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RESEARCH ARTICLE

Patient Safety Culture among physicians In Benha University Hospitals

Wassef O M*,Dawah A A, Elbitar E A,Elawady M A and Elmahdy O M

Department of Community Medicine, Faculty of Medicine, Benha University, Benha, Egypt.

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*Corresponding Author

Elawady M A

Abstract

Objectives: Having a culture that supports and promotes safety efforts. The aim of this work was to study patient safety culture perception among physicians in different departments of Benha University Hospitals & finding out factors that play a role in this culture.

Method: This cross sectional study included 361 physicians from different departments, who accepted to participate in this study from April to June 2013. The AHRQ hospital survey for patient safety culture was used.

Results: The areas that need improvement were underreporting of adverse events, punitive environment, long working hours, communication breakdowns, & the hospital management system. Good points included teamwork within units, supervisor's encouragement & hospital transitions. The highest negative attitude was towards error reporting (57.4%). The mean % of overall score of the studied group regarding all patient safety culture dimensions was 49.19 ± 6.5 . Generally, patient safety culture dimensions scores & patient safety cultural levels were affected by participants' variation in scientific degrees, job, & their specialty.

Conclusion: patient safety perception is considerably low among Benha university hospitals' physicians. Results showed a tendency for under reporting of errors whether harmful to patients or not.

Recommendations: A program is to be applied including strategies for top managers, strategies for health care providers, & development of a good adverse event reporting system.

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INTRODUCTION

Safety in healthcare has received substantial attention worldwide since the late 1990s (Reichley et al., 2005). It has become important topic in health policy and healthcare practice in several countries. Rapid change in healthcare has required greater attention to safety, which is essential to the efficient, competent delivery of quality care. The past decade in health care has seen a remarkable focus and emphasis on improving quality outcomes, especially related to a culture of safe patient care (Kohn et al., 2000).

Healthcare facilities are borrowing safety culture concepts from high-reliability industries such as aviation and nuclear energy, implementing communication and teamwork models, and creating work environments that support patient safety with the ultimate goal of becoming high-reliability organizations (ECRI Institute, 2009).

Safety culture is the way in which safety is managed in the workplace, and often reflects "the attitudes, beliefs, perceptions and values that employees share in relation to safety" (Cox et al., 1991).

As health care organizations continually strive to improve, there is a growing recognition of the importance of establishing a culture of safety which requires an understanding of the values, beliefs, norms, attitudes and behaviors related to patient safety (AHRQ, 2004).

Patient safety advocates called for intensifying the reporting and analysis of near-miss data, and some hospitals implemented a variety of near-miss reporting systems modeled, in part, on the aviation experience for an overview of incident reporting systems (*Kohn et al., 2000*).

Medical errors can be prevented by redesigning healthcare delivery systems, focusing on system failures rather than human factors. The central message of the IOM report is that medical errors are caused by faulty systems not faulty people (*Leape et al., 1993*).

In Egypt, medical errors and adverse events have been subjected to increasing media attention and public concern.

Subjects and methods

The present study is a cross sectional study in Benha University Hospitals from the beginning of April to the end of June 2013.

The hospital capacity is (963) beds distributed among all specialties (501 beds for internal medicine, 23 intensive care beds and 462 beds for surgery hospitals. The target population was all the hospital physicians in different departments. Total number of hospital physicians during the period of the study, as estimated by the quality assurance unit of Benha Faculty Of Medicine was 450 house officers, 352 residents and assistant lecturers, & 548 university staff members.

A convenient sample (all physicians agreed to complete the questionnaire were included). The questionnaires were distributed upon 605 physicians but the number of physicians who completed it was 361 (97 from surgical department, 87 from internal medicine department, 41 from pediatrics department, 26 from gynecology & obstetric department and 110 from all other hospital departments) with response rate about 59.6%.

A translated Arabic version of the questionnaire (**Saudi Arabia Ministry of Health, 2010**): took about 20 minutes from each physician to fill the questionnaire which included questions about socio-demographic data, the participants' opinion about some behaviors in their work place related to patient safety (11Q), items related to error management(7Q), their supervisors/ managers' behavior towards patient safety (4Q), communication in their departments (6Q), the system of event (medical errors) reporting (3Q), patient safety grade in their departments (1Q) and factors that may affect patient safety(7Q).

Both positively worded items such as "People support one another in this unit and agree with patient safety" [positive responses are as "Strongly agree" or "Agree," or "Always" or "Most of the time," and negative responses are the number of strongly "disagree" & "disagree" responses, or "never" or "rarely"]and negatively worded items such as "We have patient safety problems in this unit and those which are against patient safety" were included in the questionnaire [positive responses are as "Strongly disagree", "Disagree," "Never" or "Rarely," and negative responses are as "Strongly agree" , "Agree," "Always" or "Most of the time,"] (**AHRQ, 2009**).

A score was calculated according to 5 Likert scale (**Kulier, 2012**) For positively worded items 0, 1, 2, 3 and 4 for strongly disagree and never, disagree and rarely, neither and sometimes, agree and most of times or strongly agree and always.

For negatively worded items 0, 1, 2, 3 and 4 for strongly agree and always, agree and most of times, neither and sometimes, disagree and rarely or strongly disagree and never.

There were 5 scores in this study (score of work place factors related to patient safety (0-72), score of main supervisor behaviors towards patient safety (0-16), score of contact and communication in different departments (0-24), Score of system of event (medical errors) reporting (0-12) and score of hospital factors that may affect patient safety in Benha University Hospitals (0-44))which were graded to three grades < 50%, 50-75% and > 75% expressed as negative, neutral and positive attitude.

Pilot study was conducted before the actual field work on 30 physicians to test the applicability of questionnaire and its results were not included in this work.

Approval of the ethical committee of Benha Faculty of Medicine, official permission and an informed consent from all physicians were obtained.

Data management

The collected data were tabulated and analyzed using the Statistical Package for Social Science (SPSS) version 16. Categorical data were expressed as number and percentage; Continuous variables as mean and standard deviation. Student's *t*-test and ANOVA test were used to compare mean of two groups or more of quantitative data respectively. Inter-group comparison of categorical data was performed by using chi square test (X^2 -value) and fisher exact test (FET). The accepted level of significance was less than 0.05.

Results

The mean age of the studied sample is (28.25 ± 5.5 y), 53.2% of them are females, and 47.1% are assistant lecturers & residents. Junior staff having job experience in the hospital less than 6 years represents about 70.7% of the studied group. As in table (1), 50.1% of the participants work more than 40 hours per week, and most of them (91.1%) have direct contact with patients.

Table (2) illustrates that long working hours is best for patient care and that patient safety problems are present in work place have got the highest negative opinions (57.1% and 56.5% respectively) among all items. On the other hand, the items indicating that staff work together as a team when a lot of work needs to be done quickly and that there is temporary staff more than is best for patient care have got the highest positive opinions (70.1% and 69% respectively) among all patient safety behavioral factors in work place.

Staff worry that mistakes they make are kept in their personal files and that when an event is reported, it feels like the person is being written up, not the problem, have got the highest negative opinions (69.2% and 61.8% respectively).

Whenever pressure builds up, the supervisor wants staff to work faster, even if it means taking shortcuts has got the highest negative opinion (56.8 %) among all items, while the item indicating that the supervisor says a good word when he sees a job done according to established patient safety procedures has got the highest positive opinion (67.9%).

The item indicating that staff feel free to question the decisions or actions of those with more authority has got the highest negative opinion (40.2%) among all items, while the items indicating that the staff is informed about errors that happen in their units has got the highest positive opinion (43.2%). The physicians who have negative opinions towards error reporting occurrence in their work place when a mistake is made, but is caught and corrected before affecting the patient, when a mistake is made, but has no potential to harm the patient and when a mistake is made that could harm the patient are (55.1 %, 53.2% and 49%) respectively.

Mistakes happen when transferring patients from one unit to another and those problems often occur in the exchange of information across hospital units have got the highest negative opinions (62.1 % and 59.6% respectively) among all items. On the other hand, important patient care information is lost during shift changes and that shift changes are problematic for patients in the hospital have got the highest positive opinions (58.4% and 52.9% respectively).

More than half (65.7 %) of the studied group state that events are reported by oral way only, while 28% state that it is by oral and written ways. Table (3) shows that in the past 12 months, 77.3% of the studied group did not fill out & submit event reports.

Table (4) describes that 37.7 % of the studied group state that patient safety grade in their departments is (poor and failing), while only 23.9% agree that it is (excellent and very good).

Table (5) shows that the mean overall score of the studied group regarding all patient safety culture dimensions is 82.64 ± 11.07 . Opinions of those working in pediatrics department regarding hospital factors related to patient safety are significantly the highest among that of all participants. The mean scores of the opinions of those working in surgical departments regarding patient safety factors related to work place, error reporting and all patient safety culture dimensions are significantly higher than all that of other participants.

There are insignificant differences between male & female participants regarding their mean scores of all patient safety culture dimensions.

There are significant differences between participants with different scientific degrees regarding their patient safety culture scores about supervisors' behaviors towards patient safety, and hospital factors related to patient safety. The mean overall score of those with doctorate degree regarding all patient safety culture dimensions is higher than that of other participants.

The mean scores of the opinions of resident and assistant lecturers are the highest regarding communication in their departments and error reporting. Opinions about patient safety factors related to work place are significantly high among house officers, while opinions about supervisors' behaviors and all patient safety culture dimensions are significantly high among university staff members.

Table (6) describes that the cultural level towards error reporting shows the most negative results and it shows the only significant difference between male and female participants ($P < 0.01$).

The levels of patient safety culture towards supervisors' factors, communication factors, error reporting and hospital factors related to patient safety significantly differ between participants with different jobs.

Table (1): Distribution of the studied group according to some demographic characteristics:

Demographic characteristics		Frequency	N =361	%
Sex	Male		169	46.8
	Female		192	53.2
Degree	Bachelor		216	59.8
	Master		99	27.4
	Doctorate		46	12.8
Job experience (years)	<1		147	40.7
	1-		108	30.0
	6-		90	24.9
	>15		16	4.4
Work hours/ week	<40		123	34.1
	40		57	15.8
	>40		181	50.1
Job title	University staff		46	12.7
	Assistant lecturer& resident		170	47.1
	House officer		145	40.2
Direct contact with patients	Yes		329	91.1
	No		32	8.9
Department	Surgical		97	26.9
	Internal medicine		87	24.1
	Pediatric		41	11.4
	Gynecology		26	7.2
	Others		110	30.4
Age	Mean \pm SD		28.25 \pm 5.5	

Table (2): Physicians' opinions regarding practicing patient safety behavioral factors, error management, supervisors'/ managers' behaviors towards patient safety, staff members' communication skills, occurrence of medical errors reporting in their work place (departments) and Benha University Hospitals' factors related to patient safety

	Physicians' opinions (No. 361)					
	Negative		Neutral		Positive	
	No.	%	No.	%	No.	%
Patient safety behavioral factors inwork place						
1-Staff support one another.	102	28.2	19	5.3	240	66.5

2-There is enough staff to handle the workload.	171	47.4	20	5.5	170	47.1
3-When a lot of work needs to be done quickly; staff works together as a team.	84	23.3	24	6.6	253	70.1
4-Staff treat each other with respect.	50	13.8	67	18.6	244	67.6
5-Staff work longer hours is best for patient care*	206	57.1	17	4.7	138	38.2
6-Staff is actively doing things to improve patient safety.	152	42.1	49	13.6	160	44.3
7-There is more temporary staff than is best for patient care*	60	16.6	52	14.4	249	69.0
8-Staff work in "crisis mode" trying to do too much, too quickly*	137	38.0	33	9.1	191	52.9
9-There are patient safety problems*	204	56.5	50	13.9	107	29.6
10-Patient safety is never sacrificed to get more work done.	135	37.4	62	17.2	164	45.4
11-When one area gets really busy, others help out.	181	50.1	18	5.0	162	44.9
Error management items in work place						
1-Staff feel like their mistakes are held against them*	169	46.8	67	18.6	125	34.6
2-Mistakes have led to positive changes.	190	52.6	29	8.0	142	39.4
3-It is just by chance that more serious mistakes don't happen around here*	110	30.5	54	14.9	197	54.6
4-When an event is reported, it feels like the person is being written up, not the problem*	223	61.8	52	14.4	86	23.8
5-After making changes to improve patient safety, we evaluate their effectiveness	175	48.5	53	14.7	133	36.8
6-Staff worry that mistakes they make are kept in their personal file*	250	69.2	44	12.2	67	18.6
7-Our procedures and systems are good at preventing errors from happening.	204	56.5	40	11.1	117	32.4
Supervisors' behaviors towards patient safety						
1- Supervisor says a good word when he sees a job done according to established patient safety procedures.	93	25.7	23	6.4	245	67.9
2-Supervisor seriously considers staff suggestions for improving patient safety.	115	31.9	57	15.8	189	52.3
3-Whenever pressure builds up, the supervisor wants staff to work faster, even if it means taking shortcuts*	205	56.8	58	16.1	98	27.1
4-Supervisor overlooks patient safety problems*	93	25.8	45	12.4	223	61.8
Staff members' communication skills in work place						
1-Staff are given feedback about changes put into place based on event reports.	104	28.8	159	44.0	98	27.2
2-Staff freely speak up if they see something that may negatively affect patient care.	73	20.2	171	47.4	117	32.4
3-Staff is informed about errors that happen in this unit.	84	23.3	121	33.5	156	43.2
4-Staff feel free to question the decisions or actions of those with more authority.	145	40.2	134	37.1	82	22.7
5-Staff discuss ways to prevent errors from happening again.	111	30.7	106	29.4	144	39.9
6-Staff are afraid to ask questions when something does not seem right*	119	32.9	158	43.8	84	23.3
Occurrence of reporting medical errors						
1-Reporting if a mistake is made, but is corrected	199	55.1	71	19.7	91	25.2

before affecting the patient.						
2-Reporting if a mistake is made, but has no potential to harm the patient.	192	53.2	125	34.6	44	12.2
3-Reporting if a mistake is made that could harm the patient, but does not.	177	49.0	94	26.0	90	25.0
Hospital factors related to patient safety						
1-Hospital management provides a work climate that promotes patient safety.	169	46.8	128	35.5	64	17.7
2-Hospital units do not coordinate well with each other*	173	47.9	78	21.6	110	30.5
3-Mistakes happen when transferring patients from one unit to another*	224	62.1	30	8.3	107	29.6
4-There is effective cooperation among hospital units that need to work together.	139	38.5	43	11.9	179	49.6
5-Important patient care information is often lost during shift changes*	102	28.3	48	13.3	211	58.4
6-It is often unpleasant to work with staff from other hospital units*	158	43.8	108	29.9	95	26.3
7-Problems often occur in the exchange of information across hospital units*	215	59.6	44	12.2	102	28.2
8-The actions of hospital management show that patient safety is a top priority.	168	46.5	83	23.0	110	30.5
9-Hospital management seems interested in patient safety only after an adverse event happens.*	127	35.2	58	16.1	176	48.7
10-Hospital units work well together to provide the best care for patients.	176	48.7	51	14.1	134	37.2
11-Shift changes are problematic for patients in the hospital*	139	38.5	31	8.6	191	52.9

*refers to reversely worded items.

Table (3): Distribution of event reporting according to type and frequency during the last year:

Frequency		N=361	%
Medical errors reports			
Event reporting type	Oral only	237	65.7
	Oral & written	101	28.0
	Never occurs	23	6.3
No. of written reports in the past 12 months	None	279	77.3
	1-	79	21.9
	>10	3	0.8

Table (4): Physicians' opinion regarding patient safety grade in their work place:

Patient Safety grade	Physicians' opinions	Physicians' opinions (No. 361)	
		No	%
Excellent		15	4.2
Very good		71	19.7
Acceptable		139	38.5

Poor	126	34.9
Failing	10	2.8
Total	361	100

Table (5): Mean± SD of patient safety culture dimensions scores according to physicians' specialties, gender, scientific degree and job:

Patient safety culture dimensions scores	1- Work place factors score (Max. score 72)	2-Main supervisor factors score (Max. score 16)	3- Communicati on score (Max. score 24)	4-Error reporting score. (Max. score 12)	5-Hospital factors score (Max. score 44)	Mean overall score	Mean % of overall score
Patient safety culture dimensions scores	36.59±6.43	8.97±3.22	11.75±2.29	4.35±2.91	20.99±5.99	82.64±11.07	49.19±6.5
Participants' specialties							
Surgical departments (97)	38.04±6.76	9.35±3.18	12.07±2.17	6.97±3.12	21.32±5.59	92.68±12.31	51.3±8.1
Internal medicine departments (87)	36.71±5.99	8.49±3.42	11.82±2.63	5.74±3.45	21.2±5.35	88.2±13.21	47.94±9.38
Pediatrics (41)	36.76±5.74	9.34±3.31	12.02±1.94	6.05±3.47	22.63±6.2	90.66±13.64	50.26±8.93
Gynecology (26)	34.15±6.37	9.04±2.57	10.96±1.93	5.73±3.03	16.96±5.61	81.15±12.31	45.27±7.62
Others (110)	35.74±6.54	8.85±3.19	11.49±2.27	5.65±3.38	20.89±6.48	86.72±12.24	47.6±8.52
F test	2.715	0.989	1.78	2.504	3.946	5.66	4.17
P value	<0.05	>0.05	>0.05	<0.05	<0.01	<0.01	<0.01
Participants' gender							
Male (169)	36.5±6.39	9.21±3.27	11.75±2.09	6.38±3.14	21.27±5.43	89.55±12.51	49.61±8.43
Female (192)	36.68±6.49	8.76±3.17	11.75±2.46	5.81±3.5	20.76±6.45	87.99±13.38	48.1±9.02
Student t test	0.265	1.32	0.000	1.64	0.809	1.14	1,64
P value	>0.05	>0.05	-	>0.05	>0.05	>0.05	>0.05
Participants' scientific degrees							
Bachelor (216)	37.06±6.38	7.32±2.58	11.52±2.48	5.81±3.37	20.8±5.92	86.7±13.23	46.24±8.53
Master (99)	35.72±6.58	11.2±2.25	12.16±2.18	6.54±3.38	19.23±5.53	89.94±12.5	51.5±7.85
Doctorate (46)	36.28±6.32	11.89±2.69	11.91±1.23	6.37±3.09	25.72±4.81	95.59±10.5	55.05±6.75
F test	1.545	116.52	2.8	1.83	20.77	9.94	29.74
P value	>0.05	<0.01	>0.05	>0.05	<0.01	<0.01	<0.01
Participants' jobs							
University staff members (46)	36.28±6.32	11.89±2.69	11.91±1.23	6.37±3.09	25.72±4.81	95.59±10.51	55.05±6.75

Assistant lecturer& residents (170)	35.76±6.24	9.38±3.24	12.26±2.01	7.39±3.1	20.29±5.54	90.72±11.86	50.95±7.29
House officers (145)	37.66±6.58	7.57±2.54	11.09±2.67	4.45±2.99	20.32±6.18	84.2±13.47	44.32±8.79
F test	3.51	41.83	11.01	36.46	17.94	18.95	44.37
P value	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Table (6): Patient safety culture dimensions level according to physicians’ gender, scientific degree, job and specialties:

Patient safety factors			Work place		Supervisors		Communication		Error reporting		Hospital	
Patient safety culture level	Negative		1	0.6	32	19.8	5	3.1	93	57.4	31	19.1
	Neutral		183	20.3	138	15.3	232	25.8	164	18.2	184	20.4
	Positive		177	23.9	191	25.7	124	16.7	104	14.0	146	19.7
Gender	Negative	Male	1	0.6	13	7.7	2	1.2	26	15.4	9	5.3
		Female	0	0.0	19	9.9	3	1.6	67	34.9	22	11.5
	Neutral	Male	88	52.1	61	36.1	106	62.7	101	59.8	91	53.8
		Female	95	49.5	77	40.1	126	65.6	63	32.8	93	48.4
	Positive	Male	80	47.3	95	56.2	61	36.1	42	24.9	69	40.8
		Female	97	50.5	96	50.0	63	32.8	62	32.3	77	40.1
	Test P value			FET=1.38 >0.05		x ² =1.514 >0.05		FET=0.567 >0.05		x ² =29.38 <0.05		x ² =4.46 >0.05
Scientific degree	Negative	Bachelor	0	0.0	31	14.4	5	2.3	62	28.7	14	6.5
		Master	1	1.0	1	1.0	0	0.0	30	30.3	17	17.2
		Doctorate	0	0.0	0	0.0	0	0.0	1	2.2	0	0.0
	Neutral	Bachelor	100	46.3	123	56.9	133	61.6	95	44.0	124	57.4
		Master	58	58.6	9	9.1	71	71.7	34	34.3	49	49.5
		Doctorate	25	54.3	6	13.0	28	60.9	35	76.1	11	23.9
	Positive	Bachelor	116	53.7	62	28.7	78	36.1	59	27.3	78	36.1
		Master	40	40.4	89	89.9	28	28.3	35	35.4	33	33.3
		Doctorate	21	45.7	40	87.0	18	39.1	10	21.7	35	76.1
	FET test P value			7.51 >0.05		136.67 <0.01		4.9 >0.05		29.61 <0.01		36.36 <0.01
Job	Negative	University staff member	0	0.0	0	0.0	0	0.0	1	2.2	0	0.0
		Assistant lecturer and residents	1	0.6	15	8.8	0	0.0	32	18.8	19	11.2
		House officers	0	0.0	17	11.7	5	3.4	60	41.4	12	8.3
	Neutral	University staff member	25	54.3	6	13.0	28	60.9	35	76.1	11	23.9
		Assistant lecturer and residents	96	56.5	47	27.6	105	61.8	57	33.5	87	51.2
		House officers	62	42.8	85	58.6	99	68.3	72	49.7	86	59.3
	Positive	University	21	45.7	40	87.0	18	39.1	10	21.7	35	76.1

		staff member										
		Assistant lecturer and residents	73	42.9	108	63.5	65	38.2	81	47.6	64	37.6
		House officers	83	57.2	43	29.7	41	28.3	13	9.0	47	32.4
	FET test		7.97		64.38		9.26		88.89		30.31	
	P value		>0.05		<0.01		<0.05		<0.01		<0.01	
Specialties	Negative	Surgical	1	1.0	7	7.2	1	1.0	14	14.4	6	6.2
		Internal medicine	0	0.0	10	11.5	3	3.4	26	29.9	3	3.4
		Pediatrics	0	0.0	3	7.3	0	0.0	11	26.8	3	7.3
	Neutral	Gynecology	0	0.0	1	3.8	1	3.8	8	30.8	8	30.8
		Others	0	0.0	11	10.0	0	0.0	34	30.9	11	10.0
		Surgical	42	43.3	31	32.0	59	60.8	55	56.7	52	53.6
	Positive	Internal medicine	41	47.1	39	44.8	50	57.5	35	40.2	50	57.5
		Pediatrics	21	51.2	16	39.0	25	61.0	16	39.0	26	39.0
		Gynecology	15	57.7	11	42.3	22	84.6	12	46.2	13	50.0
		Others	64	58.2	41	37.3	76	69.1	46	41.8	53	48.2
		Surgical	54	55.7	59	60.8	37	38.1	28	28.9	39	40.2
		Internal medicine	46	52.9	38	43.7	34	39.1	26	29.9	34	39.1
		Pediatrics	20	48.8	22	53.7	16	39.0	14	34.1	22	53.7
		Gynecology	11	42.3	14	53.8	3	11.5	6	23.1	5	19.2
Others	46	41.8	58	52.7	34	30.9	30	27.3	46	41.8		
Test		9.29		6.402		14.46		11.56		25.49		
P value		>0.05		>0.05		<0.05		>0.05		<0.01		

Discussion

The response rate was 59.6% as this topic is critical and newly addressed in medical research which was higher than some other studies that had shown a 47.4% response rate (Al-Ahmadi, 2009).

Physicians with doctorate degree and university staff members had highest positive attitudes towards patient safety culture while physicians working in gynecology department recorded the lowest positive attitudes among all participants.

Variations in patient safety attitudes were across individual employees, so efforts to promote a patient safety culture must continue targeting individual staff members (Deilkás E. et al, 2010). However, the results of the current study also revealed that different departments can affect physicians' perception of safety.

The most obvious observation was the weakness of the error reporting management in Benha University Hospitals. About half of the surveyed physicians were females. 47.1% were assistant lecturers & residents, 40.2% were house officers and 12.7% were university staff members. This high percentage of junior physicians' involvement could be explained as they are more available in the hospital carrying all the day & night shifts, and they were more cooperative in this study.

Regarding job experience, 70.7% of the involved physicians had experience <6y, 24.9% with experience 6-15 y, & only 4.4% with experience >15y. Half of the participants were working > 40 hours/week. This could be explained by the large percentage of the junior staff.

In this study, 26.9% of the participants worked in surgical departments, 24.1% in internal medicine departments, 11.4% in pediatrics department, 7.2% in gynecology & obstetric department and 30.5% in the other hospital departments.

Regarding the opinion of the participants about practicing patient safety behavioral factors in their work place, the most obvious problem was working for long hours, where more than half of the participants stated that staff worked long hours is best for patient care. That was against **AHRQ's comparative database report (2012)**, where 53% of the participants denied that working hours were long.

Fletcher et al, (2008) revealed that contributors to patient care errors include fatigue and workload and described the impact of both intended and unintended consequences of the work hour rules on patient care.

Those who gave negative opinions about having patient safety problems in their departments were 56.5%. That was against **AHRQ's comparative database report (2012)**, where safety problems were not stated by 64% of the participants.

Teamwork within hospital units (means that staff supports one another, treat each other with respect, and work together as a team) gave the highest positive opinions (70.1%) among all patient safety behavioral factors in work place (**AHRQ, 2009**). This agreed with **AHRQ's comparative database report (2012)**, which showed 86% positive responses. Another good area was clear as 67.6% agreed that people treated each other with respect in their departments.

Teamwork within units was rated also favorably by **Agnew C.et al, (2013)** and contradicts **Kho M.et al, (2009)**, who examined factors associated with higher safety climate score in ICU, where inadequate teaming and staffing within hospital units were the most prominent problems.

The most obvious problem was the punitive environment (**Morrison AL.,et al., 2001**). About 69% of the studied group worried about keeping mistakes in their personal files. When an event was reported, 61.8% felt like the person was being written up, not the problem. Feeling that mistakes were held against the staff was a worry to 46.8% of the participants.

The **IOM** report highlighted an actionable conclusion that "the biggest challenge to moving toward a safer health system is changing the culture from one of blaming individuals for errors to one in which errors are treated not as personal failures, but as opportunities to improve the system and prevent harm"(**Kohn, et al, 2000**).

An important component of developing a positive safety culture in organizations is the ability to recognize, respond, feedback and learn from adverse events (**Benn, et al, 2009**). Our results revealed that mistakes didn't lead to positive changes in departments for more than half of the participants.

It was just by chance that serious mistakes didn't happen had got the highest positive opinion (54.6%) among all error management items in work place. This agreed with **Nie et al, (2013)** as the positive opinions about that item were 62%.

Leadership commitment and support is essential for creating a patient safety climate in hospitals (**Ruchlin HS,et al. 2004**). **Regarding the participants' opinions about their supervisors/ managers' behaviors towards patient safety**, whenever pressure built up, the supervisor wanted staff to work faster, even if it meant taking shortcuts, had got the highest negative opinion (56.8 %) among all items.

A good point appeared when 67.9 % of the studied group stated that their supervisor/manager said a good word about a job done according to established patient safety procedures which was higher than that recorded by **Aboul-Fotouh et al, (2012)**, where this item got 46.4% positive responses. This finding also agreed with **AHRQ's comparative database report (2012)**, where it showed 73% positive answers.

Ineffective communication among health care professionals is one of the leading causes of medical errors and patient harm (**Woolf SH,et al. 2004**).Staff felt free to question the decisions or actions of those with more authority had got the highest negative opinion (40.2%). No discussion of ways to prevent errors from happening again was estimated by 30.7% of the surveyed physicians.

The items indicating that the staff was informed about errors that happened in their units had got the highest positive opinion (43.2%).

These communication results agreed with **Nabhan A. et al, (2007)** as only 7% of respondents received feedback after referral of cases. However, that was totally against the results of the **AHRQ's comparative database report (2012)** where the composite score of communication items was 64%, and with **Nie et al (2013)**, where it constituted 60%.

So, the communication was a point of weakness that needs potential improvement as open communication among physicians, administrators, and healthcare workers; as well as with patients and their families are considered the principal characteristics of a culture of safety (**Kitch, 2005**).

Physicians who had negative opinions towards error reporting occurrence in their work place when a mistake was made, but was caught and corrected before affecting the patient, had no potential to harm the patient and could harm the patient constituted (55.1 %, 53.2% and 49%) respectively. That indicated a tendency for under reporting of errors whether harmful to patients or not.

This agreed with **Aboul-Fotouh et al, (2012)**, as average composite score of adverse event reporting & recording was 33.4%, and different with others where event reporting was 63% (**AHRQ, 2012**). The explanation of the low error reporting may be for fear from its consequences, as the hospital environment is a (punitive) one (**Al-Ahmadi, 2009**).

More than half of the studied group stated that events were reported by oral way only, while only 28% stated that they were by written way. In the past 12 months, 77.3% of the studied group did not fill out & submit event reports, this came in accordance with **Hamdan (2013)**, as the percent of (no reporting) was 71%, but against **Al-Ahmadi (2009)**, as the no reports percent constituted 43.1% and 52.5% had submitted 1-10 reports. The high percent of 'no event reports' represented under-reporting and was identified as an area for potential improvement for the hospitals because potential patient safety problems may not be recognized or identified and therefore may not be addressed.

Incident reporting and conducting root cause and risk analyses were identified as the most important factors for achieving good levels of patient safety (**Nygren M. et al, 2013** and **Makai P. et al, 2009**).

37.7 % stated that patient safety grade in their departments was (poor / failing); while only 23.9% agreed that it was (excellent / very good). This agreed with the results of **Abbas et al, (2008)**, who found that the majority of participants conveyed negative perceptions toward patient safety. On the contrary patient safety grade results were 75% (excellent / very good) (**AHRQ, 2012**). Also **Nie et al, (2013)** showed that 70% of the results were (excellent / very good). In Saudi hospitals, the (excellent / very good) grades percent was 60.3% (**Al-Ahmadi, 2009**)

Regarding the participants' opinion about Benha University Hospitals' factors related to patient safety, Items indicating that mistakes happened when transferring patients from one unit to another and that problems often occurred in the exchange of information across hospital units had got the highest negative opinions (62.1 % and 59.6% respectively) among all hospital factors items.

About 47% of the studied group refused that hospital management provided a work climate that promotes patient safety. This finding agreed with **Aboul-Fotouh et al, (2012)**, as that item had got the lowest positive percentage in hospital factors related to patient safety and with **Hamdan M. (2013)**, as management support was only moderately rated (61.5% of positive responses). But this was against the results of **AHRQ's comparative database report (2012)**, where 81% of the participants stated positive patient safety work climate, & the results of **Nie et al, (2013)** which were 71% positive answers.

For 46.5% of the studied group, the actions of hospital management didn't show that patient safety was a top priority; this was against **Nie et al, (2013)** who stated 70% positive answers.

A study conducted by **Khatab (2005)** concluded that only 36% of safety measures to prevent susceptibility to hospital-acquired infection were followed.

Makai. et al, (2009) also concluded the existence of the relationship between quality and safety, which supports the view that patient safety should be integrated into quality management systems.

On the other hand, the items indicating that important patient care information were often lost during shift changes and that shift changes were problematic for patients in the hospital had got the highest positive opinions (58.4% and 52.9% respectively) among all items. This indicates that problems associated with hand-over are not

frequent in Benha University Hospitals. This finding contradicts those of **Aboul-Fotouh et al, (2012)**, where the items representing hospital handoffs were points of weakness, which needed a potential improvement (composite score of hospital hand offs and transitions was 24.6% positive responses).

Patient handoffs between physicians are recognized as a time of potential communication lapses that leads to errors in patient care. Fifty-nine percent of medical and surgical residents in a recent study reported that one or more of their patients were harmed as a result of inadequate handoffs (**Kitch B,et al., 2008**).

Regarding differences in patient safety perception of physicians according to their job positions, it was evident that senior physicians consistently perceive safety culture more positively than the junior ones across multiple dimensions of safety culture. Regarding attitudes of patient safety culture towards hospital factors and all dimensions university staff members had significantly the highest score. This was also evident also by the results in table (6), where the house officers gave the least positive safety culture level towards supervisors' behaviors towards patient safety, communication in their departments, and error reporting.

These findings agree with the results of **Aboul-Fotouh et al, (2012)** and with **Raftopoulos V.et al, (2013)** and contradict the results of **Abbas, et al, (2008)** who revealed that the total mean score of the participants' perceptions about patient safety decreased as their years of experience increased. This difference may be due to less exposure of senior physicians to the junior work conditions, senior physicians may be less knowledgeable about safety than juniors whose actions directly impact patients.

Regarding differences in patient safety perception of physicians according to their scientific degrees, the mean overall score of those with doctorate degree regarding all patient safety culture dimensions was significantly higher than that of all other participants. Participants with bachelor degree gave the least positive safety culture level towards supervisors' behaviors towards patient safety, while participants with doctorate degree gave the lowest negative attitudes towards error reporting and the highest positive attitudes towards hospital factors related to patient safety.

This comes in accordance to the results of **Kim,et al, (2012)**who found that perception of patient safety was found to be significantly correlated with health care provider degree of education.

Regarding differences in patient safety perception of physicians according to their gender, there were no significant differences between male & female participants regarding scores of patient safety culture dimensions. This result agrees with **Aboul-Fotouh et al, (2012)** and **Kim et al, (2012)**. This could be explained as both male and female physicians follow the same regulations and work in the same climate.

Regarding differences in patient safety perception of physicians according to their specialties, the mean overall score of those working in surgical departments regarding all patient safety culture dimensions was significantly the highest. This finding agrees with **Aboul-Fotouh et al, (2012)**, but disagrees with **Abbas et al, (2008)** who find that participants in the ICUs had the highest score. This could be due to variation in safety culture across organizations.

Physicians working in gynecology department recorded the least positive patient safety culture attitudes towards communication factors among all the participants. This finding comes in accordance to **Belyansky I et al, (2011)**.

Variations in patient safety culture perception among health care providers working in different hospital wards may be of value in organizational learning of the hospital. **Zohar et al, (2007)** has reported how information on safety climate has been used to guide prevention efforts toward selected units. Selection must to avoid stigmatizing working units as “low-score”.

Recommendations

The health care organizations need to assess patient safety culture, redesign system to reduce opportunities for error, and establish comprehensive patient safety programs to increase detection of adverse events.

To facilitate change in cultural behaviors, hospital management should assess and redesign their current patient safety system including governance and reporting structures. In addition, they should provide their health professionals with comprehensive training on patient safety concepts, tools, and implementations.

Recent surveys have found that overworked health professionals, the nursing shortage, poor supervision, lack of teamwork, poor handwriting, insurer influence on care decisions, varying definitions of errors, lack of training, and fear of litigation are viewed as barriers to patient safety by both physicians and the public.

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