS training courses positively influenced HCWs' attitudes toward PS, aligning with findings by Asem et al. (2), Zhao et al. (29), and Biresaw et al. (30), which noted that PS education enhances knowledge and attitudes. Similarly, the study revealed that HCWs with advanced degrees scored higher, as their broader knowledge base likely equips them to address safety issues more effectively. However, this may also result in additional pressures, potentially affecting teamwork (29).

Regression analysis identified nurses as having more favorable attitudes toward PS than physicians, likely due to their frontline roles and increased exposure to safety culture training. These findings align with those reported by Abu-El-Noor, El Shafei, and Zayed (28, 33, 34), although other research has found physicians to outperform nurses in some domains.

Conclusion

The study highlighted low PS scores among HCWs in both PHC units and hospitals, with no domain achieving a score above 75%. Hospital HCWs generally exhibited higher scores than PHCWs, and advanced education and nursing roles were predictors of positive PS attitudes. Improving PS requires continuous assessment, awareness campaigns, and monitoring. Healthcare organizations should prioritize orientation programs and training for new staff, cultivate a supportive, non-punitive culture, and implement hierarchical diagnostic systems to manage workloads and reduce stress among HCWs. Further research should explore factors such as staffing and work environments to better predict care outcomes.

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