

Original Article

Attitude of primary care physicians toward patient safety in Aseer region, Saudi Arabia

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ABSTRACT

Objective: The objective of this study was to assess the attitude of physicians at primary health-care centers (PHCC) in Aseer region toward patient safety. **Materials and Methods:** This study was conducted among working primary health-care physicians in Aseer region, Saudi Arabia, in August 2011. A self-administered questionnaire consisting of three parts was used; the first part was on the socio-demographic, academic and about the work profile of the participants. The attitude consisting of 26 questions was assessed on a Likert scale of 7 points using attitude to patients safety questionnaire-III items and the last part concerned training on "patient safety," definition and factors that contribute to medical errors. Data of the questionnaire were entered and analyzed by Statistical Package for the Social Sciences (SPSS) version 15. **Results:** The total number of participants was 228 doctors who represent about 65% of the physicians at PHCC, one-third of whom had attended a course on patient safety and only 52% of whom defined medical error correctly. The best score was given for the reduction of medical errors (6.2 points), followed by role of training and learning on patient safety (6 and 5.9 points), but undergraduate training on patient safety was given the least score. Confidence to report medical errors scored 4.6 points as did reporting the errors of other people and 5.6 points for being open with the supervisor about an error made. Participants agreed that "even the most experienced and competent doctors make errors" (5.9 points), on the other hand, they disagreed that most medical errors resulted from nurses' carelessness (3.9 points) or doctors' carelessness (4 points). **Conclusion:** This study showed that PHCC physicians in Aseer region had a positive attitude toward patient safety. Most of them need training on patient safety. Undergraduate education on patient safety which was considered a priority for making future doctors' work effective was inadequate.

Key words: Aseer region, attitude, patient safety, primary health-care centers

INTRODUCTION

The Institute of Medicine (IOM) has defined patient safety as "the prevention of harm to patients". Patient safety includes risk assessment, identification, management of patient related risk, reporting and analysis of incidents and the capacity to learn from and follow-up incidents and implement solutions to minimize the risk of the reoccurrence of the incident.^[1]

International studies have revealed that the rate of medical errors was 5-80/100,000 consultations in primary health-care (PHC) settings, with prescription errors of 11% and adverse event rate at 3.7/100,000 clinic visits.^[2,3] Medical record based study from general practice in Holland revealed a prevalence of 2.2% safety incidents in 1000 patient records.^[4]

In Saudi Arabia, patient safety and medical errors have become an important national issue discussed by the media in the past decade. However, only a few studies have been conducted on this subject.^[5-10]

Of these studies only one discussed the knowledge and attitude of undergraduate medical students,^[8] two others discussed patient safety culture in hospital,^[6] and one reported the status of medical liability claims in Saudi Arabia.^[5] Another study explored the preference and

Access this article online	
Quick Response Code:	Website: www.jfcmonline.com
	DOI: 10.4103/2230-8229.121976

perception of the public on the disclosure of medical errors.^[9] A study in a PHC setting in Riyadh city by Khoja *et al.*, found that there were about 19% errors in prescriptions issued by doctors working at primary health-care centers (PHCC).^[7] One recent study was conducted at an academic center to assess the attitude of nurses toward patient safety.^[10]

This scarcity of studies indicates that more studies on patient safety are required and medical errors in the provision of health-care, particularly the knowledge and attitude toward these issues have to be explored.

The objective of this study was to assess the attitude of PHC physicians in Aseer region, Saudi Arabia toward patient safety.

MATERIALS AND METHODS

This cross-sectional study was conducted among physicians working at PHCC in Aseer region, Saudi Arabia, in August 2011. A self-administered questionnaire consisting of three parts was used to achieve the objective of this study. The first part of the questionnaire dealt with the socio-demographics, the academic and work profile of participants. The second component comprising 26 questions assessed the attitude.

This questionnaire was developed and validated by Carruthers *et al.* for use among students and tutors in UK (Attitude to Patients Safety Questionnaire-III [APSQ-III]).^[11]

This questionnaire was found to have reliability ranges between 0.64 and 0.82 for the nine factors namely; 1-patient safety training received, 2-errors reporting confidence, 3-working hours as error cause, 4-error inevitability, 5-professional incompetence as error cause, 6-disclosure responsibility, 7-team functioning, 8-patient involvement in reducing errors, 9- and importance of patient safety in curriculum. Items were assessed on a Likert scale of seven points (7 = strongly agree, 1 = strongly disagree). Attitude to patient safety was classified as positive, neutral or negative depending on scores given for each item: a score of less than four was negative attitude/disagree, four was neutral and a score of five or more indicated a positive attitude/agree. For questions (11-17) and question, (25) attitude was considered positive/agree if the score was less than 4, neutral if the score was four and negative/disagree if it was five or greater. The last part of the questionnaire developed by the investigator consisted of three questions; 1-receiving training on “patient safety” during the past 5 years, 2-the main contributing factor to medical errors, 3-definition of a medical error. The PHCC doctors who had attended family medicine essentials course in Aseer region and agreed to participate in

this study were invited to complete the questionnaire under the direct supervision of the investigator, who explained the purpose and the importance of this study. Permission from the authors of the APSQ-III was obtained to use the questionnaire through E-mail contact. Data of the questionnaire were coded and then entered into personal computer provided with Statistical Package for the Social Sciences SPSS version 15 for statistical analysis. Appropriate statistical tests (Chi-square, ANOVA) were used accordingly and *P* values were considered significant if <0.05.

RESULTS

The total number of participants in this study was 228 doctors out of 365 (65%) physicians working at PHCC in Aseer region at the time of the study, giving a response rate of 65%. The characteristics of participants are summarized in Table 1. The mean age was 39 years; 77% were males; Saudi doctors represented 18% and 80% had no post MBBS qualifications. The average experience of work at PHCC was 8.3 years and the average number of patients seen daily was 44 patients. Less than one-third (30%) had attended a course on patient safety and only 52% defined medical error correctly.

Statistical analysis showed that 20% of Saudi doctors, 42% of Arab doctors and 20% of non-Arab doctors had attended a course on patient safety ($\chi^2 = 9, P = 0.01$). Those

Table 1: Characteristics of physicians at PHCC, Aseer region 2011 (N=228)

Age (mean±SD) (years)	39±8
Sex	
Male	175 (77)
Female	53 (23)
Nationality	
Saudi	39 (18)
Non-Saudi (Arabic speaking)	112 (49)
Non-Saudi (non-Arabic)	44 (19)
Missing	33 (15)
Post MBBS qualification	
Nil	181 (80)
Diploma	25 (11)
Master	12 (5)
Board equivalent	8 (4)
Marital status	
Married	206 (90)
Single	22 (10)
Years since graduation from Medical College (years)	13±8.6
Experience in PHCC (years)	8.3±7
Daily average patients/doctor (patients)	44±2 (median=40)
Attended a course on patient safety in the last 5 years	69 (30)
Ability to define a medical error	118 (52)
Knowledge of the main cause of medical errors	138 (61)

PHCC: Primary health-care centers, Figures in parenthesis are in percentage

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who had worked at a PHCC for more than 5 years had attended such courses compared to those who had worked for <5 years ($\chi^2 = 12, P = 0.006$). The older doctors tended to attend courses related to patient safety more than young doctors ($\chi^2 = 8, P = 0.02$).

Saudi doctors and those who had worked at a PHCC for less than five years defined medical error correctly compared to the non-Saudi ($\chi^2 = 20, P = 0.01$) and those who had worked at a PHCC for more than 5 years ($\chi^2 = 22.5, P = 0.03$).

Table 2 depicts the mean scores of questions assessing attitudes toward patient safety in nine areas.

The best score was given for reducing medical errors (6.2 points), followed by role of training and learning on patient safety (6 and 5.9 points). However, participants were not satisfied with undergraduate training on patient

safety (4.8 points). Confidence in reporting medical errors and reporting the errors of other people scored 4.8 points and the confidence to be open with supervisor about an error had made scored 4.6 points.

Regarding the relationship between working hours and occurrence of medical errors, it was thought that shorter shifts would reduce medical errors (5.4 points), not taking break would increase the risk of medical errors (5.7 points) while the number of hours a doctor worked would increase the likelihood of medical error (5.4 points).

Concerning the inevitability of errors, it was agreed that “even the most experienced and competent doctors make errors” (5.7 points), on the other hand, participants disagreed with the statement that most medical errors resulted from the carelessness of nurses (5.9 points) or careless doctors (4.9 points).

Table 2: Attitude of PHC physicians toward patient safety, Aseer region, KSA, 2011

Statements (strongly disagree 1 2 3 4 5 6 7 strongly agree)	Mean score	SD	Disagree N (%)	Neutral N (%)	Agree N (%)
My training is preparing me to understand the causes of medical errors	4.5	1.9	67 (29)	38 (17)	123 (54)
I have a good understanding of patient safety issues as a result of my undergraduate medical training	4.8	1.8	50 (22)	33 (15)	145 (63)
My training is preparing me to prevent medical errors	6	1.4	18 (8)	10 (4)	200 (88)
I would feel comfortable reporting any errors I had made, no matter how serious the outcome had been for the patient	4.8	1.9	55 (24)	30 (15)	143 (61)
I would feel comfortable reporting any errors other people had made, no matter how serious the outcome had been for the patient	4.8	1.9	61 (27)	39 (17)	128 (56)
I am confident I could talk openly to my supervisor about an error I had made if it had resulted in potential or actual harm to my patient	4.6	2	26 (11)	26 (11)	176 (78)
Shorter shifts for doctors will reduce medical errors	5.6	1.6	42 (18)	21 (9)	165 (73)
By not taking regular breaks during shifts doctors are at an increased risk of making errors	5.7	1.7	24 (11)	22 (10)	182 (79)
The number of hours doctors work increases the likelihood of making medical errors	5.4	1.9	30 (15)	9 (4)	189 (81)
Even the most experienced and competent doctors make errors	5.7	1.7	23 (10)	16 (7)	189 (83)
A true professional does not make mistakes or errors [®]	5.8	1.7	129 (57)	31 (14)	68 (29)
Human error is inevitable [®]	4.9	2	56 (25)	33 (15)	139 (60)
Most medical errors result from careless nurses [®]	5.9	1.6	91 (40)	53 (23)	84 (37)
If people paid more attention at work, medical errors would be avoided [®]	3.2	2	18 (8)	13 (6)	197 (86)
Most medical errors result from careless doctors [®]	4.9	2	76 (33)	45 (20)	107 (47)
Medical errors are a sign of incompetence [®]	4.3	1.8	69 (30)	49 (22)	113 (48)
It is not necessary to report errors which do not result in adverse outcomes for the patient [®]	3.9	1.7	131 (58)	26 (11)	71 (31)
Doctors have a responsibility to disclose errors to patients only if they result in patient harm	5.9	1.4	91 (40)	40 (16)	97 (44)
All medical errors should be reported	4	1.8	28 (12)	21 (9)	179 (79)
Better multi-disciplinary teamwork will reduce medical errors	4.3	1.8	15 (8)	11 (5)	202 (87)
Teaching teamwork skills will reduce medical errors	6.2	1.3	14 (6)	6 (3)	208 (91)
Patients have an important role in preventing medical errors	3	2.1	52 (23)	32 (15)	144 (62)
Encouraging patients to be more involved in their care can help to reduce the risk of medical errors occurring	3.9	2.1	19 (8)	19 (8)	190 (84)
Teaching students about patient safety should be an important priority in medical students training	5.6	1.7	16 (7)	5 (3)	207 (90)
Patient safety issues cannot be taught and can only be learned by clinical experience when qualified [®]	3.4	2	122 (54)	25 (11)	81 (35)
Learning about patient safety issues before I qualify will enable me to become a more effective doctor	6.2	1.4	22 (10)	13 (6)	193 (84)

[®]items are reverse scored; PHC: Primary health-care; SD: Standard deviation

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Reporting all medical errors was considered necessary even if they caused no harm to patients (3.9 points) while teaching teamwork skills would reduce medical errors (6.2 points).

Patients have an important role in preventing medical errors and their involvement was considered important in reducing the risk of medical errors (3 and 3.9 points respectively).

Teaching students about patient safety was considered a priority in the training of medical students (5.6 points). Learning about patient safety before graduating would help doctors to become more effective (6.2 points).

Table 3 shows association between socio-demographic variables and attitude toward patient safety. Statistical analysis revealed that females scored higher points than males in many questions (numbers 1, 2, 14, 19, 23, 24) ($P = 0.00-0.04$).

Using analysis of variance (ANOVA) showed that non-Arab doctors scored higher points than Arab and

Saudi doctors for the first eight questions and question numbers 12 and 18 (P values between 0.00 and 0.03), those above 45 years, scored the highest points compared to those between 36 and 45 years and less than 36 years old in nine questions with different P values ranging from 0.00 to 0.04 for questions numbers (1, 2, 3, 6, 10, 12, 14, 20, 21). Those doctors who had worked for more than 20 years were found to have a positive attitude compared with those who had worked between 11-20 years, 5-10 years and less than five years for nine questions (2, 3, 6, 9, 10, 14, 19, 20, 21) with P values ranging between 0.00 and 0.02.

Regarding the association between qualification and attitude toward patient safety, it was found that those with high qualifications had a positive attitude (highest points) toward patient safety as observed in question numbers (7, 8, 15, 17, 21, 24) with P values between 0.001 and 0.04.

Doctors who had training on patient safety was found to have positive attitude (items number 2, 6, 13, 23) [Table 4].

Table 3: Association between some demographic variables and mean score for some items in APSQ-III

Q no.	Statements	Saudi	Arabic	Non-Arab	P value*
1	My training is preparing me to understand the causes of medical errors	2.6	4.9	5.2	0.00
2	I have a good understanding of patient safety issues as a result of my undergraduate medical training	3.3	5	5.4	0.00
3	My training is preparing me to prevent medical errors	4.9	6.3	6.3	0.00
4	I would feel comfortable reporting any errors I had made, no matter how serious the outcome had been for the patient	4.2	4.8	5.3	0.02
5	I would feel comfortable reporting any errors other people had made, no matter how serious the outcome had been for the patient	4.1	4.5	5.2	0.03
6	I am confident I could talk openly to my supervisor about an error I had made if it had resulted in potential or actual harm to my patient	4.5	5.8	6	0.00
7	Shorter shifts for doctors will reduce medical errors	5.8	5	6	0.001
8	By not taking regular breaks during shifts doctors are at an increased risk of making errors	6.3	5.5	5.9	0.031
12	Human error is inevitable	4.4	4.9	5.7	0.010
18	Doctors have a responsibility to disclose errors to patients only if they result in patient harm	3.2	3.8	4.4	0.02
Age group					
Q no.	Statements	Less than 36 years	36-45 years	More than 45 years	P values*
1	My training is preparing me to understand the causes of medical errors	3.6	5	5	0.04
2	I have a good understanding of patient safety issues as a result of my undergraduate medical training	4.1	5.3	5.2	0.002
3	My training is preparing me to prevent medical errors	5.4	6.3	6.6	0.00
6	I am confident I could talk openly to my supervisor about an error I had made if it had resulted in potential or actual harm to my patient	5	6	6	0.001
10	Even the most experienced and competent doctors make errors	5.6	6	6.1	0.01
12	Human error is inevitable	4.5	4.9	5.7	0.03
14	If people paid more attention at work, medical errors would be avoided	5.6	6.1	6.1	0.005
20	Better multi-disciplinary teamwork will reduce medical errors	6	6.4	6.3	0.024
21	Teaching teamwork skills will reduce medical errors	5.9	6.3	6.4	0.002

*Using ANOVA test; PHCC: Primary health-care centers; Attitude to patients safety questionnaire-III

Table 4: Impact of training on some aspects of attitude of PHCC doctors toward patient safety, Aseer region, 2011

Q no.	Statements	Trained on patient safety mean±SD	Untrained on patient safety mean±SD	P value*
2	I have a good understanding of patient safety issues as a result of my undergraduate medical training	5.3±1.8	4.3±1.8	0.01
6	I am confident I could talk openly to my supervisor about an error I had made if it had resulted in potential or actual harm to my patient	6.1±1.5	5.4±1.7	0.002
13	Most medical errors result from careless nurses®	3.5±1.9	4.1±1.6	0.02
23	Patient safety issues cannot be taught and can only be learned by clinical experience when qualified®	6.3±1.2	5.6±1.6	0.002

SD: Standard deviation; *Using Student t-test; PHCC: Primary health-care centers

DISCUSSION

Most of PHCC doctors in Aseer region showed a positive attitude toward patient safety. However, 70% had not attended any training course on patient safety, which was reflected in their knowledge, which was 52% and 61% were able to define “medical error” and knew the main causes of medical errors.

Such important findings indicate that there is urgent need for such interventions as conducting continuous professional development programs on “medical errors and patient safety” for PHC physicians.

In spite of the importance of patient safety in the medical school curriculum, one-fifth of the participants were not satisfied with their learning or training. A study by Almaramhy *et al.* (2010), mentioned that more than two-thirds of medical students agreed that the teaching of patient safety in medical schools and the continuous training of health staff was necessary.^[8] Another study from Hong Kong (2009) showed that 90% of medical students strongly agreed that patient safety was an important topic for teaching in medical school.^[12] Those findings should alert us on the issue of the curricula of medical colleges in KSA and the importance of making “patient safety and medical errors” a priority particularly in final years.

Reporting medical errors is important step in improving the quality of health-care including patient safety. Participants scored (3.9-4.8 points) in this area. In other words, about one third of the participants were comfortable with reporting medical errors. These low scores which reflected the negative attitude of some physicians toward reporting adverse events could be due to the lack of a system for reporting medical errors. Also, a culture of safety in health settings, as reported by Alahmadi^[6] is yet to be developed.

The confidence of participants in talking about their errors with their supervisor if harm is caused to the patient was given an average score of 5.6 and majority of participants (78%) said they would do so. This rate is in

agreement with the findings of a study conducted of GPs in Denmark (2006), which revealed that more than 75% of GPs would report adverse event that occurs.^[13]

In the few PHCC with a high number of patients attending and work overload, participants showed that a shorter shift for the doctors and taking breaks would reduce medical errors. These findings agree with those reported in 2009 by Carruthers *et al.*^[11]

The area of “errors inevitability” scored 3.2-5.9 points regarding competency and experience of doctors. These findings are comparable to those reported from UK.^[11]

As reported by Hammami *et al.* (2009)^[9] the disclosure of medical errors poses a big dilemma in health settings in Saudi Arabia.

In this study, the trend was different as 44% agreed that “doctor had the responsibility of disclosing errors to patients only if they resulted in harm to the patient,” while 40% disagreed and 16% were neutral. On the other hand, most participants (79%) agreed to report all medical errors while 12% disagreed. A study of medical trainees (2006) found that 80% would disclose adverse events to patients.^[14] These diversity of attitude could be explained by the lack of training and experience of PHCs in dealing with medical errors. In addition, there is a lack of established culture of reporting adverse events in PHC settings in Saudi Arabia.

Most participants (91%) agreed that the teaching of teamwork would reduce medical errors. This had the highest scores of all items in the questionnaire. These high scores confirm the vital role played by the teaching of teamwork and leadership in patient safety mentioned by Firth-Cozens.^[15]

Patients play an essential role in their health and safety by active involvement in decision making and self-management.^[16] PHCC physicians showed average to high agreement (84%) in this regard (4.9 and 5.9 points) compared to 5.2 points in UK study, but less than what was reported from Saudi Arabia (44.7%).^[11,8]

The last theme of the study was about the importance of patient safety in the curriculum. A total of 90% of the participants with a high average score of 5.6 out of seven points agreed that teaching students about patient safety is a priority in medical training while 84% with the highest score of all items in the questionnaire agreed that learning about patient safety before graduation from medical schools would produce more effective doctors, these important findings are in agreement with results of two studies conducted among medical students in the Qassim region and Hong Kong,^[8,12] which emphasized the priority of putting patient safety in the undergraduate curriculum of medical colleges.

In this study, attitudes toward patient safety were affected to some degree by some demographic and scientific background such as gender, age group, nationality, qualification and work experience at PHCC. Female doctors had a more positive attitude toward patient safety than male doctors, which was difficult to explain. The doctors with more experience in PHCC had a more positive attitude toward patient safety than those with a short experience. This finding is expected and supported by the factor of age. It is known that as doctors got older and more experienced, their attitude to their profession changed for the better. It was found that doctors with high qualifications had a positive attitude toward patient safety. Such a finding could be either because they had taken some courses or their training had included some sessions on patient safety and medical errors.

The impact of training on patient safety and attitude was not always positive as only a few items (items no 2, 6, 13, 23) were positively affected by training. These associations should be interpreted carefully as less than one-third of the participants had had a course on patient safety.

CONCLUSION

This study showed that PHC physicians in Aseer region had a positive attitude toward patient safety.

Undergraduate education on patient safety considered a priority to make future doctors effective was inadequate. Teamwork approach and patient involvement were given a priority in the prevention of medical errors and the improvement of patient safety.

Recommendations

PHC physicians in Aseer region should have training sessions on patient safety and medical errors.

Reporting medical errors at PHCCs should be made mandatory. Further studies are needed to explore the knowledge and behaviors of PHCC physicians on patient safety and medical errors.

REFERENCES

1. Aspden P, Corrigan J, Wolcott J, Erickson SM, eds. Patient safety: Achieving a new standard for care. Washington, DC: National Academies Press; 2004.
2. Sandars J, Esmail A. The frequency and nature of medical error in primary care: Understanding the diversity across studies. *Fam Pract* 2003;20:231-6.
3. Fischer G, Fetters MD, Munro AP, Goldman EB. Adverse events in primary care identified from a risk-management database. *J Fam Pract* 1997;45:40-6.
4. Gaal S, Verstappen W, Wolters R, Lankveld H, van Weel C, Wensing M. Prevalence and consequences of patient safety incidents in general practice in the Netherlands: A retrospective medical record review study. *Implement Sci* 2011;6:37.
5. Samarkandi A. Status of medical liability claims in Saudi Arabia. *Ann Saudi Med* 2006;26:87-91.
6. Alahmadi HA. Assessment of patient safety culture in Saudi Arabian hospitals. *Qual Saf Health Care* 2010;19:e17.
7. Khoja T, Neyaz Y, Qureshi NA, Magzoub MA, Haycox A, Walley T. Medication errors in primary care in Riyadh City, Saudi Arabia. *East Mediterr Health J* 2011;17:156-9.
8. Almaramhy H, Al-Shobaili H, El-Hadary K, Dandash K. Knowledge and attitude towards patient safety among a group of undergraduate medical students in Saudi Arabia. *Int J Health Sci (Qassim)* 2011;5:59-67.
9. Hammami MM, Attalah S, Al Qadire M. Which medical error to disclose to patients and by whom? Public preference and perceptions of norm and current practice. *BMC Med Ethics* 2010;11:17.
10. Zakari NM. Attitude of academic ambulatory nurses toward patient safety culture in Saudi Arabia. *Life Sci J* 2011;8:230-7.
11. Carruthers S, Lawton R, Sandars J, Howe A, Perry M. Attitudes to patient safety amongst medical students and tutors: Developing a reliable and valid measure. *Med Teach* 2009;31:e370-6.
12. Leung GK, Patil NG. Patient safety in the undergraduate curriculum: Medical students' perception. *Hong Kong Med J* 2010;16:101-5.
13. Mikkelsen TH, Sokolowski I, Olesen F. General practitioners' attitudes toward reporting and learning from adverse events: Results from a survey. *Scand J Prim Health Care* 2006;24:27-32.
14. Sorokin R, Riggio JM, Hwang C. Attitudes about patient safety: A survey of physicians-in-training. *Am J Med Qual* 2005;20:70-7.
15. Firth-Cozens J. Cultures for improving patient safety through learning: The role of teamwork. *Qual Health Care* 2001;10(Suppl 2):ii26-31.
16. Phillips RL. The Health Care Policy Context. In: Sandars J, Cook G, editor. *ABC of Patient Safety*. Blackwell Publishing; 2007. p. 37-40.

How to cite this article: Al-Khaldi YM. Attitude of primary care physicians toward patient safety in Aseer region, Saudi Arabia. *J Fam Community Med* 2013;20:153-8.

Source of Support: Nil, **Conflict of Interest:** None declared.