ORIGINAL RESEARCH

Assessment of Attitude of Primary Care Medical Staff Toward Patient Safety Culture in Primary Health-care Centers——Al-Ahsa, Saudi Arabia

Mohammed M AlMaani[1]
Khaled F Salama [iD][2]

[1]King Abdulaziz-National Guard Hospital Al-Ahsa, Dammam, Saudi Arabia; [2]Department of Environmental Health, College of Public Health, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia

Introduction: An effective leadership is critical to the development of a safety culture within an organization. Patient safety in primary health care is an emerging field of research of increasing importance.

Objective: This study has been conducted to explore the safety culture attitude toward patient safety to improve the quality and patient safety in primary health-care centers.

Methods: A cross-sectional survey involving 288 medical staff in primary health-care centers in Al-Ahsa was conducted using an Arabic translated safety attitude questionnaire to assess the safety attitudes among health care center staff toward patient safety culture.

Results: This study showed that the attitude of medical staff in primary health-care centers is somewhat positive toward patient safety culture where the average of job satisfaction score in the current study was higher at 80% and the overall score for safety climate was 68%. The overall score for safety attitudes was highest in Al-Ayoun Health Center (79%) and lowest in Al Faisaliah Health Center (58%). The score of teamwork and stress recognition was high and statistically significant ($p<0.05$) among females. However, staff perception toward management was significantly higher ($p<0.05$) among males. Staff perception toward management was significantly low ($p<0.05$) among clinicians. The overall score for safety attitudes was remarkably high ($p<0.05$) among those with less than 10 years' experience, the overall safety culture score was significantly high ($p<0.05$) among administrative staff and all correlations were significant ($p<0.01$) except for recognition of stress with teamwork, job satisfaction, management perception, and safety climate. In addition, there were different attitudes toward patient safety culture between gender and physician vs non-physician and management staff vs non-management staff.

Conclusion: The findings suggested that certain improvements are needed, especially in the field of communication and stress recognition with regard to patient safety culture.

Keywords: primary health-care center, safety attitude, patient safety, safety climate, work condition

Introduction

In the current health-care setting, systems are increasingly becoming complex as caregivers are compelled to work in a fast-moving and pressurized environment thereby elevating the possibilities of clinical errors and harm to patients.[1]

As a way of combating these rapid incidences, health-care institutions are striving to improve their performance as well as recognize the significance of

Correspondence: Khaled F Salama
Department of Environmental Health, College of Public Health, Imam Abdulrahman Bin Faisal University, PO Box 1982, Dammam, 31441, Saudi Arabia
Email ksalama@iau.edu.sa

developing a safety culture for enhancing the behavior and attitude of caregivers toward patients.[2]

The safety attitude is also explained as the freedom from any kind of injury that is caused by negligence in medical care. Safety attitude helps in the reduction of unnecessary issues connected to health care in a smallest possible way. It is also referred to as a safety culture or safety climate ensuring the constant concerns of nurses, health-care workers, and professionals as they are the ones who play an important role in improving and promoting a better and safe environment for staff as well as patients.[1–3]

Patient safety is defined as the prevention and avoidance of adverse events or patients' injuries occurring because of the procedures of health-care delivery.[3] Health-care providers working in the primary health-care centers must be empowered with enough background information regarding patient safety to minimize the adverse event, especially where the caregivers are in frontline contact with patients.[4]

Safety culture is an integral part of health-care organizations whereby the conceptualization of shared believes, attitudes, values, norms and behaviors are used to gauge a caregiver's performance toward achieving patient safety.[5] Majority of the community and population health-care requirements and needs are being provided at the primary health-care centers, however, the theme of patient's safety culture becomes overshadowed and poorly visualized.[6]

The safety attitude questionnaire (SAQ) was designed to fulfil the assessment of patient safety culture. The framework was developed by the University of Texas Center of Excellence for Patient Safety Research and Practice[7,8] where the main part of it involves six main factors including, perception of management, stress recognition, teamwork climate, communication, safety climate, working conditions and satisfaction.[9] SAQ helps in identifying the major expected weakness in the settings of clinics and motivates the reductions of medical errors while suggesting possible interventions for providing quality care.[10]

Najjar et al[11] explored the relationship between patient safety attitude and adverse events, they explained that a hospital with a positive safety culture had fewer adverse events. Inconsistent with this finding Sorra et al[12] studied the relationship between staff attitude and patient assessment. Moreover, a systematic review performed to explore this association found evidence of association between the patient safety culture and patient outcome existed in the hospital and nursing units.[13]

Primary health care is an essential component of the health-care system, where patient harm and adverse events may occur at any point of care during the treatment process. Assessment of the primary health-care staff toward patient safety attitude is a preliminary step to identify the weakness areas related to patent quality and safety.

This study has been conducted to explore the culture of safety attitudes toward patient safety as it is considered an essential step to improve the quality of patient safety in primary health-care centers. Since, the majority of health-care provision takes place in primary health care. However, most of the safety attitude studies were carried out in a hospital setting.

Methods
Study Area
Primary health-care center (PHC) services in Al Ahsa includes important rehabilitative, curative, preventive, and promotional services, immunization, child health, chronic disease management such as diabetes and hypertension, dental oral health, crucial laboratory investigation services, provision of essential medication, environmental health, disease control, and health education. Moreover, a medical imaging service (X-ray) is available in a limited number of PHCs in the region where the average annual number of visits was 2.6 for every single person of the Al Ahsa population.

Primary health-care centers in Al Ahsa are distributed among the region in three sectors namely, Al Hofuf sector (n=22), Al Mubarraz sector (n=22), and Al Omran sector (n=23) with a total of 67 PHCCs.

Consequently, the total workforce in PHCs was 1659 distributed between physicians, nurses, pharmacists, and allied health personnel employees male and female—Saudi (n=1440) and non-Saudi (n=219).

Study Design
This study is based upon the cross-sectional survey that was done in the primary health-care center of Al-Ahsa, Saudi Arabia from February 2020 to May 2020 (approximately four months). The dependent variable of the study is the attitude of primary care medical staff toward patient safety culture in PHCs. However, the independent variable

includes sociodemographic characteristics, especially participant's gender, years of experience, job title, and position.

Source and Study Population

The study included the participants from physicians, medical managers, nurses, and other staff in PHC, in Al-Hasa, Saudi Arabia. The inclusion criteria comprises medical workers and staff members employed in the PHC, in Al-Hasa, Saudi Arabia. While, the new medical and nursing staff working for less than one year and trainees of medical and nursing staff were excluded from the study.

The Sample Sizes

The sample size for this research is measured by the help of the Raosoft® software program. In addition, for the calculation of the sample, the information considered includes the total number of the workforce in primary health care centers, Al-Ahsa as 1659, with a 5% error margin and 95% confidence interval. Furthermore, this provided the estimation of the sample to be 313. In addition, 10% extra was added to cover the incomplete answers, resulting in a final sample of 344 employees.

Eligibility Criteria

The inclusion criteria include the medical workers and staff members employed in the PHC, in Al-Hasa, Saudi Arabia. While the new medical and nursing staff working for less than one year and trainees of medical and nursing staff were excluded from the study.

Collection Methods

Instruments

The SAQ tool was selected for the evaluation of safety attitude due to its ease of use and it was rigorously validated, as well as a common tool for collecting data regarding health care safety climate and attitude. It has been widely used in different countries including Saudi Arabia, and has been translated into seven different languages including Arabic. A translated Arabic version was used in this study and prior to administration of the questionnaire, permission was obtained from Dr Ayman Elsous, Israa University Gaza.[14,15]

Questionnaire Data

The SAQ measures patient safety culture along six subscales: teamwork climate, six items (items 1 to 6), safety climate, seven items (items 7 to 13): job satisfaction, five items (items 15 to 19): stress recognition, four items (items 20 to 23): perceptions of management, five items (items 24 to 28), and working conditions, four items (items 29 to 32), plus employee's perceptions of the quality of their work environment.

The internal consistency was represented by Cronbach's α, cutoff=0.70 and it exceeded the set cutoff for all subscales ranging from 0.73 to 0.85, therefore, the overall Cronbach's α was 0.86, which indicates that each scale demonstrated a good and comparatively high level of reliability.

Ethical Consideration

This study was approved by Imam Abdulrahman Bin Faisal University research committee with approval reference number IRB-PGS-2020-03-056. Appendix A is a copy of IRB approval. Permission was obtained from PHC managers to participate in the study after giving full information about the aim and purpose of the study. The questionnaire was explained, and verbal consent was obtained from the participants. Appendix B.

Data Analysis

Data were recorded, tabled, and analyzed by IBM SPSS software version 25. Respondent's characteristics were described by using percentages. To compare the means between two groups a two-sample t-test was used. One-way ANOVA was used to compare the means between several groups.

Results

The demographic characteristics of the study participants (n=288) are presented in Table 1. Female participants were comparatively more than male (n=175, 60.8% and 113, 39.2%). Most of participants were nurses (35.4%) followed by technologists/technicians (21.5%), physicians (18.8%), pharmacists/pharmacy technicians (12.5%) and others. (11.8%). Participants aged less than 30 years were 27.8%, from 30 to 40 years were 45.5%, and more than 40 years were 26.7%. Participant's working in the center for less than three years were 13.2%, three to ten years were 58.3% and more than 10 years were 28.5%. The majority of participants were diploma holders (70.1%), then bachelor holders (27.1%), and board-certified (2.8%). The majority of the participants were Saudi (90.6%).

Perception of management had the highest Cronbach's α-value and work condition had the lowest value. The closer Cronbach's alpha coefficient is to 1.0, the greater the internal consistency of the items in the instrument or

Table 1 Demographics Characteristic for Study Participants in PHCs

	Frequency	Percent
Gender		
Female	175	60.8
Male	113	39.2
Job category		
Nurse	102	35.4
Technologist/technician	62	21.5
Physician	54	18.8
Pharmacist/pharmacy tech.	36	12.5
Other	34	11.8
Years in the center		
Less than 3 years	38	13.2
3–10 years	168	58.3
More than 10 years	82	28.5
Job title		
Nurse in charge	9	3.1
Manager	7	2.4
Nonsupervisory	272	94
Age		
Less than 30	80	27.8
30 to 40 years	131	45.5
More than 40 years	77	26.7
Education level		
Diploma	202	70.1
Bachelor	78	27.1
Board	8	2.8
Nationality		
Saudi	261	90.6
Non-Saudi	27	9.4

Table 2 Internal Consistency of the Scale

Subscale	Cronbach's α	Item Numbers
Teamwork	0.75	1–6
Safety climate	0.76	7–13
Job satisfaction	0.83	15–19
Stress recognition	0.77	20–23
Perception of management	0.85	24–28
Work condition	0.73	29–32
Total	0.86	All items

the scale. Therefore, our findings indicate each scale demonstrated a good and a comparatively high level of reliability such that no sub-scales could be considered to be poorly constructed as shown in Table 2.

Scale-to-scale correlations were studied by the degree of linear association between pairs of two scales: Pearson's correlation coefficients are shown in Table 3. The correlation ranged from 0.069 to 0.788. All the correlations were significant ($p<0.01$) except stress recognition with teamwork, job satisfaction, perception of management, and safety climate. Moreover, stress recognition was least positively correlated with subscales with teamwork, job satisfaction, perception of management, and safety climate. The total score for each subscale was more positively correlated with perception of management, job satisfaction, and safety climate and work condition 0.739 to 0.788. However, the least positive correlation of total score was with stress recognition and teamwork ranging from 0.428 to 0.598.

The minimum and maximum score in each subscale along with mean SD (standard deviation) and score on a 100-point scale are shown in Table 4. Job satisfaction had the highest mean among all the subscales ie 4.20 (with 100Pt scale of 80) followed by teamwork (4.11 with 100Pt

Table 3 Validity of the Scale Using Pearson's Correlation Coefficients

	Teamwork	Job Satisfaction	Stress Recognition	Perception of Management	Work Condition	Safety Climate	Total Score
Teamwork	1						
Job satisfaction mean	0.409*	1					
Stress recognition	0.097	0.069	1				
Perception of management	0.352*	0.669*	0.094	1			
Work condition mean	0.287*	0.497*	0.231*	0.557*	1		
Safety climate	0.552*	0.613*	0.096	0.584*	0.453*	1	
Total score	0.598*	0.773*	0.428*	0.788*	0.739*	0.757*	1

Note: *$p<0.01$ significance level.

Table 4 Total and Subscale Scores of Medical Staff Attitudes Towards Patient Safety in PHCs

Subscale	N	Minimum	Maximum	Mean	SD	Score
Teamwork	288	1.17	5.00	4.11	0.595	77.5
Safety climate	288	1.50	5.00	3.74	0.778	68.5
Job satisfaction	288	1.20	5.00	4.20	0.720	80
Stress recognition	288	1.00	5.00	3.01	1.130	50
Perception of management	288	1.00	5.00	3.75	0.859	68.6
Work condition	288	1.00	5.00	3.50	0.797	62.6
Total score	288	1.85	4.89	3.72	0.521	68

scale of 77.5) perception of management, (3.75 with 100Pt scale of 68.6), safety climate (3.74 with 100Pt scale of 68.5), work conditions (3.50 with 100Pt scale of 62.6) and stress recognition (3.01 with 100Pt scale of 50). However, the total score was found to be 3.72 (with a 100Pt scale of 68). Overall, Job satisfaction and teamwork subscales among all safety attitude subscales received scored greeter than 75%.

This section shows the participant's responses for each item in the six subscales of SAQ. It presents mean scores, standard deviation (SD), and frequencies of participants' agreement (slightly agree and strongly agree) and disagreement (slightly disagree and strongly disagree) with each item in the subscales Table 5.

This section presents the comparison between participant's perception toward the six sub-scales of patient safety and their characteristics such as gender, job category, age, experience, job title, education level, CBAHI accreditation, and PHC sectors. In comparison between the sectors, the highest total score of safety attitude was recorded in Al Omran sector (70.7) followed by Al Mubarraz sector (67.1) and Al Hofuf sector (66.3). Moreover, it was found that CBAHI accredited PHCs had a low total safety attitude score compared to nonaccredited (67 vs 68.7), however, the result was nonsignificant Table 6.

Discussion

Previous studies[16–19] conducted in various regions of Saudi Arabia have explored the safety attitudes of physician and/or nurses in a specific area such as ICU or emergency department as well as at the level of the hospital. According to Alahmadi,[20] Saudi Arabian hospitals in cities like Riyadh are struggling to enhance their patient safety and quality of care by utilizing safety system applications as well as creating a safety culture. Moreover, Al-Khaldi[21] explored the attitude of physicians

at primary health-care centers in Aseer region toward patient safety.

Correlation analysis in the current study indicated that stress recognition was least positively correlated with subscales teamwork, job satisfaction, perception of management, and safety climate although the analysis was nonsignificant, which is consistent with a study[22] carried out in Albanian hospitals as there was the least positive and nonsignificant correlation between stress recognition with perceptions of management, the teamwork climate, and job satisfaction. Similar findings were also found in a study[9] exploring safety attitudes among the staff of a primary health-care facility in Slovenia and it was reported that stress recognition was not significantly correlated with other subscales. However, the total score for each subscale in our study was more positively correlated with perception of management, job satisfaction, safety climate, and work condition ranging from 0.739 to 0.788. Nevertheless, the least positive correlation of total score was with stress recognition and teamwork ranging from 0.428 to 0.598.

Subscale stress recognition had the lowest mean, which indicates that the acceptance of how work is affected by stressors is less recognized among all the subscales which is consistent with other studies.[22,23] Identifying that stress from work necessities can be a cause of sickness, disturbing usual work routines, and subsequently reduced quality of care, are perceptions that need to be recognized by health-care professionals.[23] There is a strong relationship between patient safety and fatigue, anxiety, as well as lack of motivation for not predictably doing the job, with the support and motivation of the team. This can affect an individual as well as the collective working of the patient care team and can also increase the likelihood of adverse events.[24,25]

Furthermore, our study illustrated that after job satisfaction the highest total score was for teamwork (77.5)

Table 5 Participant's Responses for Each Item in the Six Subscales of SAQ

Subscales, Item Number, and Text	Disagree (%)	Neutral (%)	Agree (%)	Missing (%)	Mean (SD)
1. Nurse input is well received in this center	18 (6.25)	31 (10.75)	235 (81.6)	4 (1.38)	75.0 (22.5)
2. In this PHC center, it is difficult to speak up if I perceive a problem with patient care[a]	239 (83)	17 (5.9)	27 (9.4)	5 (1.73)	74.9 (24.8)
3. Disagreements in this center are resolved appropriately	28 (9.7)	20 (6.9)	234 (81.3)	6 (2.1)	74.8 (24.3)
4. I have the support I need from other personnel to care for patient	22 (7.6)	2 (6.9)	242 (84)	4 (1.4)	77.5 (23.3)
5. It is easy for personnel here to ask questions when there is something that they do not understand	14 (4.8)	5 (1.7)	264 (92)	5 (1.73)	81.8 (19.3)
6. The physicians and nurses here work together as well coordinated team	15 (5.2)	21 (7.3)	24 3(84)	9 (3.1)	81.2 (20.9)
7. I would feel safe being treated here as a patient	31 (10.8)	30 (10.4)	223 (77.4)	4 (1.4)	74.1 (25.5)
8. Medical errors are handled appropriately in this center	75 (26)	14 (4.9)	196 (68)	3 (1.0)	64.8 (31.6)
9. I know the proper channels to direct questions regarding patient safety	67 (23.3)	30 (10.4)	186 (64.6)	5 (1.7)	63.6 (30.2)
10. I received appropriate feedback about my performance	29 (10.1)	31 (8.7)	226 (78.5)	2 (0.7)	75.0 (24.4)
11. In this center it is difficult to discuss errors[a]	194 (67.4)	35 (12.2)	55 (19.1)	4 (1.4)	66.1 (29.2)
12. I am encouraged by my colleagues to report any patient safety concerns I may have	52 (18.1)	26 (9.0)	156 (54)	5 (1.7)	69.0 (27.7)
13. The culture in this center makes it easy to learn from the errors of others	50 (17.4)	4 0(13.9)	191 (66.3)	7 (2.4)	66.5 (26.4)
15. I like my job	5 (1.73)	17 (5.9)	262 (90.9)	4 (1.4)	88.9 (17.9)
16. Working here is like being part of a large family	21 (7.3)	29 (10.1)	232 (80.5)	6 (2.1)	79.7 (23.9)
17. This is a good place to work	31 (10.8)	36 (12.5)	218 (75.7)	2 (0.7)	75.0 (26.4)
18. I am proud to work in this center	17 (5.9)	35 (12.2)	232 (80.5)	4 (1.4)	80.6 (23.3)
19. Morale in this center is high	17 (4.9)	50 (17.4)	216 (75)	5 (1.7)	76.4 (22.8)
20. When my workload becomes excessive my performance is impaired	129 (44.8)	37 (12.8)	124 (43)	8 (2.8)	48.1 (32.8)
21. I am less effective at work when fatigued	123 (42.7)	35 (12.2)	122 (42.4)	4 (1.4)	50.2 (33.2)
22. I am more likely to make errors in tense or hostile situations	139 (48.2)	34 (11.8)	113 (46.2)	2 (0.7)	51.1 (33.9)
23. Fatigue impairs my performance during emergency situations	129 (44.8)	51 (17.7)	102 (35.4)	6 (2.1)	51.2 (31.9)
24. Management supports my daily efforts	41 (14.2)	55 (19.1)	189 (65.6)	3 (1.0)	67.9 (25.9)
25. Management does not knowingly compromise patient safety	67 (23.2)	47 (16.3)	169 (58.7)	5 (1.7)	62.8 (29.5)

(Continued)

Table 5 (Continued).

Subscales, Item Number, and Text	Disagree (%)	Neutral (%)	Agree (%)	Missing (%)	Mean (SD)
26. Management is doing a good job	28 (9.7)	38 (13.2)	218 (75.7)	4 (1.4)	73.6 (24.4)
27. Problem personnel are dealt with constructively by the center management	35 (12.1)	52 (18.1)	194 (67.4)	7 (2.4)	70.2 (26.8)
28. I get adequate timely information about events that might affect my work	41 (14.2)	50 (17.4)	195 (67.7)	2 (0.7)	68.4 (26.1)
29. The levels of staffing in this center are sufficient to handle the number of patients	134 (46.5)	49 (17)	103 (35.8)	2 (0.7)	45.9 (32.1)
30. This center does a good job of training new personnel	42 (14.6)	33 (11.5)	208 (72.2)	5 (1.7)	68.8 (24.3)
31. All the necessary information for diagnostic and therapeutic decisions is routinely available to me	36 (12.5)	56 (19.4)	188 (65.3)	8 (2.8)	68.1 (23.8)
32. Trainees in my discipline are adequately supervised in this center	32 (11.1)	64 (22.2)	183 (63.5)	9 (3.1)	68.0 (23.7)

Notes: [a]Indicates that the question was reversed. SAQ subscale items adapted from Sexton JB, Helmreich RL, Neilands TB, et al. The Safety Attitudes Questionnaire: Psychometric Properties, Benchmarking Data, and Emerging Research. *BMC Health Services Research*. 2006;6:44.[7] © 2006 Sexton et al; licensee BioMed Central Ltd. Creative Commons Attribution License (http://creativecommons.org/licenses/by/2.0).

followed by perception of management (68.6), safety climate (68.5), and work conditions (62.6). In an era of growing complexity and several specialized professionals working together in patient care process demands effective communication and teamwork to consistently produce the best patient care.[26]

It has been seen in the present study that the second-lowest score regarding safety attitude was recorded in subscale working conditions ie, 62.6. Furthermore, the findings of the study revealed that many fields of the work life of nurses in PHC need strategic reorganization such as attitudes of the public, family needs, management and supervision, professional development opportunities, salary factors, staffing, working atmosphere, and duty hours.

Concerning the gender of study participants, the analysis revealed that teamwork and stress recognition score was found to be significantly high among the female gender compared to the male gender. These findings are consistent with other studies that have been carried out in the PHCs of Kuwait and Egypt.[1,4]

The comparison between the score of participant's experiences revealed that teamwork, job satisfaction, stress recognition, perception of management, and total safety attitude score significantly high among those with less than ten years of experience compared to those with greater than ten years of experience.

Contradictory to our findings a study[2] from Palestinian hospitals reported that patient safety attitudes became more positive with increasing years of experience in some subscales.

Similarly the comparison between the participant's age and their safety attitude, in the current study, it was observed that the teamwork, job satisfaction, stress recognition, perception of management, as well as total score was significantly high among those who were less than 40 years old compared to those who were more than 40 years old. The possible explanation of this result is that the participant's age could be associated with their years of experience.

The comparison between the score of physicians vs nonphysicians in the present study revealed that perception of management was significantly low among physicians. Alzahrani[27] explored physicians' and nurses' attitudes toward patient safety in the Saudi Armed Forces Hospitals in the eastern region and reported that less than half of nurses and doctors had positive attitudes toward patient safety, especially on the subscales of stress recognition and perceptions of management. It has also been reported previously that health-care workers were likely to deny the effect of stress and fatigue on their performance.[14,28–30]

There were some notable differences in scores among types of staff, ie managerial vs nonmanagerial staff. It was

Table 6 Comparison Between Participant's Characteristic and Their Attitude Scores Toward Patient Safety

Sub-Scales	TW	SC	JP	SR	PM	WC	Overall Score
Mean (SD)	77.5 (15.1)	68.5 (19.4)	80 (18.0)	50 (28.3)	68.6 (21.5)	62.6 (19.9)	68.0 (13.1)
Sectors of the PHC							
Al Hofuf	75.3 (17.6)	67.5 (20.9)	79.7 (19.7)	47.6 (28.6)	68.6 (23.9)	59.6 (21.4)	66.4 (14.4)
Al Mubarraz	79.3 (14.7)	68.3 (19.3)	77.3 (17.6)	50.0 (26.0)	65.9 (20.4)	61.9 (18.4)	67.1 (11.9)
Al Omran	77.9 (11.7)	69.8 (17.7)	84.3 (15.9)	53.5 (30.6)	72.2 (19.6)	66.9 (19.7)	70.8 (12.3)
F	1.857	0.328	3.654	0.993	2.078	3.095	2.916
p-value	0.158	0.721	0.027	0.372	0.127	0.047	0.056
CBAHI accreditation							
Yes	77.0 (14.1)	68.6 (18.9)	79.5 (18.8)	47.6 (28.5)	67.7 (22.6)	62.1 (20.1)	67.1 (12.7)
No	78.1 (15.8)	68.4 (19.9)	80.6 (17.4)	52.5 (27.9)	69.3 (20.5)	63.1 (19.8)	68.7 (13.4)
t-value	0.593	0.078	0.527	1.459	0.624	0.412	1.016
p-value	0.553	0.938	0.599	0.146	0.533	0.681	0.310
Gender							
Male	74.7 (18.5)	69.1 (19.6)	81.6 (17.4)	38.9 (25.8)	73.2 (19.3)	62.0 (18.6)	66.6 (14.0)
Female	79.4 (12.1)	68.1 (19.0)	79.2 (18.4)	57.5 (27.5)	65.7 (22.3)	63.0 (20.7)	68.8 (12.3)
t-value	2.539	0.455	1.103	5.714	2.907	0.382	1.390
p-value	0.012	0.650	0.271	0.000	0.004	0.703	0.166
Years in the PHC Center							
Less than 3 years	80.8 (14.0)	72.8 (19.9)	82.9 (16.4)	47.6 (30.5)	71.6 (24.2)	70.3 (21.2)	70.9 (16.7)
3–10 years	78.8 (11.3)	68.1 (19.8)	82.3 (16.5)	53.1 (27.3)	70.6 (19.5)	62.3 (18.9)	69.2 (10.7)
More than 10 years	73.3 (20.7)	67.2 (20.4)	73.9 (20.5)	45.5 (28.8)	62.8 (23.1)	59.5 (20.5)	63.7 (14.5)
F	4.797	1.243	6.782	2.158	4.044	4.080	6.266
p-value	0.009	0.290	0.001	0.117	0.019	0.018	0.002
Age							
Less than 30 years	76.3 (11.8)	63.1 (20.4)	77.3 (16.9)	49.4 (28.1)	64.3 (23.6)	59.6 (21.1)	65.0 (13.1)
30–40 years	80.3 (13.2)	70.5 (19.2)	84.3 (16.2)	55.7 (27.4)	74.3 (18.2)	65.8 (18.4)	71.8 (11.3)
More than 40 years	73.6 (19.5)	69.6 (18.1)	74.7 (20.4)	40.8 (27.8)	61.7 (22.5)	59.2 (19.9)	63.3 (13.9)
F	5.418	3.636	8.568	7.152	10.957	3.764	14.058
p-value	0.005	0.028	0.000	0.001	0.000	0.024	0.000
Job category							
Nurse	79.7 (11.6)	68.4 (18.4)	80.6 (16.7)	57.9 (27.2)	67.3 (22)	64.5 (20.2)	69.7 (11.8)
Technologist/technician	76.8 (12.9)	68.1 (19.9)	80.9 (18.4)	47.8 (27.8)	74.5 (18.8)	63.4 (20.3)	68.6 (12.4)
Physician	79.3 (14.8)	74.9 (16.8)	80 (19.8)	42.5 (28.2)	63.4 (20.9)	65 (21.7)	67.5 (13.1)
Pharmacist/pharmacy tech.	79.4 (13.2)	64.3 (19.6)	83.6 (15.8)	54.1 (29.5)	74.7 (22.7)	58.5 (18.8)	69.1 (11.4)
Other	68.5 (24.1)	63.5 (22.7)	73.9 (19.8)	40.7 (25.6)	63.7 (21.3)	56.1 (15)	61.1 (16.9)
F	4.268	2.523	1.390	4.337	3.333	1.765	3.122
p-value	0.002	0.041	0.238	0.002	0.011	0.136	0.015
Job title							
Nurse in charge	83.6 (7.72)	79.7 (12.6)	87.7 (18.2)	59.7 (22.3)	78.8 (32.1)	81.9 (17.5)	78.6 (12.7)
Manager	88.8 (10.8)	82.6 (12.3)	94.3(6.91)	47.9 (21.6)	82.1 (14.9)	84.8 (17.9)	80.1 (10.1)
Nonsupervisory	77.1 (15.2)	67.8 (19.5)	79.5 (18.0)	50.4 (28.6)	67.9 (21.9)	61.4 (19.4)	67.3 (12.8)
F	2.860	3.650	3.194	0.538	2.558	9.627	6.659
p-value	0.059	0.027	0.042	0.584	0.079	0.000	0.001

(*Continued*)

Table 6 (Continued).

Sub-Scales	TW	SC	JP	SR	PM	WC	Overall Score
Education level							
Diploma	76.3 (15.3)	65.7 (19.8)	78.9 (17.6)	51.1 (27.8)	67.8 (21.7)	61.5 (19.7)	66.9 (13.0)
Bachelor	81.2 (13.8)	74.2 (17.7)	83.2 (18.3)	48.1 (28.9)	70.9 (20.9)	65.5 (20.7)	70.5 (13.2)
Board	77.6 (15.0)	78.8 (5.4)	76.4 (24.4)	51.8 (36.9)	61.9 (21.5)	60.7 (13.8)	66.8 (7.9)
F	3.895	6.920	1.754	0.357	0.965	1.239	2.312
p-value	0.021	0.001	0.175	0.700	0.382	0.291	0.101

observed that: teamwork, safety climate, job satisfaction scores were significantly higher among managerial staff in contrast to nonmanagerial staff. This was in accordance with a study reporting managers' more positive safety attitude compared to nonmanagerial staff.[31]

Regarding the education level of the study participants, the analysis revealed that teamwork, safety climate and perception management was significantly high among those with a bachelor's degree education level compared to those with diploma education level. Consistent with our finding Al-Khaldi[21] explored the attitude of physicians at primary health-care centers in Aseer region toward patient safety reported that those with high qualifications had a positive attitude toward patient safety.

Limitations

Due to time and resource restrictions, this research has some limitations. The sample size of the study was small to generalize the results for overall primary health-care centers operating in the Eastern Province of KSA or all of the primary health-care centers of KSA. As this study was a questionnaire-based survey it is essential to investigate more useful research approach such as hybrid methods for the safety attitude culture in PHCs.

Conclusion

With the suggestion to pay more attention to the older staff, who had a diploma education level, long working experience, and general staff position, certain improvements are needed, especially in the field of communication and stress recognition with regards to safety culture. The results could help the management of the health-care centers to introduce a systematic approach to patient safety, to tackle the weak points and improve them, to initiate a continuous assessment of safety culture, and to increase awareness of a no-blame culture.

Certain improvements are needed, especially in the field of communication and stress recognition with regard to safety culture. The results could help the management of the health-care centers to introduce a systematic approach to patient safety, to tackle the weak points and improve them, to initiate a continuous assessment of safety culture, and to increase awareness of a no-blame culture.

There is also a strong need to investigate the knowledge and skills of health-care staff to gain deep insights into the present situation. Possibly, another tool for a more comprehensive measurement of safety culture in PHCs could be utilized to recognize other factors that might be important for patient safety.

Ethical Statement

This study was approved by Imam Abdulrahman Bin Faisal University research committee with approval reference number IRB-PGS-2020-03-056. Permission was obtained from PHC managers to participate in the study after giving full information about the aim and purpose of the study. All participants signed written informed consent to confirm their willingness to participate after having the purpose of the study explained.

Disclosure

The authors report no conflicts of interest in this work.

References

1. El Shafei AMH, Zayed MA. Patient safety attitude in primary health care settings in Giza, Egypt: cross-sectional study. *Int J Health Plann Manage.* 2019;34(2):851–861. doi:10.1002/hpm.2743
2. Alfaqawi M, Böttcher B, Abuowda Y, et al. Treating patients in a safe environment: a cross-sectional study of patient safety attitudes among doctors in the Gaza Strip, Palestine. *BMC Health Serv Res.* 2020;20:1–9. doi:10.1186/s12913-020-05230-5
3. Verbakel N, Langelaan M, Verheij T, Wagner C, Zwart D. Improving patient safety culture in primary care: a systematic review. *J Patient Saf.* 2016;12:152–158. doi:10.1097/PTS.0000000000000075

4. Ghobashi MM, El-Ragehy HAG, Ibrahim HM, Al-Doseri FA. Assessment of patient safety culture in primary health care settings in Kuwait. *Epidemiol Biostatist Public Health*. 2014;11(3):e9101-1–e9101-9.

5. Khamaiseh A, Al-Twalbeh D, Al-Ajlouni K. Patient safety culture in Jordanian primary health care centres as perceived by nurses: a cross-sectional study. *East Mediterran Health J*. 2020;34(4):101–108.

6. Al-Babtain B, Aljadhey H, Mahmoud MA, Alaqeel S, Ahmed Y. Culture of safety among nurses in a tertiary teaching hospital in Saudi Arabia. *Trop J Pharma Res*. 2016;5(3):639–644.

7. Sexton JB, Helmreich RL, Neilands TB, et al. The Safety Attitudes Questionnaire: psychometric properties, benchmarking data, and emerging research. *BMC Health Serv Res*. 2006;6(1):44. doi:10.1186/1472-6963-6-44

8. Thomas EJ, Sexton JB, Helmreich RL. Discrepant attitudes about teamwork among critical care nurses and physicians. *Crit Care Med*. 2003;31(3):956–959. doi:10.1097/01.CCM.0000056183.89175.76

9. Klemenc-Ketiš Z, PoplasSusič A. Safety culture at primary health-care level: a cross-sectional study among employees with a leadership role. *Sloven J Public Health*. 2019;59(1):42–46. doi:10.2478/sjph-2020-0006

10. Abdelhai R, Abdelaziz B, Ghanem S. Assessing patient safety culture and factors affecting it among health care providers at Cairo University Hospitals. *J Am Sci*. 2018;8:23–28.

11. Najjar S, Nafouri N, Vanhaecht K, Euwema M. The relationship between patient safety culture and adverse events: a study in Palestinian hospitals. *Saf Health*. 2015;1(1):1–9. doi:10.1186/s40886-015-0008-z

12. Sorra J, Khanna K, Dyer N, Mardon R, Famolaro T. Exploring relationships between patient safety culture and patients' assessments of hospital care. *J Patient Saf*. 2012;8(3):131–139. doi:10.1097/PTS.0b013e318258ca46

13. DiCuccio MH. The relationship between patient safety culture and patient outcomes: a systematic review. *J Patient Saf*. 2015;11(3):135–142. doi:10.1097/PTS.0000000000000058

14. Elsous A, Akbari Sari A, AlJeesh Y, Radwan M. Nursing perceptions of patient safety climate in the Gaza Strip, Palestine. *Int Nurs Rev*. 2017;64(3):446–454. doi:10.1111/inr.12351

15. Zakari NM. Attitude of academic ambulatory nurses toward patient safety culture in Saudi Arabia. *Life Sci J*. 2011;8(3):230–237.

16. Alayed AS, Lööf H, Johansson UB. Saudi Arabian ICU safety culture and nurses' attitudes. *Int J Health Care Qual Assur*. 2014;27(7):581–593. doi:10.1108/IJHCQA-04-2013-0042

17. Alzahrani N, Jones R, Abdel-Latif ME. Attitudes of doctors and nurses toward patient safety within emergency departments of two Saudi Arabian hospitals. *BMC Health Serv Res*. 2018;18(1):736. doi:10.1186/s12913-018-3542-7

18. Ibrahim MAM, Osman OB, Ahmed WAM. Assessment of patient safety measures in governmental hospitals in Al-Baha, Saudi Arabia. *AIMS Public Health*. 2019;6(4):396. doi:10.3934/publichealth.2019.4.396

19. Mahrous MS. Patient safety culture as a quality indicator for a safe health system: experience from Almadinah Almunawwarah, KSA. *J Taibah Univ Med Sci*. 2018;13(4):377–383. doi:10.1016/j.jtumed.2018.04.002

20. Alahmadi H. Assessment of patient safety culture in Saudi Arabian hospitals. *Qual Saf Health Care*. 2010;19(5):e17.

21. Al-Khaldi YM. Attitude of primary care physicians toward patient safety in Aseer region, Saudi Arabia. *J Family Community Med*. 2013;20(3):153. doi:10.4103/2230-8229.121976

22. Gabrani JC, Knibb W, Petrela E, Hoxha A, Gabrani A. Provider perspectives on safety in primary care in Albania. *J Nurs Scholars*. 2016;48(6):552–560. doi:10.1111/jnu.12236

23. Souza MM, Ongaro JD, Lanes TC, Andolhe R, Kolankiewicz A, Magnago TS. Patient safety culture in the Primary Health Care. *Revista Brasileira De Enfermagem*. 2019;72(1):27–34. doi:10.1590/0034-7167-2017-0647

24. Fermo VC, Radünz V, Rosa LD, Marinho MM. Professional attitudes toward patient safety culture in a bone marrow transplant unit. *Revistagaucha De Enfermagem*. 2016;37(1):e55716.

25. Barbosa MH, Aleixo T, Oliveira K, Nascimento K, Felix M, Barichello E. Patient safety climate in medical and surgical units. *Rev Eletr Enf*. 2016;18:7.

26. Weller J, Boyd M, Cumin D. Teams, tribes and patient safety: overcoming barriers to effective teamwork in healthcare. *Postgrad Med J*. 2014;90(1061):149–154. doi:10.1136/postgradmedj-2012-131168

27. Alzahrani A. *Clinicians' Attitudes Toward Patient Safety: A Sequential Explanatory Mixed Methods Study in Saudi Armed Forces Hospitals* [(Eastern Region) (Ph.d)]. Curtin University; 2015.

28. Flin R, Yule S, McKenzie L, Paterson-Brown S, Maran N. Attitudes to teamwork and safety in the operating theatre. *Surgeon*. 2006;4(3):145–151. doi:10.1016/S1479-666X(06)80084-3

29. Grant MJC, Donaldson AE, Larsen GY. The safety culture in a children's hospital. *J Nurs Care Qual*. 2006;21(3):223–229. doi:10.1097/00001786-200607000-00006

30. Modak I, Sexton JB, Lux TR, Helmreich RL, Thomas EJ. Measuring safety culture in the ambulatory setting: the safety attitudes questionnaire—ambulatory version. *J Gen Intern Med*. 2007;22(1):1–5. doi:10.1007/s11606-007-0114-7

31. Wagner LM, Capezuti E, Rice JC. Nurses' perceptions of safety culture in long-term care settings. *J Nurs Scholars*. 2009;41(2):184–192. doi:10.1111/j.1547-5069.2009.01270.x