

# Awareness, Attitude and Practice of Patient Safety Culture among Primary Care Physicians in Primary Health Care Centers in Makkah Al-Mukarrmah in 2021

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**Abstract** Background: Patient safety and quality improvement of health care delivery to the patients are among the highest priorities of health care system. Building a safe health care system means designing processes of care to ensure that patients are safe from accidental injury. Patient safety education and its training for all health care providers including both doctors and nurses is an important required learning at all levels of training. Patient safety is the prevention of adverse events to patients with stress on the system of care delivery that prevents errors and learning from errors that occur within the building and of a safety culture involving patients, health care workers, and organizations. In patient care, it is crucial to assess patient safety guides to identify chances for improvement and to create a starting point for evaluating future improvement efforts. In order to achieve this, health care providers should integrate quality and safety into their organization to guarantee proper clinical and administrative practices, in Saudi Arabia limited amount of data exists about patient safety culture; however the healthcare organizations in Saudi Arabia are assessing patient safety guides to identify opportunities for improvement. Aim of the study: To evaluate the patient safety culture in primary health care centers among primary care physicians in Makkah, Saudi Arabia during 2021. Method: cross-section study, has been conducted on primary care physicians working in the primary health care centers under the Ministry of Health in Makkah, during data collection period 2021, The total number of physicians working in all PHCC's in Makkah is (173), this design was chosen due to the nature of the required data collection and aim of the study. Results: distribution of the participants' perception among work unit results show the majority of participant had average perception were (81.50%), regarding distribution of the participants' perception towards Supervisor/Management results show the majority of participant had average perception were (60.69%). Considering perception of the participants towards the Communication reporting we found that results show the majority of participant had average perception were (75.14%). Conclusion: Response to errors is an important determinant of safety culture in healthcare organizations. In order for healthcare organizations to create a culture of safety and improvement, they must eliminate fear of blame and create a climate of open communication and continuous learning. The study calls for the need for increasing attention to patient safety and efforts to improve the performance and quality of service.

**Keywords:** awareness, attitude, practice, patient, safety, culture, physicians, primary health care

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## 1. Introduction

Patients are injured by medical errors in both developed and developing countries. In developing countries, the burden of unsafe care is unclear due to inappropriate infrastructure, insufficient human resources and poorly developed medical error reporting system. [1] Almost all health care providers have made medical mistakes but they generally don't tell patients or families about these errors because facing to a medical error is never easy and hence it is not disclosed and are generally underreported. [2]

There were up to 98,000 deaths per year because of medical errors. [3] WHO curriculum guide is developed to help medical schools to develop their own patient safety curriculum. [4] Report on safety in health care by Institute of Medicine publication, To Err is human, focused attention on this problem that every year more die as a result of medical errors than deaths from automobile accidents. [5] awareness of patient safety culture among primary care physicians is an important determinant of patient safety in health care organizations [6,7]. Research efforts in various countries have focused on assessment safety culture. [8,9] Patient safety is an important component of quality health care. [10] Harteloh defined quality as: "Quality is an optimal balance between

possibilities realized and a framework of norms and values.” [11] This definition is a conceptional definition which raises the importance of realizing the possibilities as components and defining or determining their standards and values. [12] The rise of health care quality in medical practice in the Kingdom of Saudi Arabia (KSA) is taking a path of development and improvement which necessitates patient safety as a critical component. Dimensions of safety culture have been linked to several healthcare outcomes such as medication errors, nurse back injuries, urinary tract infections, patient satisfaction, patients’ perceptions of nurse responsiveness and nurse satisfaction. [13] Safety problems are believed to arise from safety violations and unintentional errors and mistakes. [14]

The IOM has defined patient safety as “the prevention of harm to patients.” [12,13,14,15] The Stanford University Evidence Based Practice Center (EPC) has defined patient safety practice as “a type of process or structure whose application reduces the probability of adverse events resulting from exposure to the health care system across a range of disease and procedures” [16,17].

A framework by the Saudi Patient Safety Center in KSA created to understand and unify the key concepts of patient safety; The Saudi Patient Safety Taxonomy. [18]

Medical colleges in Saudi Arabia have started implanting patient safety modules and increasing exposure of their students to the concepts of quality care and patient safety. [19]

Health care providers at all training levels experience feelings of guilt and sense of inadequacy of varying degree as a consequence of medical error. [20] patient safety is an important topic which must be included in the curricula of both undergraduate postgraduates medical and nursing teaching. In KSA medical and nursing school curriculum, there is dearth of information regarding patient safety and is not given due importance. Postgraduate training period is vulnerable time in which early experience shapes future behavior of residents. Our nurses must also be very familiar with patient safety. We planned this study to learn about awareness, attitude and practice of patient safety culture among Primary Care Physicians in primary health care centers in Makkah Al-Mukarrmah. The continuation of exposure to these concepts should not only continue throughout their education and training, but be considered basic competencies in their practice.

## 1.2. Literature Review

Up to our knowledge, this is the first study that aimed to identify and analyze factors that influence patient safety culture in the primary health care setting in Makkah Al-Mukarrmah city, Kingdom of Saudi Arabia. In Kuwait, a study conducted by Ghobashi et.al. Showed that overall average of positive response rate for patient safety culture was 82% [21]. Moreover, in Turkey, Bodur S, showed that the mean average of positive responses was 50% [22] which is slightly similar to another study conducted by Ayisa A in Ethiopia which found that mean average of positive responses was 45.3% [23].

A broader study was conducted in Riyadh City, KSA titled, “Assessment of patient safety culture in Saudi Arabian hospitals” resulting in an overall patient safety

grade as excellent or very good by 60% of participants, acceptable by 33% and failing or poor by 7%. [24] The researchers found that more than half of the participants complained of managers overlooking recurring patient safety issues. Unlike the previous article, the researchers found that participants found communication about errors and teamwork are areas of strength but corresponded with potential for improvement in under-reporting. [25,26]. Another study, the overall average positive response rate for the patient safety culture dimensions was 76.13%. This is higher than the reported in many studies which used the same tool including the study of Chen I-C in Taiwan which reported overall average of positive response of 61% [27] as well as study of Akologo et.al in upper region of Ghana who reported overall average of positive responses of 58.1% [28] and both results were lower than our average. Similarly other previous studies reported lower overall average of positive responses including 67% in Yemen [29], 62.7% in Sri Lanka [21,30], 58% in Oman [31], 58% in South India [32]. This difference between studies in reporting the overall mean average of positive responses for the awareness, attitude and practice patient safety culture dimensions may be due to the differences in organizational behavior between countries .

Another studies that confirm that most attempts to improve safety in healthcare are reactive in nature; however, efforts to proactively identify and eliminate hazards have the potential to significantly improve safety. [33]

Alahmadi et al. [34], in Kingdom of Saudi Arabia who reported that 85% of the participants (who included nurses, technicians, managers and medical staff) rated the overall patient safety grade as excellent or very good. [34]

Ghobashi [21] reported 69% claimed that patient safety is never sacrificed to get more work done and 67% claimed that their procedures and systems are good at preventing errors from happening [21]. Research has shown that effective error response, with the primary goal of identifying systemic errors rather than placing blame on individuals, is essential for building a positive patient safety culture [35]. It has been recommended that in the event that a medical error eventually occurs, public order should be taken into account and not to put on the person who caused the error. A “flawless” environment in which people can identify and report mistakes without fear is ideal for good patient care [36]. In a study conducted in Ain Shams university hospitals in Egypt, the rate of adverse events reporting and recording was 33.4 [37].

## 1.3. Rationale

The patient safety is an issues which goes hand in hand with the practice of medicine. Health care providers deal with patients in a manner where patient safety is at the utmost importance to ensure a high standard of quality in care. Family medicine is a growing practice in Saudi Arabia and the implantation of a health care system where primary health care centers are the first line health care is aligned with 2030 vision of the kingdom. Patient safety competencies should be ingrained in the basic practice of any health care provider, but more understood and practiced by health care providers in primary health care centers due to the close nature of the relationship between

the patient and doctor and continuation of care. To understand the patient safety culture and conclude the necessary interventions will not only ensure the safety of the patient and quality care for the patient, but also will ensure the trust of the patient in the care of their primary health care provider.

The researcher is a family medicine resident training in the Makkah Family medicine joint program which is the reason for choosing the location primary health care centers. They envision an environment of high quality care and an excellent patient safety culture.

## 2. Aim of the Study

To evaluate the patient safety culture in primary health care centers among primary care physicians in Makkah, Saudi Arabia during 2021.

### 2.1. Specific Objectives

- To assess the awareness, attitude and practices of primary care physicians towards the practice of patient safety in primary health care clinics in Makkah.
- To evaluate the extent to which the primary health care centers support patient safety.

## 3. Methodology

### 3.1. Study Design

The study design proposed for this research is a cross-section study. This design was chosen due to the nature of the required data collection and aim of the study.

### 3.2. Study Area

The study location has been Makkah AlMukarramah. Makkah is a city located in the country of Saudi Arabia. It has a population of 1.53 million people according to the Kingdom of Saudi Arabia General Authority for Statistics and Saudi Census. Makkah city contains 9 official Primary Health Care Clinics located in many different districts around the city.

### 3.3. Study Population

The study populations for this research are all primary care physicians working in the primary health care centers in Makkah city under the Ministry of Health. Health care providers the total number of physicians working in all PHCC's in Makkah is (280).

### 3.4. Eligibility Criteria

#### *Inclusion criteria*

All primary care physicians working at all the primary health care centers under the Ministry of Health in the city of Makkah, Saudi Arabia.

Both Genders

All ages

Any primary care physician regardless of years of experiences

Primary care physician who provide an informed consent to participate in the study

#### *Exclusion criteria*

Primary care physicians who are taking temporary rotations from other specialties from secondary or tertiary hospitals.

Primary care physician who do not wish to participate in this research.

### 3.5. Sample Size

The sample size was determined by Raosoft program with a margin of error as 5%, confidence level of 95% and response distribution of 50% as 173 from a total population of 280. The sampling tool which has been used has established the use of the total population as a census if the population size is less than 500 with an expected response rate of 50%. A census is the determined sample for this population with an expected response of at least 140 participants.

### 3.6. Sampling Technique

The sampling technique used for this research has been a census due to the nature of the sampling tool. A list of all the primary care physicians has been obtained from the Primary Health Care Center Affairs in Makkah. The Director of the PHCC Affairs has been contacted and informed and has given permission to use the database of employee statistics in this research. All primary care physicians will be included in this study.

## 4. Data Collection Tool

The tool of choice is a self-administered questionnaire. The questionnaire that has been used is the Hospital Survey on Patient Safety Culture (HSOPSC) Questionnaire. The HSOPSC questionnaire was developed by the Agency for Healthcare Research and Quality (AHRQ). It is in the public domain and may be used and reprinted without permission. They have designed a user's guide and tool kit along with the questionnaire to help guide the researcher and provide the tools needed to assess patient safety culture.

The HSOPSC measures 12 elements of patient safety culture by asking the participant to score questions on events regarding teamwork within units, supervisor/manager expectations and actions promoting patient safety, organizational learning and continuous improvement, overall perception of patient safety, feedback and communication about error, communication openness, frequency of events reported, teamwork in the work center or unit, staffing, handoffs and transition and response to errors. The HSOPSC questionnaire is a 7-part questionnaire which takes 15 – 20 minutes to answer.

**The first part** contains questions about the personal information of the physician including gender, age, nationality, job title and specialty, place of work, years of experience and hours of work.

**Part II** contains statements which has be answered by indicating the participant's agreement or disagreement on a five-point linkert scale of 1 to 5; 1 as strongly disagree, 2 as disagree, 3 as neither, 4 as agree and 5 as strongly agree.

**Part III** is regarding the participant's supervisor and contains 4 statements which has be answered as part II. The following section,

**Part IV** asks the participants how often 6 different events happen in the work area.

**Part V** contains 3 questions about the frequency of events being reported. The pervious 2 parts (part IV and V) has be indicated by choosing from a scale of 1 to 5; 1 as never, 2 as rarely, 3 as sometimes, 4 as most of times, 5 as always.

**In part VI**, the participant is asked to grade patient safety in their work area with a grading system of A as excellent, B as very good, C as acceptable, D as poor and F as failing. In part VII, the PHCC is being ranked from 1 to 5 in 11 different statements with indication of agreement or disagreement to the statements with the same scale as the part I.

The final section, **part VIII**, we are asking the participants to estimate the number of events reported in their work area.

## 4.2. Data Collection Technique

Before data collection, a participant has been contacted by the researcher via e-mail, phone call and WhatsApp messages to invite them to participate in the research. An e-mail will be sent to all physicians working in the MOH PHC centers in Makkah inviting the health care provider to participate in the study and explaining the premises of the study which has include information on the rational, privacy policy, consent form and the questionnaire. The questionnaire has also been delivered, by the research, to each PHC center director. The questionnaire has been collected from the directors once all the health care providers have answered the survey.

## 4.3. Data Entry and Analysis

Date has be entered manually by the researcher and analyzed using SPSS. Qualitative data has be conveyed as numbers and percentages. A P-value of  $< 0.05$  will be considered as statistically significant and confidence interval of 95 will be applied.

## 4.4. Pilot Study

A pilot study has been conducted on 10% of the health care provider.

## 4.5. Ethical Considerations

Review and Approval from the Makkah Joint Program of Family Medicine

Review and Approval from the Ethical Committee

PHC center health care provider included in the sample size has be given a consent form to be read and signed before filling out the questionnaire

All information has been kept confidential and results has been submitted to the department as feedback.

## 4.6. Relevance and Expectations

The trend of patient safety has been increasing in relevance in the past few years. Development of a framework and guidelines for patient safety is in the process by many health care organizations in Saudi Arabia. It is important to assess the culture in our primary health care system to determine if implantation of more educational courses and requiring patient safety competencies in primary health care center health care providers is necessary. The possible recommendations from this research may be assessment of adding and implementing patient safety modules, courses and training to health care providers working in the PHC centers in Makkah.

## 5. Result

Regarding the age, the highest age was (53.2%) were (30-35) years followed by less than 30 years were (24.9%), (59.0%)were male while female were (41.0). (81.5%) Saudi while (18.5%)non-Saudi. the majority of participated general Practitioner were (45.1%), followed by resident were (30.1%). Regarding the years of experience, the majority of participated from 1-5 years were (42.8%)while duration from 6-10 years were (20.8%), regarding how many hours a week do you work approximately more than half of participant (69.4%) work 40 - 59 hours per week and (28.3%) were 20 - 39 hours per week. regarding you have direct interaction or contact with patients the majority of the participated yes have were (99.4%) (Table 1).

**Table 1. Distribution of Socio-demographic characteristics of the studied population (173)**

	N	%
<b>Age</b>		
Less than 30 years	43	24.9
30 - 40 years	92	53.2
41 - 50 years	28	16.2
More than 50 years	10	5.8
<b>Gender</b>		
Female	71	41.0
Male	102	59.0
<b>Nationality</b>		
Non-Saudi	32	18.5
Saudi	141	81.5
<b>Job title</b>		
General Practitioner	78	45.1
Resident	53	30.6
Specialist	21	12.1
Consultant	21	12.1
<b>Years of experience</b>		
Less than 1 year	14	8.1
1 - 5 years	74	42.8
6 - 10 years	36	20.8
11 - 15 years	27	15.6
16 - 20 years	10	5.8
More than 21 years	12	6.9
<b>Typically, how many hours a week do you work?</b>		
Less than 20 hours per week	4	2.3
20 - 39 hours per week	49	28.3
40 - 59 hours per week	120	69.4
<b>Do you have direct interaction or contact with patients?</b>		
No	1	0.6
Yes	172	99.4

Considering perception of the participants towards their work area, we found that a significant relation was P-value=0.001 and  $X^2$  8.81, (64.2%) of the participants agree that people support one another in the work area, while (59.0%) Disagree that we have enough staff to handle the workload were a significant relation were P-value=0.001 and  $X^2$  180.266. We found that a significant relation was P-value=0.001 and  $X^2$  151.480, (56.1%) of the participants agree when a lot of work needs to done quickly, we work together as a team to get the work done. Also we found that a significant relation was P-value=0.001 and  $X^2$  175.509, (68.2%) agree of in the work area, people treat each other with respect. However, we found that a significant relation were P-value=0.001 and  $X^2$  76.104 (41.6%) agree and (27.2%) disagree of participants reported staff work longer hours than is best for patient care, also we found that a significant relation were P-value=0.001 and respectively  $X^2$  (296.971, 87.879 and 132.983) agree of we are actively doing things to improve patient safety, staff feel like their mistakes are held against them and mistakes have led to positive changes in the work area were respectively (71.7%, 50.3% and 52.0%). However, we found that a significant

relation were P-value=0.001 and  $X^2$  66.104, (33.5%) of participants reported neither it is just by chance that more serious mistakes don't happen around the work area, also we found that a significant relation were P-value=0.001 and respectively  $X^2$  (173.040, 164.254 and 202.983) agree of when one area gets really busy, others help out, when an event is reported, it feels like the person is being written up, not the problem and After we make changes to improve patient safety, we evaluate their effectiveness were respectively (56.6%, 54.3% and 61.3%), also we found that a significant relation were P-value=0.001 and respectively  $X^2$  96.618, 84.254 and 128.202) agree of we work in "crisis mode" trying to do too much, too quickly, patient safety is never sacrificed to get more work done and staff worry that mistakes they make are kept in their personal file were respectively (56.6%, 43.9% and 61.8%), also we found that a significant relation were P-value=0.001 and respectively  $X^2$  129.341 and 108.994) agree of we have patient safety problems in our work area and our procedures and systems are good at preventing errors from happening were respectively (50.9% and 43.9% (Table 2).

**Table 2. Distribution of the participants' perception towards their work unit**

			Work Unit					%	Chi-square	
			Strongly Disagree	Disagree	Neither	Agree	Strongly Agree		$X^2$	P-value
1	People support one another in the work area.	N	0	26	22	111	14	73.06%	143.231	<0.001*
		%	0.0%	15.0%	12.7%	64.2%	8.1%			
2	We have enough staff to handle the workload	N	17	102	15	36	3	49.13%	180.266	<0.001*
		%	9.8%	59.0%	8.7%	20.8%	1.7%			
3	When a lot of work needs to done quickly, we work together as a team to get the work done	N	7	33	22	97	14	69.02%	151.480	<0.001*
		%	4.0%	19.1%	12.7%	56.1%	8.1%			
4	In the work area, people treat each other with respect	N	0	14	13	118	28	78.50%	175.509	<0.001*
		%	0.0%	8.1%	7.5%	68.2%	16.2%			
5	Staff work longer hours than is best for patient care	N	12	47	31	72	11	62.66%	76.104	<0.001*
		%	6.9%	27.2%	17.9%	41.6%	6.4%			
6	We are actively doing things to improve patient safety	N	2	6	19	124	22	78.27%	296.971	<0.001*
		%	1.2%	3.5%	11.0%	71.7%	12.7%			
7	Staff feel like their mistakes are held against them	N	0	23	56	87	7	69.02%	87.879	<0.001*
		%	0.0%	13.3%	32.4%	50.3%	4.0%			
8	Mistakes have led to positive changes in the work area	N	7	26	41	90	9	67.86%	132.983	<0.001*
		%	4.0%	15.0%	23.7%	52.0%	5.2%			
9	It is just by chance that more serious mistakes don't happen around the work area	N	10	44	58	53	8	60.58%	66.104	<0.001*
		%	5.8%	25.4%	33.5%	30.6%	4.6%			
10	When one area gets really busy, others help out	N	2	40	27	98	6	67.63%	173.040	<0.001*
		%	1.2%	23.1%	15.6%	56.6%	3.5%			
11	When an event is reported, it feels like the person is being written up, not the problem	N	2	35	40	94	2	66.82%	164.254	<0.001*
		%	1.2%	20.2%	23.1%	54.3%	1.2%			
12	After we make changes to improve patient safety, we evaluate their effectiveness	N	4	29	30	106	4	68.90%	202.983	<0.001*
		%	2.3%	16.8%	17.3%	61.3%	2.3%			
13	We work in "crisis mode" trying to do too much, too quickly	N	0	15	26	98	34	77.46%	96.618	<0.001*
		%	0.0%	8.7%	15.0%	56.6%	19.7%			
14	Patient safety is never sacrificed to get more work done	N	2	32	39	76	24	70.17%	84.254	<0.001*
		%	1.2%	18.5%	22.5%	43.9%	13.9%			
15	Staff worry that mistakes they make are kept in their personal file	N	0	16	31	107	19	74.91%	128.202	<0.001*
		%	0.0%	9.2%	17.9%	61.8%	11.0%			
16	We have patient safety problems in our work area	N	2	36	36	88	11	68.09%	129.341	<0.001*
		%	1.2%	20.8%	20.8%	50.9%	6.4%			
17	Our procedures and systems are good at preventing errors from happening	N	6	35	52	76	4	64.28%	108.994	<0.001*
		%	3.5%	20.2%	30.1%	43.9%	2.3%			

**Table 3. Distribution of the participants' perception towards their Supervisors /Management**

			Supervisor/Management					%	Chi-square	
			Strongly Disagree	Disagree	Neither	Agree	Strongly Agree		X <sup>2</sup>	P-value
1	My supervisor says a good word when they see a job done according to established patient safety procedures	N	5	27	28	89	24	71.56%	117.029	<0.001*
		%	2.9%	15.6%	16.2%	51.4%	13.9%			
2	My supervisor seriously considers staff suggestions for improving patient safety	N	4	28	33	100	8	69.25%	172.462	<0.001*
		%	2.3%	16.2%	19.1%	57.8%	4.6%			
3	Whenever pressure builds up, my supervisor wants us to work faster, even if it means taking shortcuts	N	3	17	28	96	29	75.14%	148.936	<0.001*
		%	1.7%	9.8%	16.2%	55.5%	16.8%			
4	My supervisor overlooks patient safety problems that happen over and over	N	5	53	71	39	5	58.38%	99.283	<0.001*
		%	2.9%	30.6%	41.0%	22.5%	2.9%			

Moreover, considering participants' perception toward their supervisors we found that a significant relation were P-value=0.001 and X<sup>2</sup> 117.029, agree most of them agree thought that their my supervisor says a good word when they see a job done according to established patient safety procedures were (51.4%), also considers my supervisor seriously considers staff suggestions for improving patient safety were (57.8%) and we found that a significant relation were P-value=0.001 and X<sup>2</sup> 172.462, also considers whenever pressure builds up, my supervisor wants us to work faster, even if it means taking shortcuts were (55.5%) and we found agree and a significant relation were P-value=0.001 and X<sup>2</sup> 148.936, also considers neither my supervisor overlooks patient safety problems that happen over and over were (41.0%) and we found a significant relation were P-value=0.001 and X<sup>2</sup>99.283 (Table 3).

Considering perception of the participants towards the Communication, we found that a significant relation were P-value=0.001and respectively X<sup>2</sup> (85.468 and 98.936), of the participants sometimes respectively were (43.4% and 45.1%) that we are given feedback about changes put into place based on event reports and staff will freely speak up if they see something that my negatively affect patient care, also considers (38.2%) most of times are informed about errors that happen in our work area/unit also found a significant relation were P-value=0.001and respectively X<sup>2</sup> (100.728). Staff feel free to question the decisions or actions of those with more authority, we discuss ways to prevent errors from happening again and staff are afraid to ask questions when something does not seem right we found that a significant relation was P-value=0.001and respectively X (81.884, 83.387 and 68.7050) the most of participants in sometimes respectively were (41.0%, 38.2% and 38.2%) (Table 4).

**Table 4. Distribution of the participants' perception towards their Communication**

			Communication					%	Chi-square	
			Never	Rarely	Some times	Most of times	Always		X <sup>2</sup>	P-value
1	We are given feedback about changes put into place based on event reports	N	6	28	75	47	17	64.74%	85.468	<0.001*
		%	3.5%	16.2%	43.4%	27.2%	9.8%			
2	Staff will freely speak up if they see something that my negatively affect patient care	N	4	32	78	46	13	63.70%	98.936	<0.001*
		%	2.3%	18.5%	45.1%	26.6%	7.5%			
3	We are informed about errors that happen in our work area/unit	N	5	28	65	66	9	65.32%	100.728	<0.001*
		%	2.9%	16.2%	37.6%	38.2%	5.2%			
4	Staff feel free to question the decisions or actions of those with more authority	N	13	29	71	52	8	61.50%	81.884	<0.001*
		%	7.5%	16.8%	41.0%	30.1%	4.6%			
5	We discuss ways to prevent errors from happening again	N	11	23	66	61	12	64.62%	83.387	<0.001*
		%	6.4%	13.3%	38.2%	35.3%	6.9%			
6	Staff are afraid to ask questions when something does not seem right	N	13	34	66	51	9	61.04%	68.705	<0.001*
		%	7.5%	19.7%	38.2%	29.5%	5.2%			

**Table 5. Distribution of the participants' perception towards their Frequency of event reporting**

			Frequency of event reporting					%	Chi-square	
			Never	Rarely	Some times	Most of times	Always		X <sup>2</sup>	P-value
1	When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?	N	13	46	73	27	14	58.03%	73.792	<0.001*
		%	7.5%	26.6%	42.2%	15.6%	8.1%			
2	When a mistake is made, but has no potential to harm the patient, how often is this reported?	N	17	53	67	27	9	55.14%	69.688	<0.001*
		%	9.8%	30.6%	38.7%	15.6%	5.2%			
3	When a mistake is made that could harm the patient, but does not, how often is this reported?	N	16	52	66	27	12	56.18%	63.676	<0.001*
		%	9.2%	30.1%	38.2%	15.6%	6.9%			

Considering perception of the participants towards their Frequency of event reporting, we found that a significant relation were P-value=0.001 and respectively  $\chi^2$  (73.792, 69.688 and 63.676), we found of the participants sometimes respectively were (42.2%, 38.7% and 38.2) that when a mistake is made, but is caught and corrected before affecting the patient, how often is this reported, when a mistake is made, but has no potential to harm the patient, how often is this reported and when a mistake is made that could harm the patient, but does not, how often is this reported (Table 5).

Furthermore, we found that a significant relation were P-value=0.001 and respectively  $\chi^2$  (149.977, 115.295, 126.399, 140.266 and 93.040) and the participants agree on the PHCC management provides a work climate that promotes patient safety, PHCC units do not coordinate well with each other, Things “fall between the cracks” when transferring patients from one unit to another, There is good cooperation among PHCC units that need to work together and Important patient care information is often lost during shift changes were respectively (54.9%, 41.0%, 60.1%, 51.4% and 37.6%). Moreover, (49.7%) of the participants disagree that it is often unpleasant to work with staff from other units we found that a significant relation were P-value=0.001 and  $\chi^2$  (58.746), also considers of the participants agree problems often occur in the exchange of information across units, the actions of PHCC management shows that patient safety is a top

priority, PHCC units work well together to provide the best care for patients and shift changes are problematic for patients in this hospital/PHCC were respectively (37.0%, 52.0%, 49.7% and 35.3%) we found that a significant relation were P-value=0.001 and respectively  $\chi^2$  (59.77%, 70.17%, 69.02% and 64.97%) (Table 6).

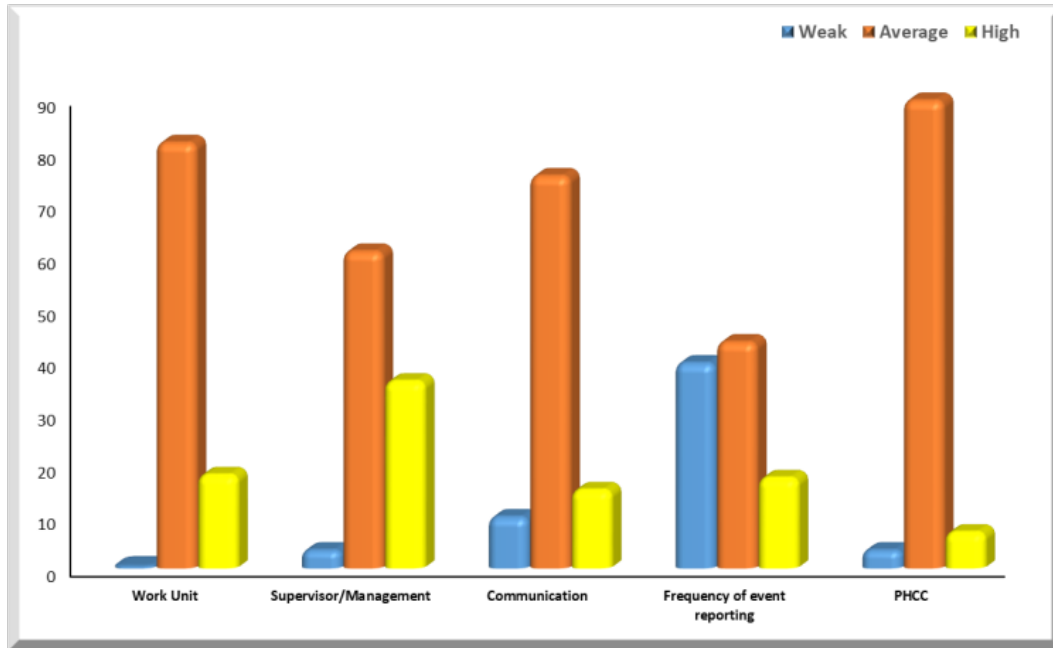
Regarding distribution of the participants' perception among work unit results show the majority of participant had average perception were (81.50%) the data ranged from (42-71) by mean  $\pm$ SD (58.318 $\pm$ 5.543). also regarding distribution of the participants' perception towards Supervisor/Management results show the majority of participant had average perception were (60.69%) the data ranged from (6-18) by mean  $\pm$ SD (13.717 $\pm$ 1.993). Considering perception of the participants towards the Communication reporting we found that results show the majority of participant had average perception were (75.14%) the data ranged from (6-28) by mean  $\pm$ SD (19.046 $\pm$ 3.694). Considering perception of the participants towards their Frequency of event reporting, we found that results show the majority of participant had average perception were (43.35%) followed by weak were (39.31) the data ranged from (3-15) by mean  $\pm$ SD (8.468 $\pm$ 2.874). Regarding distribution of the participants' perception among PHCC results show the majority of participant had average perception were (89.60%) the data ranged from (23-47) by mean  $\pm$ SD (34.775 $\pm$ 4.281) (Table 7 & Figure 1).

**Table 6. Distribution of the participants' perception towards their PHC in patient safety culture**

		PHCC					%	Chi-square		
		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree		$\chi^2$	P-value	
1	PHCC management provides a work climate that promotes patient safety	N	9	39	22	95	8	66.24%	149.977	<0.001*
		%	5.2%	22.5%	12.7%	54.9%	4.6%			
2	PHCC units do not coordinate well with each other	N	1	63	30	71	8	62.54%	115.295	<0.001*
		%	.6%	36.4%	17.3%	41.0%	4.6%			
3	Things “fall between the cracks” when transferring patients from one unit to another	N	0	31	34	104	4	69.36%	126.399	<0.001*
		%	0.0%	17.9%	19.7%	60.1%	2.3%			
4	There is good cooperation among PHCC units that need to work together	N	6	45	29	89	4	64.62%	140.266	<0.001*
		%	3.5%	26.0%	16.8%	51.4%	2.3%			
5	Important patient care information is often lost during shift changes	N	5	57	41	65	5	60.92%	93.040	<0.001*
		%	2.9%	32.9%	23.7%	37.6%	2.9%			
6	It is often unpleasant to work with staff from other units	N	21	86	31	35	0	49.25%	58.746	<0.001*
		%	12.1%	49.7%	17.9%	20.2%	0.0%			
7	Problems often occur in the exchange of information across units	N	2	64	42	64	1	59.77%	114.890	<0.001*
		%	1.2%	37.0%	24.3%	37.0%	.6%			
8	The actions of PHCC management shows that patient safety is a top priority	N	4	30	31	90	18	70.17%	124.717	<0.001*
		%	2.3%	17.3%	17.9%	52.0%	10.4%			
9	PHCC management seems interested in patient safety only after an adverse event happens	N	9	65	34	59	6	58.61%	86.509	<0.001*
		%	5.2%	37.6%	19.7%	34.1%	3.5%			
10	PHCC units work well together to provide the best care for patients	N	4	32	35	86	16	69.02%	113.618	<0.001*
		%	2.3%	18.5%	20.2%	49.7%	9.2%			
11	Shift changes are problematic for patients in this hospital/PHCC	N	3	42	52	61	15	64.97%	70.439	<0.001*
		%	1.7%	24.3%	30.1%	35.3%	8.7%			

**Table 7. Distribution of the participants' perception towards among (work Unit, supervisor/Management, communication, frequency of event reporting, PHCC)**

	Weak		Average		High		Score	
	N	%	N	%	N	%	Range	Mean±SD
Work Unit	1	0.58	141	81.50	31	17.92	42-71.	58.318±5.543
Supervisor/Management	6	3.47	105	60.69	62	35.84	6-18.	13.717±1.993
Communication	17	9.83	130	75.14	26	15.03	6-28.	19.046±3.694
Frequency of event reporting	68	39.31	75	43.35	30	17.34	3-15.	8.468±2.874
PHCC	6	3.47	155	89.60	12	6.94	23-47.	34.775±4.281



**Figure 1.** Distribution of the participants' perception towards among (work Unit, supervisor/Management, communication, frequency of event reporting, PHCC)

**Table 8. Correlation between work unit, supervisor/management, communication, frequency of event reporting and supervisor/management, communication, frequency of event reporting, PHCC**

Correlations		Work Unit	Supervisor/Management	Communication	Frequency of event reporting
Supervisor/Management	r	0.411			
	P-value	<0.001*			
Communication	r	0.346	0.432		
	P-value	<0.001*	<0.001*		
Frequency of event reporting	r	0.191	0.129	0.379	
	P-value	0.012*	0.091	<0.001*	
PHCC	r	0.289	0.350	0.104	0.027
	P-value	<0.001*	<0.001*	0.172	0.724

Table 8 shows a significant correlation between work unit and supervisor/management, communication, frequency of event reporting, PHCC respectively were (r= 0.411, 0.346, 0.191 and 0.289) and p-value =0.001, 0.001, 0.012 and 0.001.

Also shows a significant correlation between supervisor/management and communication, PHCC respectively were (r= 0.432 and 0.350) and p-value =0.001, while no significant correlation between supervisor/management and frequency of event reporting were (r=0.129) and p-value =0.091. Regarding communication shows a significant correlation between communication and frequency of event reporting were (r= 0.379) and p-value =0.001 but no significant correlation between communication and PHCC were

(r= 0.104) and p-value =0.172, regarding frequency of event reporting shows no significant correlation between frequency of event reporting and PHCC were (r= 0.027) and p-value =0.724.

Regarding results show a significant relation between work unit and nationality were T=2.282and P-value=0.024, increase in Non-Saudi were the mean +SD (60.313±5.492), also a significant relation between work unit and years of experience were F=6.962 and P-value=0.001, increase in more than 21 years were the mean +SD (62.583±4.461).

While another items (Age, Gender, Job title) results show no significant relation between work unit and another items respectively were F= 1.780, T=-0.044 and F=1.570 and P-value=0.153, 0.965and 0.199 (Table 9).



**Table 9. Description of the relation between socio-demographic data (Age, Gender, Nationality, Job title, Years of experience) and work unit**

Items	N	Work Unit			F or T	ANOVA or T-test	
		Mean	±	SD		test value	P-value
Age	Less than 30 years	43	58.256	± 5.412	F	1.780	0.153
	30 - 40 years	92	58.000	± 5.614			
	41 - 50 years	28	58.071	± 5.537			
	More than 50 years	10	62.200	± 4.686			
Gender	Female	71	58.296	± 6.165	T	-0.044	0.965
	Male	102	58.333	± 5.098			
Nationality	Non-Saudi	32	60.313	± 5.492	T	2.282	0.024*
	Saudi	141	57.865	± 5.474			
Job title	General Practitioner	78	57.410	± 5.769	F	1.570	0.199
	Resident	53	58.811	± 5.818			
	Specialist	21	58.714	± 3.258			
	Consultant	21	60.048	± 5.509			
Years of experience	Less than 1 year	14	61.357	± 5.706	F	6.972	<0.001*
	1 - 5 years	74	56.230	± 5.622			
	6 - 10 years	36	58.694	± 5.047			
	11 - 15 years	27	60.926	± 4.066			
	16 - 20 years	10	56.000	± 3.367			
	More than 21 years	12	62.583	± 4.461			

**Table 10. Description of the relation between socio-demographic data (Age, Gender, Nationality, Job title, Years of experience) and Supervisor/Management**

Items	N	Supervisor/Management			F or T	ANOVA or T-test	
		Mean	±	SD		test value	P-value
Age	Less than 30 years	43	13.814	± 1.880	F	0.241	0.867
	30 - 40 years	92	13.761	± 1.647			
	41 - 50 years	28	13.429	± 2.602			
	More than 50 years	10	13.700	± 3.368			
Gender	Female	71	13.690	± 1.954	T	-0.146	0.884
	Male	102	13.735	± 2.029			
Nationality	Non-Saudi	32	14.656	± 2.104	T	3.023	0.003*
	Saudi	141	13.504	± 1.911			
Job title	General Practitioner	78	13.577	± 1.827	F	0.404	0.750
	Resident	53	13.868	± 1.922			
	Specialist	21	14.000	± 2.429			
	Consultant	21	13.571	± 2.357			
Years of experience	Less than 12 year	14	14.357	± 1.906	F	2.732	0.021*
	1 - 5 years	74	13.581	± 1.704			
	6 - 10 years	36	13.861	± 2.307			
	11 - 15 years	27	14.222	± 1.476			
	16 - 20 years	10	11.800	± 1.549			
	More than 21 years	12	13.833	± 3.129			

Regarding results show a significant relation between Supervisor/Management and nationality were  $T=3.023$  and  $P\text{-value}=0.003$ , increase in Non-Saudi were the mean  $+SD$  ( $14.656 \pm 2.104$ ), also a significant relation between Supervisor/Management and years of experience were  $F=2.732$  and  $P\text{-value}=0.021$ , increase in more than 21 years were the mean  $+SD$  ( $14.357 \pm 1.906$ )

While another items (Age, Gender, Job title) results show no significant relation between work unit and another items respectively were  $F=0.241$ ,  $T=-0.044$  and  $F=0.404$  and  $P\text{-value}=0.867$ ,  $0.884$  and  $0.750$  (Table 10).

Regarding results show a significant relation between communication and gender were  $T=2.759$  and  $P\text{-value}=0.006$ , increase in Female were the mean  $+SD$  ( $19.958 \pm 3.793$ ), also a significant relation between communication and nationality were  $T=3.948$  and  $P\text{-value}=0.001$ , increase in Non-Saudi were the mean  $+SD$  ( $21.281 \pm 3.603$ ), also a significant relation between communication and years of experience were  $F=8.749$  and  $P\text{-value}=0.001$ , increase in 6 - 10 years were the mean  $+SD$  ( $20.444 \pm 3.130$ ). While another items (Age and Job title) results show no significant relation between

communication and anther items respectively were F= 0.174 and F= 0.336 and P-value=0.914 and 0.800 (Table 11).

Regarding results show a significant relation between frequency of event reporting and years of experience were F=2.791 and P-value=0.091, increase in 11 - 15 years were the mean +SD (9.815±3.163). While anther items (Age, Gender, Nationality and Job title) results show no significant relation between frequency of event reporting

and anther items respectively were F= 0.680 and T= 0.201, T=1.644 and F=0.654 and P-value=0.566, 0.841, 0.102 and 0.581 (Table 12).

Regarding results show no significant relation between socio-demographic data (Age, Gender, Nationality, Job title, Years of experience and PHCC respectively were F=2.434, T= -0.288, T=-1.042, F=0.759 and F=1.664 and P-value=0.067, 0.774, 0.299, 0.519, 0.146 (Table 13).

**Table 11. Description of the relation between socio-demographic data (Age, Gender, Nationality, Job title, Years of experience) and Communication**

Items	N	Communication			F or T	ANOVA or T-test	
		Mean	±	SD		test value	P-value
Age	Less than 30 years	43	18.953	± 4.094	F	0.174	0.914
	30 - 40 years	92	19.152	± 2.813			
	41 - 50 years	28	18.679	± 5.638			
	More than 50 years	10	19.500	± 2.550			
Gender	Female	71	19.958	± 3.793	T	2.759	0.006*
	Male	102	18.412	± 3.505			
Nationality	Non-Saudi	32	21.281	± 3.603	T	3.948	<0.001*
	Saudi	141	18.539	± 3.535			
Job title	General Practitioner	78	18.744	± 3.417	F	0.336	0.800
	Resident	53	19.245	± 4.350			
	Specialist	21	19.476	± 3.219			
	Consultant	21	19.238	± 3.491			
Years of experience	Less than 1 year	14	18.143	± 4.204	F	8.749	<0.001*
	1 - 5 years	74	18.865	± 3.365			
	6 - 10 years	36	20.444	± 3.130			
	11 - 15 years	27	20.185	± 3.114			
	16 - 20 years	10	13.000	± 3.916			
	More than 21 years	12	19.500	± 2.541			

**Table 12. Description of the relation between socio-demographic data (Age, Gender, Nationality, Job title, Years of experience) and Frequency of event reporting**

Items	N	Frequency of event reporting			F or T	ANOVA or T-test	
		Mean	±	SD		test value	P-value
Age	Less than 30 years	43	8.349	± 2.716	F	0.680	0.566
	30 - 40 years	92	8.315	± 3.009			
	41 - 50 years	28	9.179	± 2.894			
	More than 50 years	10	8.400	± 2.221			
Gender	Female	71	8.521	± 3.184	T	0.201	0.841
	Male	102	8.431	± 2.653			
Nationality	Non-Saudi	32	9.219	± 3.139	T	1.644	0.102
	Saudi	141	8.298	± 2.795			
Job title	General Practitioner	78	8.526	± 2.984	F	0.654	0.581
	Resident	53	8.075	± 2.993			
	Specialist	21	9.048	± 1.987			
	Consultant	21	8.667	± 2.955			
Years of experience	Less than 1 year	14	6.500	± 2.682	F	2.791	0.019*
	1 - 5 years	74	8.581	± 2.775			
	6 - 10 years	36	8.194	± 3.097			
	11 - 15 years	27	9.815	± 3.163			
	16 - 20 years	10	8.000	± 1.247			
	More than 21 years	12	8.250	± 2.050			

**Table 13. Description of the relation between socio-demographic data (Age, Gender, Nationality, Job title, Years of experience) and PHCC**

Items	N	PHCC			F or T	ANOVA or T-test		
		Mean	±	SD		test value	P-value	
Age	Less than 30 years	43	36.047	±	5.296	F	2.434	0.067
	30 - 40 years	92	34.609	±	3.348			
	41 - 50 years	28	34.143	±	4.608			
	More than 50 years	10	32.600	±	5.275			
Gender	Female	71	34.662	±	3.862	T	-0.288	0.774
	Male	102	34.853	±	4.567			
Nationality	Non-Saudi	32	34.063	±	4.377	T	-1.042	0.299
	Saudi	141	34.936	±	4.258			
Job title	General Practitioner	78	34.410	±	3.355	F	0.759	0.519
	Resident	53	35.038	±	5.159			
	Specialist	21	35.857	±	5.480			
	Consultant	21	34.381	±	3.598			
Years of experience	Less than 1 year	14	36.786	±	3.906	F	1.664	0.146
	1 - 5 years	74	34.946	±	4.578			
	6 - 10 years	36	34.056	±	3.380			
	11 - 15 years	27	35.519	±	3.577			
	16 - 20 years	10	32.900	±	5.152			
	More than 21 years	12	33.417	±	5.248			

## 6. Discussion

Up to our knowledge, this is the first study that aimed to assess awareness, attitude and practice of Patient Safety Culture among Primary Care Physicians in Primary Health Care Centers and to evaluate the extent to which the primary health care centers support patient safety in Makkah, Kingdom of Saudi Arabia. In this study, the majority agree perception of the participants towards their work unit, we found that most of item a significant relation were P-value=0.001 similar the response rate for the patient safety culture dimensions was this is higher than the reported in many studies which used the same tool including the study of Chen I-C in Taiwan which reported overall average of positive response of 61% [27] as well as study of Akologo et.al in upper region of Ghana who reported overall average of positive responses of 58.1% [28]. In Kuwait, a study conducted by Ghobashi et.al. showed that overall average of positive response rate for patient safety culture was 82% which is slightly higher than ours results [21]. Moreover, in Turkey, Bodur S, showed that the mean average of positive responses was 50% [22] which is slightly similar to another study conducted by Ayisa A in Ethiopia which found that mean average of positive responses was 45.3% [23] and both results were lower than our average. Similarly, other previous studies reported lower overall average of positive responses including 67% in Yemen [29], 62.7% in Sri Lanka [30], 58% in Oman [31], 58% in South India [32]. Supervisor/Management showed the highest response rate of agree these results similar were quite expected as supervisor/management usually have broader points of view and are keen to explore the working environment thus detecting any points of defect. [38]

The present work showed that most of the participants have sometime responses about communication and feedback about errors, a result that is similar to that observed in an earlier study conducted in Saudi Arabia

[39]. In this study the percentage of the positive responses ranged from 22-70%. The percentage of positive responses about communication and feedback reported by participants in the present study is higher than that reported in a study done in Palestine [40] (11), where the percentage of the sometimes responses high. Regarding correlation between work unit, supervisor/management, communication, frequency of event reporting and supervisor/management, communication, frequency of event reporting, PHCC, shows a significant correlation between work unit and supervisor/management, communication, frequency of event reporting, PHCC respectively were ( $r= 0.411, 0.346, 0.191$  and  $0.289$ ) and p-value =0.001,0.001,0.012 and 0.001. Also shows a significant correlation between supervisor/management and communication, PHCC respectively were ( $r= 0.432$  and  $0.350$ ) and p-value =0.001, while no significant correlation between supervisor/management and frequency of event reporting were ( $r=0.129$ ) and p-value =0.091. Regarding communication shows a significant correlation between communication and frequency of event reporting were ( $r= 0.379$ ) and p-value =0.001 but no significant correlation between communication and PHCC were ( $r= 0.104$ ) and p-value =0.172, regarding frequency of event reporting shows no significant correlation between frequency of event reporting and PHCC were ( $r= 0.027$ ) and p-value =0.724 (Table 8). This is better than the reported in the study of Alahmadi HA who reported that 63% thought that patient's safety is never sacrificed to get more work done and 70% claimed that their procedures and systems are good at preventing errors from happening [34]. The study of Ghobashi reported 69% claimed that patient safety is never sacrificed to get more work done and 67% claimed that their procedures and systems are good at preventing errors from happening [21]. Research has shown that effective error response, with the primary goal of identifying systemic errors rather than placing blame on individuals, is essential for building

a positive patient safety culture [27]. It has been recommended that in the event that a medical error eventually occurs, public order should be taken into account and not to put on the person who caused the error. A “flawless” environment in which people can identify and report mistakes without fear is ideal for good patient care [41]. When medical errors are reported, steps can be taken to prevent recurrence.

## 7. Limitations

Possible limitation may be:

Time consuming

Refusal of health care provider to participate in answering the questionnaire

## 8. Budget

The budget for this research has been self-funded by the researcher.

## 9. Conclusion

Based on the obtained results of the current study, it was apparently demonstrated the low awareness, attitude and practice of Patient Safety Culture among Primary Care Physicians in Primary Health Care Centers. The patient safety culture in primary health care facilities in Makah city, Kingdom of Saudi Arabia is average the results better than previous studies. Therefore, it is required to take comprehensive educational and institutional measures aiming at the improvement of awareness, attitude and practice of Patient Safety Culture among Primary Care Physicians in Primary Health Care Centers, it is recommended that safety culture should be initiated, supported, and maintained, among both front-line personnel and senior management, to improve safety with special emphasis on medical and paramedical personnel. The study calls for the need for increasing attention to patient safety and efforts to improve the performance and quality of service.

## References

- [1] Andel, C., Davidow, S. L., Hollander, M., & Moreno, D. A. (2012). The economics of health care quality and medical errors. *Journal of health care finance*, 39(1), 39.
- [2] Bari, A., Khan, R. A., & Rathore, A. W. (2016). Medical errors; causes, consequences, emotional response and resulting behavioral change. *Pakistan journal of medical sciences*, 32(3), 523.
- [3] Harolds, J. A. (2015). Quality and safety in health care, part III: to err is human. *Clinical Nuclear Medicine*, 40(10), 793-795.
- [4] Oates, K., Wilson, I., Hu, W., Walker, B., Nagle, A., & Wiley, J. (2018). Changing medical student attitudes to patient safety: a multicentre study. *BMC Medical Education*, 18(1), 1-7.
- [5] Shojania, K. G., & Dixon-Woods, M. (2017). Estimating deaths due to medical error: the ongoing controversy and why it matters. *BMJ Quality & Safety*, 26(5), 423-428.
- [6] Longtin, Y., Sax, H., Leape, L. L., Sheridan, S. E., Donaldson, L., & Pittet, D. (2010, January). Patient participation: current knowledge and applicability to patient safety. In *Mayo Clinic Proceedings* (Vol. 85, No. 1, pp. 53-62). Elsevier.
- [7] Al Doweri, H. F., Al Raoush, A. T., Alkhatib, A. J., & Batiha, M. A. (2015). PATIENT'S SAFETY CULTURE: PRINCIPLES AND APPLICATIONS. *Eur Sci J*, 11(15), 83-94.
- [8] Ree, E., & Wiig, S. (2020). Linking transformational leadership, patient safety culture and work engagement in home care services. *Nursing Open*, 7(1), 256-264.
- [9] Suliman, M. M. (2015). *Nurses' Perceptions of Patient Safety Culture in Public Hospitals in Jordan*. Case Western Reserve University.
- [10] Gaston, T., Short, N., Ralyea, C., & Casterline, G. (2016). Promoting patient safety. *The Journal of Nursing Administration*, 46(4), 201-207.
- [11] Harteloh, P. P. (2003). The meaning of quality in health care: a conceptual analysis. *Health Care Analysis*, 11(3), 259-267.
- [12] Hughes R. Patient safety and quality: An evidence-based handbook for nurses: Agency for Healthcare Research and Quality Rockville, MD; 2008.
- [13] Al-Dossary, R. N. (2018). The Saudi Arabian 2030 vision and the nursing profession: The way forward. *International nursing review*, 65(4), 484-490.
- [14] Dekker, S. W., & Breakey, H. (2016). 'Just culture': Improving safety by achieving substantive, procedural and restorative justice. *Safety science*, 85, 187-193.
- [15] Kim, L., Lyder, C. H., McNeese-Smith, D., Leach, L. S., & Needleman, J. (2015). Defining attributes of patient safety through a concept analysis. *Journal of advanced nursing*, 71(11), 2490-2503.
- [16] Shojania, K. G., Duncan, B. W., McDonald, K. M., Wachter, R. M., & Markowitz, A. J. (2001). Making health care safer: a critical analysis of patient safety practices. *Evidence report/technology assessment (Summary)*, (43), i-x.
- [17] Shekelle, P. G., Sarkar, U., Shojania, K., Wachter, R. M., McDonald, K., Motala, A., ... & Shanman, R. (2016). Patient safety in ambulatory settings.
- [18] Kulwicki, A., & Ballout, S. (2015). POST TRAUMATIC STRESS DISORDER (PTSD) IN ARAB AMERICAN REFUGEE AND RECENT IMMIGRANT WOMEN. *Journal of Cultural Diversity*, 22(1).
- [19] Alzahrani, A. S. (2015). *Clinicians' attitudes toward patient safety: a sequential explanatory mixed methods study in Saudi armed forces hospitals (Eastern Region)* (Doctoral dissertation, Curtin University).
- [20] LaDonna, K. A., Ginsburg, S., & Watling, C. (2018). "Rising to the level of your incompetence": what physicians' self-assessment of their performance reveals about the imposter syndrome in medicine. *Academic Medicine*, 93(5), 763-768.
- [21] Ghobashi, M. M., El-Ragehy, H. A. G., Ibrahim, H. M., & Al-Doseri, F. A. (2014). Assessment of patient safety culture in primary health care settings in Kuwait. *Epidemiology, Biostatistics and Public Health*, 11(3).
- [22] Bodur, S., & Filiz, E. (2009). A survey on patient safety culture in primary healthcare services in Turkey. *International Journal for Quality in Health Care*, 21(5), 348-355.
- [23] Ayisa, A., Getahun, Y., & Yesuf, N. (2021). Patient Safety Culture and Associated Factors Among Health-Care Providers in the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia. *Drug, Healthcare and Patient Safety*, 13, 141.
- [24] Bulgarelli, A. F., Baumgarten, A., Bulgarelli, P. T., Hilgert, J. B., Souza, K. R., & Marques, F. P. (2017). Primary health care infrastructure regarding Tuberculosis control: a countrywide cross-sectional study. *Primary health care: open access. Los Angeles*.
- [25] Sujun, M. (2015). An organisation without a memory: a qualitative study of hospital staff perceptions on reporting and organisational learning for patient safety. *Reliability engineering & system safety*, 144, 45-52.
- [26] Graban, M., & Toussaint, J. (2018). *Lean hospitals: improving quality, patient safety, and employee engagement*. Productivity Press.
- [27] Chen, I. C., & Li, H. H. (2010). Measuring patient safety culture in Taiwan using the Hospital Survey on Patient Safety Culture (HSOPSC). *BMC health services research*, 10(1), 1-10.
- [28] Akologo, A., Abuosi, A. A., & Anaba, E. A. (2019). A cross-sectional survey on patient safety culture among healthcare providers in the Upper East region of Ghana. *PloS one*, 14(8), e0221208.

- [29] Webair, H. H., Al-Assani, S. S., Al-Haddad, R. H., Al-Shaheb, W. H., Bin Selm, M. A., & Alyamani, A. S. (2015). Assessment of patient safety culture in primary care setting, Al-Mukala, Yemen. *BMC family practice*, 16(1), 1-9.
- [30] Amarapathy, M., Sridharan, S., Perera, R., & Handa, Y. (2013). Factors affecting patient safety culture in a tertiary care hospital in Sri Lanka. *Int J Sci Technol Res*, 2(3), 173-180.
- [31] Al-Mandhari, A., Al-Zakwani, I., Al-Kindi, M., Tawilah, J., Dorvlo, A. S., & Al-Adawi, S. (2014). Patient safety culture assessment in Oman. *Oman medical journal*, 29(4), 264.
- [32] Rajalatchumi, A., Ravikumar, T. S., Muruganandham, K., Thulasingham, M., Selvaraj, K., Reddy, M. M., & Jayaraman, B. (2018). Perception of patient safety culture among health-care providers in a tertiary care hospital, South India. *Journal of natural science, biology, and medicine*, 9(1), 14.
- [33] Sorra JS, Nieva VF. Hospital survey on patient safety culture. (Prepared by Westat, under contract no. 290-96-0004). AHRQ publication no. 04-0041. Rockville (MD): Agency for Healthcare Research and Quality, 2004.
- [34] Alahmadi, H. A. (2010). Assessment of patient safety culture in Saudi Arabian hospitals. *Quality and Safety in Health Care*, 19(5), e17-e17.
- [35] Hamaideh, S. H. (2017). Mental health nurses' perceptions of patient safety culture in psychiatric settings. *International nursing review*, 64(4), 476-485.
- [36] Oliveira, S. L., Francisco, T. J., Santos, H. M., Cesar, A. N., & Lima, P. R. (2019). Risk factors for falls in elderly homes: A look at prevention. *Brazilian Journal of Health Review*, 2(3), 1568-1595.
- [37] Aboul, F. A. M., Ismail, N. A., Ez, E. H. S., & Wassif, G. (2012). Assessment of patient safety culture among health-care providers at a teaching hospital in Cairo, Egypt. *EMHJ East. Mediterr. Health J*, 18, 372-377.
- [38] Vaismoradi, M., Tella, S., A Logan, P., Khakurel, J., & Vizcaya-Moreno, F. (2020). Nurses' adherence to patient safety principles: A systematic review. *International Journal of Environmental Research and Public Health*, 17(6), 2028.
- [39] Alswat, K., Abdalla, R. A. M., Titi, M. A., Bakash, M., Mehmood, F., Zubairi, B., ... & El-Jardali, F. (2017). Improving patient safety culture in Saudi Arabia (2012–2015): trending, improvement and benchmarking. *BMC Health Services Research*, 17(1), 1-14.
- [40] Aboshaiqah, A. E., & Baker, O. G. (2013). Assessment of nurses' perceptions of patient safety culture in a Saudi Arabia hospital. *Journal of nursing care quality*, 28(3), 272-280.
- [41] Laal, F., Fazli, B., Balarak, D., Dalir, F., Mohammadi, M., & Mirzaei, R. (2016). Attitude toward the Patient Safety Culture in healthcare systems. *Journal of Patient Safety & Quality Improvement*, 4(2), 363-368.



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