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Emergency Cases and Primary Healthcare Physicians: Factors and Barriers in Al-Madinah City, 2021

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Abstract

Introduction: Primary health care (PHC) centers are the first meeting line with health services, therefore, there is a significant number of emergency cases presenting to PHC centers with different levels of severity from mild to moderate and sever cases. This study aimed to assess primary health care physicians` competency regarding emergency cases, factors and barriers.

Methods: A cross-sectional study among all primary health care physicians in Al-Madinah city was performed during 2021. Two tools were adopted for data collection; a self-administered questionnaire to assess physicians` competency in dealing with emergency cases and a structured observation sheet used to evaluate the availability of equipment, drugs, and other supporting facilities required to deal with emergency cases in PHC centers.

Results: The study included 200 primary healthcare physicians, out of targeted 219 with a response rate of 91.3%. Their age ranged between 26 and 63 years with an arithmetic mean of 36.05 years and standard deviation of (±) 8.16 years. More than one third (39%) of the physicians had poor level of competence in dealing with emergency cases. Saudi, more qualified physicians, those who attended BLS this year and those who attended ATLS courses since more than two years were more competent in dealing with emergency cases than their peers. Overall, 40% of them had insufficient level of competence and comfort in performing different emergency skills. Male physicians were more likely than females to have sufficient level of competency and comfort in performing emergency skills, p=0.021. The most frequently reported barriers facing primary healthcare physicians in dealing with emergency cases were availability of ER facilities (72%) and insufficient knowledge and practice related to emergency cases (61.5%). The commonest reported preferred methods for training in emergency medicine were practical training in PHC centers by a qualified staff (81%), hospital rotation training (52%) and lectures (40%).

Conclusions: A considerable proportion of primary healthcare physicians in Al Madinah were not competent in dealing with emergency cases, and performing emergency skills. Most of Emergency medications and services at PHC level were available; however, shortages were observed in some items.

Keywords: Emergency, Primary Healthcare, Physicians, Competency

Introduction

Primary health care (PHC) was defined by the World Health Organization (WHO) as a whole-of-society approach to health and well-being centered on the needs and preferences of individuals, families and communities [1], It provides a comprehensive care for all patients ranging from promotion and prevention to treatment, rehabilitation and palliative care [1].

Medical emergency means any health condition, illness, injury, physical or mental inability which requires immediate attention by medical professionals, if wasn't managed in a timely manner could lead to serious impairment to bodily functions, organs, or parts and could place the physical or mental health of the patient in a serious risk [2]. Since PHC centers are an essential component of human and community development [1], there is a continuous and progressive need for its improvement.

Being the first meeting line with health services, there is a significant number of emergency cases presenting to PHC centers with different levels of severity from mild to moderate and sever cases [3] requiring a decent degree of care, including a well-qualified PHC centers with all the required facilities and a well competent physicians in managing the emergent cases, all these puts the PHC physicians under challenge. Some studies suggest that one-third to two-thirds of patients attend to the emergency departments with problems that could be managed at PHC centers [4].

A study was done in Jeddah to estimate the prevalence of emergency cases reporting to PHC centers and to explore the barriers facing PHC physicians when dealing with emergency cases. It showed a prevalence of 5.2% for the emergency cases attending PHC centers in Jeddah in 2013.The majority of physicians 97.1% had attended basic life support (BLS) courses, but 83.5% had not attended ATLS courses, with 60.7% never attending advanced cardiac life support (ACLS) courses. Physicians in the age group 36-45 years, non-Saudi, those who had SBFM, those who reported experience in working in emergency departments and physicians who reported more working years in PHC centers >5 years had a significant higher score of perceived level of competence in performing emergency skill scale than others [9].

About 87.3% of physicians had a good diagnostic knowledge score while only 47.6% had a good management score. Nonetheless, 63.5% of physicians had a neutral attitude toward emergency medical services and practical training in hospital's emergency department was chosen by of 80% of physicians as a preferred method for more training in emergency medicine [6].

In Damam region, the total number of physicians "actually" present ranged from 2 to 8 per center and nurses actually present were 4–11 which are less than the officially assigned number, 15.4% of centers had a place reserved for emergency medical services in each male and female section, 30.8% of PHC centers had a male ER located on the ground floor, near the entrance [10]. However, in Abha district, there was no devoted place for emergency services in 6.7% of PHC centers, Separate drug cabinets for emergency services were found in 76.7% of the centres.16.7% had no devoted registry for emergency cases, there was deficiency in the supporting facilities, The average duration spent in PHC centers in Saudi Arabia was for physicians was 8.7 years., only 29.8% of them worked in hospitals for a mean duration of 2.7 years [11].

The majority of Egyptian physicians 94.1% and nurses 85.0% had practiced emergency care in the primary health care. More physicians as compared to nurses reported greatest need for continuing medical education in the management of pediatric emergencies [12]. Generally, the doctors preferred means of providing for their medical educational needs are clinical rounds, consultations with specialists and regular lectures [5].

Emergency equipment was easily accessible in 90.5% of them, while in the remaining centers, the equipment and drugs were stored in locked cabinets [13]. In a developed country such as Australia, 57% general physicians (GPs) reported managing a cumulative total of 5640 emergencies over the preceding 12 months. Non-metropolitan GPs saw about 30% more emergencies than their metropolitan counterparts. 77% GPs stocked 15 or more of the 16 emergency doctor's bag drugs, but 67% had all of the

basic emergency equipment items considered essential [14].

In means to improve the quality of PHC services provided including emergency services studies showed that training in emergency medicine was on the top of the list of the needed aspects in continued medical education [5, 6]. An evaluation of PHC physician's competency, factors and barriers affecting them regarding dealing with emergency cases has not been previously performed in Al-Madinah city, KSA. As communities are continuing in growing and aging there is an increased demand for PHC services [7], including acute and emergency cases management which represents a good number of cases so, the better care provided by physicians the more control of emergency cases will be achieved, and this will also play a role in decreasing the emergency cases which presents to the emergency room in main hospitals while they can be managed in primary health care centers. This study aimed to explore primary health care physicians' competency regarding emergency cases, factors and barriers in Al-Madinah city 2021.

Methods

This is a cross-sectional study among primary health care physicians in Al-Madinah city was performed. There are around 40 PHC centers in Al-Madinah city; they are divided into 5 sectors according to the ministry of health so, each sector has its own secondary care hospital and PHC centers. We included all primary health care physicians working in primary health care centers in Al-Madinah city 2021 constituted the target population for the study. The estimated number of the sample size was 219.

The study tool consists of 2 sources for data collection: a self-administered questionnaire and the researcher was available for any questions, in addition to a structured observation sheet used to evaluate the availability of equipment, drugs, and other supporting facilities required to deal with emergency cases. The questionnaire is ready used by a previously published study in 2016 about [9] and the permission was taken from the author to use the study tool.

Regarding physicians` competency in dealing with emergency cases, a scoring system was created in the way the higher the score the more competent the physician. Total score and its percentage were computed and physicians scored less than 60% were considered having "poor competence" whereas those scored 60% or more were considered having "good competence". Further modifications were done on some questions, more questions were added and the questionnaire was presented to 2 Emergency Room (ER) consultants for validity checking.

The questionnaire is written in English language and it is divided into 3parts:

-The 1st part contains questions to assess the physicians` perceived competence and comfort in dealing with emergency cases.

-The 2ndpart contains questions to assess the barriers facing physicians in dealing with emergency cases and their preferred training method in emergency medicine. The 3rdpart contains the sociodemographic data of the participants. The availability sheet was filled by the researcher and it's divided into 3 parts: the 1st part including a list of equipment needed in emergency care, the 2nd part including a list of medications and intravenous fluids needed in emergency care, while the 3rd part including supporting facilities in emergency care

A ready used questionnaire was distributed among primary health care physicians during work days and they were interviewed by the researcher to fill it. Ten physicians were asked to fill the questionnaire to test its validity; little modifications were done, in socio-demographic data according to the pilot study and pilot records were excluded from the study.

The researcher distributed the questionnaire during working hours, was available to clarify any issues, and then the questionnaire was recollected on the same day. Data were entered into a personal computer and it was analyzed using (SPSS), version 26. All variables were coded before entry and checked before analysis. Continuous data were tested for normal distribution and normally distributed variables were presented as the mean and standard deviation while abnormally distributed variables were presented as median and interquartile range (IQR). Categorical data were presented as percentage and frequency.

Suitable statistical tests were applied according to the type of data with the help of a statistician. Chi-square was used for comparing 2 or more qualitative variables, Student's t-test for comparing two independent quantitative normally distributed variables and Mann-Whitney test for comparing two independent quantitative abnormally distributed variables. A p-value of less than 0.05 was considered statistically significant.

Approval was obtained from the ethics committee before data collection. A written permission was obtained from the concerned authority in the primary care centers. The purpose of the study was explained to the participants and they were asked to provide a "verbal" informed consent before filling the questionnaire. All information was kept confidential and anonymous.

Results

The study included 200 primary healthcare physicians, out of targeted 219 with a response rate of 91.3%. Table 1 presents their socio-demographic characteristics. Their age ranged between 26 and 63 years with an arithmetic mean of 36.05 years and standard deviation of (±) 8.16 years. Slightly more than half of them (52.5%) were males and most of the physicians (73.5%) were Saudi nationals.

Most of the PHC physicians were either MBBS (42%) or Saudi Board of Family Medicine (SBFM) (41%) holders. Almost half of them (84.5%) have attended Basic Life Support (BLS) course since less than one year whereas 41.5% have attended BLS courses since a period ranged between one and two years. Slightly less than half (47% (22%) of physicians have attended ACLS course since more than two year and 22% did not attend such courses. More than half (57%) of them did not attend ATLS course while only 7% attended ATLS courses since less than one year. Less than half of them (47.5%) had any work experience in emergency department. Average number of patients seen per day ranged between 4 and 80 with a median of 30 patients. Experience of working in primary care ranged between 3 months and 30 years (7.2±6.0 years) while experience since graduation ranged between 4 months and 36 years (10.2±8.4 years).

Table 1: Socio-demographic characteristics of the participants (n=200)

Characteristic	*Frequency*	*Percentage*
Gender		
Male	105	52.5
Female	95	47.5
Nationality		
Saudi	147	73.5
Non-Saudi	53	26.5
Highest qualification degree		
MBBS	84	42.0
ABFM	15	7.5
SBFM	82	41.0
FM/Internal medicine	16	8.0
Diploma	3	1.5
Others		
Duration since attending Basic Life Support course		
<one year	99	49.5
1-2 years	83	41.5
>2 years	18	9.0
Duration since attending Advanced cardiac Life Support course		
***<one** year*	28	14.0
1-2 years	34	17.0
>2 years	94	47.0
Didn't attended	44	22.0
Duration since attending Advanced Trauma Life Support course		
***<one** year*	14	7.0
1-2 years	24	12.0
>2 years	48	24.0
Didn't attended	114	57.0
Did you have any work experience in emergency department?		
Yes	95	47.5
No	105	52.5

ABFM: Arab Board of Family Medicine
SBFM: Saudi Board of Family Medicine

A considerable proportion of the PHC physicians were extremely competent in dealing with cases of

severe acute asthma (41%) while 47% were slightly competent in dealing with cases of acute

Table 2: Age, level of training, previous experience and emergency courses

Factor	Distribution
Age (years)	
Range	26-63
Mean (SD)	36.05±8.16
Average number of patients seen/day	
Range	4-80
Median	30
Years of work in primary health care	
Range	3 months-30 years
IQR	3-10
Median	5
Years of total experience since graduation	
Range	4 months-36 years
IQR	4.25-16
Median	7

gastrointestinal bleeding and 45% were moderately competent in dealing with cases of severe dehydration and 41% in dealing with cases burns or convulsions. More than one-fourth (26%) were not competent in dealing with cases of cardiac arrest. Table 3. Overall, more than one third (39%) of the physicians had poor level of competence in dealing with emergency cases as illustrated in Figure 1. Almost two-thirds (66%) of Saudi physicians compared to 47.2% of none-Saudi physicians had good level of competency in dealing with emergency cases, p<0.001. Participants' age and gender were not significantly associated with level of competency in dealing with emergency cases. Table 4

Table 5 demonstrated that the highest level of good competency in dealing with emergency cases was observed among Saudi Board of Family Medicine (SBFM) (75.6%) and Arab Board of Family Medicine (ABFM) (73.3%) holders compared to 47.6% of MBBS holders, p=0.003. Physicians who attended BLS this year were more likely to have good level of competency in dealing with emergency cases than those attended it since more than two years (65.7% vs. 22.2%), p=0.002. Majority of physicians who attended ATLS courses since more than two years (83.3%) compared to 41.7% of those who attended such courses in the last 1-2 years expressed good level of competency in dealing with emergency cases, p=0.001. Other studied factors were not significantly associated with level of competency in dealing with emergency cases.

As shown in table 6, more than half of the PHC physicians (54.5%) have seen 5 cases or more with severe acute asthma and about one-fourth of them have seen 5 cases or more with renal colic (23%), hypoglycemia (22.5%) and burns (20.5%). On the other hand, most of them have not seen any case in the last 12 months of cardiac arrest (84%), acute gastrointestinal bleeding (74%), anaphylaxis (68%), acute vaginal bleeding (67%) and angina pectoris (56%).

From Table 7, it is seen that more than one-third of the primary healthcare physicians will attempt nebulization & oxygen therapy (41.5%), simple suture (37%), cardiac compression (37%), bag & mask resuscitation (36%), and using IV fluid &medications (35.5%) in all cases. On the other hand, 50% of them did not know how to start intubation whereas 30%, 29%, 28% and 27% of them did not know how to start inserting IV cannula, defibrillation, nasogastric tube insertion and urinary catheter insertion, respectively. Overall, 40% of the primary healthcare physicians had insufficient level of competence and comfort in performing different emergency skills as shown in Figure 2.

About two-thirds (67.6%) of male physicians compared to51.6% of female physicians had sufficient level of competency and comfort in performing emergency skills, p=0.021. Participants' age and nationality were not significantly associated with level of competency and comfort in performing emergency

skill as in table 8. The highest level of sufficient competency and comfort in performing emergency cases was observed among all physicians with other qualification compared to 33.3% of ABFM holders, p=0.015. Other studied factors were not significantly associated with level of competency in dealing with emergency cases as demonstrated in table 9. From table 10, it is demonstrated that the most frequent available equipment needed for emergency cases at investigated PHCCs were blades (97.2%), dressing table, suture materials, suction apparatus, intravenous (IV) stand, cannulas, oxygen masks and oxygen cylinder with standard fitting (94.4%). On the other hand, splints, and cervical collars were available in only 72.2% and 50% of PHCCs, respectively.

As regards medications and intravenous fluids, normal saline and Ringer lactate were available in 100% and 97.2% of PHCCs, respectively while activated charcoal powder and Rabies vaccine were available in only 36.1%, and 47.2% of PHC centers, respectively

Concerning supporting facilities, x-ray was available in only less than one-third of PHCCs (30.6%) while laboratory and ECG machine were available in 91.7% and 69.4% of PHCCs, respectively.

The most frequently reported barriers facing primary healthcare physicians in dealing with emergency cases were availability of ER facilities (72%) and insufficient knowledge and practice related to emergency cases (61.5%). Regarding preferred methods for training in emergency medicine among primary healthcare physicians, the commonest reported were practical training in PHC centers by a qualified staff (81%), hospital rotation training (52%) and lectures (40%).

Discussion

As primary healthcare physicians may face some emergency situations at their workplace and as often primary healthcare centers are not well equipped to deal with such medical emergencies, previous studies indicated that PHC centers should have a written emergency protocol that can assist them to effectively deal with emergency cases [15, 16]. In this context, the current study was conducted mainly to assess primary health care physicians` competency regarding emergency cases, factors and barriers.

In agreement with other studies conducted in Saudi Arabia (9) and Egypt [12], the present study revealed a need for continuing medical education training programs to primary health care physicians in emergency medicine. In our cohort of primary health care physicians, 22% did not attend ACLS courses and more than half (57%) of them did not attend ATLS course while only 7% attended ATLS courses since less than one year. More dramatic situation has been observed in another Saudi study carried out in Jeddah (Saudi Arabia) where more than 60% of PHC physicians never attended ACLS courses whereas more than 83% never attended ATLS courses [9]. Moreover, even the attendance of ACLS, ATLS courses, in addition to BLS course was not proved to improve their perceived level of competence in performing emergency skills and only attendance of ATLS and BLS courses was associated with better competency in dealing with emergency cases, which was not the case with ACLS. This indicates that the quality and/or contents of such courses need to be revised; particularly the part dealing with practicing different emergency skills. In addition, so long as attending continuing medical education is not obligatory for promotion or seniority, there are no incentives for physicians to attend and participate actively in such activities. Furthermore, clinical experience in emergency departments as well as years of experience in working after graduation or in PHCCs proved to be not associated with improving perceived level of competence in dealing with or performing emergency skills among primary health care physicians in this study.

In the present study, 40% of the primary healthcare physicians had insufficient level of competence and comfort in performing different emergency skills. Better result has been observed in Abha city (Saudi Arabia), as only 20% of physicians felt that they were not competent to deal with emergency cases at PHC level [11]. However quite similar rates were observed in other Saudi studies conducted in Jeddah [9] and Dammam [6]. Competence and comfort of primary healthcare physicians in performing different emergency skills is essential in proving emergency care of good quality.

In the present study, finding that male physicians were more competent and comfortable than female physicians in performing emergency skills while Saudis had higher rate of perceived level of competence in dealing with emergency cases compared to non-Saudis; most probably attributed to physiologic nature as males can withstand emergency situations more than females and consequently tended to practice emergency skills at higher rate than females and Saudis are mostly younger than none-Saudis and also can withstand emergency cases and possess more tendency to deal with emergency cases than older non-Saudis. Therefore, further training in clinical emergency medicine is warranted especially for non-Saudi and female physicians.

Review of literature revealed that emergency cases can be seen in primary health care settings [17]. Furthermore, a Saudi study done in Jeddah showed a prevalence of 5.2% for the emergency cases attending PHC centers [9]. In accordance with that, the current study showed that more than half of the PHC physicians have seen 5 cases or more in the last 12 months, with severe acute asthma and about one-fourth of them have seen 5 cases or more with renal colic (23%), hypoglycemia (22.5%) and burns (20.5%). On the other hand, most of them have not seen any case in the last 12 months of cardiac arrest (84%), acute gastrointestinal bleeding (74%), anaphylaxis (68%), acute vaginal bleeding (67%) and angina pectoris (56%). Also, in other studies carried out in Jeddah (Saudi Arabia) [9] Norway [18], Netherlands [19] and Spain [20], emergency cases represented a considerable proportion of cases seen at primary healthcare centers. In Australia, 57% general physicians (GPs) reported managing a cumulative total of 5640 emergencies over the preceding 12 months and the most common emergencies were acute asthma, psychiatric emergencies, convulsions, hypoglycaemia, anaphylaxis, impaired consciousness, shock, poisoning and overdose [14]. Therefore, PHC centers should be well equipped and properly prepared to deal with emergency cases.

The most frequently reported barriers facing primary healthcare physicians in dealing with emergency cases in the current study were availability of ER facilities and insufficient knowledge and practice related to emergency cases. In Spain [20], the provision of equipments was perceived as the most important barrier faced by physicians in dealing with emergency cases. However, in Norway, the provision of equipments in primary healthcare centers in both rural and urban areas was considered by physicians as satisfactory [21]. Overcoming those barriers will lead to improvement in the care delivered to emergency cases at primary healthcare settings.

In this study, the most preferred methods for training in emergency medicine, according to the primary healthcare physicians were practical training in PHC centers by a qualified staff (81%), hospital rotation training (52%) and lectures (40%). Another Saudi study done in Asir region showed that emergency skills were on the top of the list of the needed aspects in clinical practice by primary healthcare physicians and the most preferred means of providing their medical educational needs were clinical rounds, consultations with specialists and regular lectures [5]. In Dammam, Saudi Arabia, practical training in hospital's emergency department was chosen by of 80% of physicians as a preferred method for more training in emergency medicine [6]. In Alexandria (Egypt), 58.8% of PHC physicians endorsed hospital training while 48.4% endorsed practical training in PHC settings as preferred methods for emergency education [12]. In Abha (Saudi Arabia), the most preferred training method was practical training as mentioned by 91.5% of physicians. [11]. So, there is consensus on the role of practical training as a preferred method.

In the study and in agreement with several studies [9, 20, 22, 23], most of primary healthcare centers are lacking x-ray while 38.9% and 30.6% lacked equipped ambulance cars, and ECG machine making these centers not well prepared for dealing with emergency situations.

In the present study, relative shortage of splints, and cervical collars was observed at PHC centers. Furthermore, shortage of some medications needed in emergency care such as activated charcoal powder and Rabies vaccine were observed. In Damam (Saudi Arabia), none of the PHC centers had some emergency drugs such as metergotamine, calcium

chloride, and naloxone, none of the centers had cervical collars, mouth gags, or a tracheostomy set, 7.6% of centers had a functioning fully equipped ambulance and 38.46% of centers were equipped with electrocardiogram and X-ray machines [10]. In Abha city (Saudi Arabia), there was no devoted place for emergency services in 6.7% of PHC centers, separate drug cabinets for emergency services were found in 76.7% of the centres.16.7% had no devoted registry for emergency cases, and there was deficiency in the supporting facilities [11]. Similarly, in Turkey only 9.5% of PHC centers had a complete emergency kit with an airways bag, mask, intravenous parenteral solutions, emergency drugs, and other diagnostic equipment and emergency equipment was easily accessible in 90.5% of them, while in the remaining centers, the equipment and drugs were stored in locked cabinets [13]. In Alexandria, Egypt, there was lacking of some essential equipment and drugs [12].

This study has some important limitations. The questionnaire was full of detailed questions that could effect on the response rate of the physicians and quality of data. However, regular visits by the researcher to motivate physicians helped in obtaining a considerable response rate. The study was based entirely on self-administered questionnaire, therefore is subjected to bias as it is possible that certain practices may have been over-reported. Moreover, the study investigated the frequency that each approach was utilized, but this does not take into account the quality of practice. On the other hand, the study has also important strengths as it includes both physician`s survey as well as observation of the primary health care centers for readiness to cope with emergencies and the high response rate among primary health care physicians and all available PHC centers as 4 were closed at the time of study conduction.

Conclusions

A considerable proportion of primary healthcare physicians in Al Madinah were not competent in dealing with emergency cases, particularly none Saudi and less qualified physicians as well as they were not competent in performing emergency skills particularly females. Their level of training and emergency courses was suboptimal particularly regarding ATLS courses. The most frequently reported barriers facing primary healthcare physicians in dealing with emergency cases in the current study were availability of ER facilities and insufficient knowledge and practice related to emergency cases.

The most preferred methods for training in emergency medicine, according to the primary healthcare physicians were practical training in PHC centers by a qualified staff, hospital rotation training and lectures. Regarding emergency services at PHC level in Al Madinah, most of items were available; however, shortages were observed in some others.

Conflict of interests

The authors declared no conflict of interests.

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Table 3: Physicians` perceived competence and comfort when dealing with emergency cases

Cases	Not competent N (%)	Slightly competent N (%)	Moderately competent N (%)	Extremely competent N (%)
Severe acute asthma	18 (9.0)	28 (14.0)	72 (36.0)	82 (41.0)
Myocardial infarction	30 (15.0)	68 (34.0)	58 (29.0)	44 (22.0)
Angina pectoris	36 (18.0)	62 (31.0)	56 (28.0)	46 (23.0)
Cardiac arrest	52 (26.0)	64 (32.0)	62 (31.0)	22 (11.0)
Severe dehydration	14 (7.0)	56 (28.0)	90 (45.0)	40 (20.0)
Renal colic	12 (6.0)	46 (23.0)	78 (39.0)	64 (32.0)
Acute gastrointestinal bleeding	44 (22.0)	94 (47.0)	48 (24.0)	14 (7.0)
Hypoglycaemia	10 (5.0)	46 (23.0)	62 (31.0)	82 (41.0)
Diabetic Ketoacidosis	22 (11.0)	58 (29.0)	78 (39.0)	42 (21.0)
Convulsions	18 (9.0)	70 (35.0)	82 (41.0)	30 (15.0)
Anaphylaxis	28 (14.0)	62 (31.0)	68 (34.0)	42 (21.0)
Acute vaginal bleeding	44 (22.0)	80 (4.0)	64 (32.0)	12 (6.0)
Burns	24 (12.0)	58 (29.0_	82 (41.0)	36 (18.0)

Table 4: Socio-demographic factors associated with competency of primary healthcare physicians in dealing with emergency cases

	Competency in dealing with emergency cases		p-value
	Poor N=78	**Good N=122**	
Age (years)			
Mean±SD	37.3±9.5	35.2±7.1	0.075*
Gender			
Male (n=105)	40 (38.1)	65 (61.9)	
Female (n=95)	38 (40.0)	57 (60.0)	0.783**
Nationality			
Saudi (n=147)	50 (34.0)	97 (66.0)	
Non-Saudi (n=53)	28 (52.8)	25 (47.2)	0.016**

***Student t-test**
****Chi-square test**

Table 5: Impact of training, previous experience and emergency courses on competency of primary healthcare physicians in dealing with emergency cases

	Competency in dealing with emergency cases		p-value
	Poor N=78	**Good N=122**	
Highest qualification degree			
MBBS (n=84)	44 (52.4)	40 (47.6)	
ABFM (n=15)	4 (26.7)	11 (73.3)	
SBFM (n=82)	20 (24.4)	62 (75.6)	
FM/Internal medicine Diploma (n=16)	8 (50.0)	8 (50.0)	
Others (n=3)	2 (66.7)	1 (33.3)	0.003*
Duration since attending Basic Life Support course			
<one year (n=99)	34 (34.3)	65 (65.7)	
1-2 years (n=83)	30 (36.1)	53 (63.9)	
>2 years (n=18)	14 (77.8)	4 (22.2)	0.002*
Duration since attending Advanced cardiac Life Support course			
<one year (n=28)	14 (50.0)	14 (50.0)	
1-2 years (n=34)	14 (41.2)	20 (58.8)	
>2 years (n=94)	30 (31.9)	64 (68.1)	
Didn't attended (n=44)	20 (45.5)	24 (54.5)	0.236*
Duration since attending Advanced Trauma Life Support course			
<one year (n=14)	8 (57.1)	6 (42.9)	
1-2 years (n=24)	14 (58.3)	10 (41.7)	
>2 years (n=48)	8 (16.7)	40 (83.3)	
Didn't attended (n=114)	48 (42.1)	66 (57.9)	0.001*
Did you have any work experience in emergency department?			
Yes (n=105)	44 (41.9)	61 (58.1)	
No (n=95	34 (35.8)	61 (64.2)	0.376*
Average number of patients seen/day			
IQR	9-45	20-40	
Median	25	30	0.142**
Years of work in primary health care			
IQR	3-10	3.75-10	
Median	4	6	0.271**
Years of total experience since graduation			
IQR	4-18	5-13.25	
Median	8	7	0.375**

Table 6: Frequency of emergency cases seen by primary healthcare physicians in the last 12 months, AlMadinah.

Emergency cases	None	1-4	≥5
Severe acute asthma	36 (18.0)	55 (27.5)	109 (54.5)
Myocardial infarction	102 (51.0)	91 (45.5)	7 (3.5)
Angina pectoris	112 (56.0)	80 (40.0)	8 (4.0)
Cardiac arrest	168 (84.0)	30 (15.0)	2 (1.0)
Severe dehydration	106 (53.0)	83 (41.5)	11 (5.5)
Renal colic	38 (19.0)	116 (58.0)	46 (23.0)
Acute gastrointestinal bleeding	148 (74.0)	48 (24.0)	4 (2.0)
Hypoglycaemia	60 (30.0)	95 (47.5)	45 (22.5)
Diabetic Ketoacidosis	82 (41.0)	84 (42.0)	34 (17.0)
Convulsions	102 (51.0)	87 (43.5)	11 (5.5)
Anaphylaxis	136 (68.0)	54 (27.0)	10 (5.0)
Acute vaginal bleeding	134 (67.0)	57 (28.5)	9 (4.5)
Burns	58 (29.0)	101 (50.5)	41 (20.5)

Table 7: Perceived level of competence and comfort in performing different emergency skills among the participants

Emergency cases	I do not know where to start N (%)	I will do only if no one else is available N (%)	I will attempt in most cases N (%)	I will attempt in all cases N (%)
Cardiac compression	36 (18.0)	43 (21.5)	47 (23.5)	74 (37.0)
Mouth to mouth resuscitation	34 (17.0)	60 (30.0)	50 (25.0)	56 (28.0)
Bag & mask resuscitation	24 (12.0)	38 (19.0)	66 (33.0)	72 (36.0)
Inserting IV cannula	60 (30.0)	44 (22.0)	58 (29.0)	38 (19.0)
Intubation	100 (50.0)	66 (33.0)	22 (11.0)	12 (6.0)
Defibrillation	58 (29.0)	74 (37.0)	47 (23.5)	21 (10.5)
Reading ECG	12 (6.0)	66 (33.0)	88 (44.0)	34 (17.0)
Nebulization & oxygen therapy	22 (11.0)	46 (23.0)	49 (24.5)	83 (41.5)
Simple suture	30 (15.0)	40 (20.0)	56 (28.0)	75 (37.0)
Nasogastric tube insertion	56 (28.0)	44 (22.0)	64 (32.0)	36 (18.0)
Urinary catheter insertion	54 (27.0)	38 (19.0)	49 (24.5)	59 (29.5)
Using IV fluid &medications	26 (13.0)	48 (24.0)	55 (27.5)	71 (35.5)

Table 8: Socio-demographic factors associated with competency and comfort of primary healthcare physicians in Al-Madinah in performing different emergency skills

Factors	Competency in performing emergency skills		p-value
	Insufficient N=80	Sufficient N=120	
Age (years)			
Mean±SD	36.4±8.3	35.8±8.1	0.622*
Gender			
Male (n=105)	34 (32.4)	71 (67.6)	
Female (n=95)	46 (48.4)	49 (51.6)	0.021**
Nationality			
Saudi (n=147)	54 (36.7)	93 (63.3)	
Non-Saudi (n=53)	26 (49.1)	27 (50.9)	0.116**

***Student t-test**
****Chi-square test**

Table 9: Impact of training, previous experience and emergency courses on competency and comfort of primary healthcare physicians in performing emergency skills

Factors	Competency in performing emergency skills		p-value
	Insufficient N=80	Sufficient N=120	
Highest qualification degree			
MBBS (n=84)	40 (47.6)	44 (52.4)	
ABFM (n=15)	10 (66.7)	5 (33.3)	
SBFM (n=82)	26 (31.7)	56 (68.3)	
FM/Internal medicine Diploma (n=16)	4 (25.0)	12 (75.0)	
Others (n=3)	0 (0.0)	3 (100)	0.015*
Duration since attending Basic Life Support course			
<one year (n=99)	32 (32.3)	67 (67.7)	
1-2 years (n=83)	38 (45.8)	45 (54.2)	
>2 years (n=18)	10 (55.6)	8 (44.4)	0.067*
Duration since attending Advanced cardiac Life Support course			
<one year (n=28)	8 (28.6)	20 (71.4)	
1-2 years (n=34)	14 (41.2)	20 (58.8)	
>2 years (n=94)	36 (38.3)	58 (61.7)	
Didn't attended (n=44)	22 (50.0)	22 (50.0)	0.322*
Duration since attending Advanced Trauma Life Support course			
<one year (n=14)	6 (42.9)	8 (57.1)	
1-2 years (n=24)	12 (50.0)	12 (50.0)	
>2 years (n=48)	16 (33.3)	32 (66.7)	
Didn't attended (n=114)	46 (40.4)	68 (59.6)	0.584*
Did you have any work experience in emergency department?			
Yes (n=105)	47 (44.8)	58 (55.2)	
No (n=95	33 (34.7)	62 (65.3)	0.148*
Average number of patients seen/day			
IQR	7-45	20-40	
Median	25	30	0.107**
Years of work in primary health care			
IQR	2.25-10	4-10	
Median	5	5.5	0.700**
Years of total experience since graduation			
IQR	4-15.75	5-16	
Median	7	7.5	0.920**

Table 10: Availability of items needed for emergency care at primary health care centers in Al-Madinah

Items	Availability of the item at PHCCs (n=36)	
	Number	Percentage
1.Equipments needed in emergency care		
Side lamp with stand	32	88.9
Dressing trays	32	88.9
Dressing table	34	94.4
Urinary catheter	31	86.1
Forceps	33	91.7
Scissors	33	91.7
Suture materials	34	94.4
Needle holder	32	88.9
Suction apparatus	34	94.4
Blades	35	97.2
IV stand	34	94.4
Splints	26	72.2
Nasogastric tubes	25	69.4
Cannulas	34	94.4
Cervical collars	18	50.0
Oxygen mask	34	94.4
Airways equipment	31	86.1
Oxygen cylinder with standard fitting	34	94.4
Ambubag	34	94.4
Nebulizer	33	91.7
2. Medications and intravenous fluid needed in emergency care		
Calcium chloride injection	29	
Calcium gluconate injection injections	26	72.2
Antihistaminic injection injection	26	72.2
Hydrocortisone injection	32	88.9
Dextrose5%,10%,50%	32	88.9
Normal saline	36	100
Ringer lactate	35	97.2
Activated charcoal powder	13	36.1
Metoclopramide	31	86.1
Adrenaline injection	31	86.1
Ventolinfor neublization	33	91.7
Tetanustoxoid	30	83.3
Rabies vaccine	17	47.2
Diazepam	20	55.6
Furosemide	32	88.9
Hyoscine	33	91.7

3.Supporting facilities in emergency care		
X-ray	11	30.6
Laboratory	33	91.7
Equipped ambulancecars	22	61.1
ECG machine	25	69.4
US	18	50.0