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Research Article

BARRIERS FACING PRIMARY HEALTH CARE PHYSICIANS WHILE DEALING WITH EMERGENCY CASES IN TAIF CITY. SAUDI ARABIA, 2021

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Abstract:

Introduction: PHC physicians, as a first-line care providers, will experience all types of medical emergencies, ranging from minor symptoms to serious life-threatening events. In Taif city, data regarding emergency services at PHC level is scarce. In this study, we tried estimate the prevalence of emergency cases encountered at PHC centers in Taif city and to explore the factors and barriers that are facing PHC physicians when dealing with emergencies.

Methodology: This descriptive cross-sectional study included 150 physicians working in PHC centers of the Ministry of Health in Taif City, Saudi Arabia. This study utilized a self-administered questionnaire for data collection. The questionnaire contained information about level of training, previous emergency courses and experiences, and perceived competence when dealing with emergency cases. An observation sheet was used to evaluate the availability of equipment, drugs and other supporting facilities in PHC centers. Kruskal Wallis test and Mann-Whitney U test were used to assess relationship between variables.

Results: 150 PHC physicians were included in the study. 52% were males and 48% were females. Their age ranged between 24 and 59 years, with a mean age of 33.1 ± 8.0 years. The majority of the physicians [95.3%] had attended a BLS course, while half of them [50.7%] had attended ACLS course and only few physicians [18%] had attended ATLS course. Throughout the period from August 2020 to July 2021, the prevalence of emergency cases reported to PHC centers in Taif city was 6.1%. The perceived competence in dealing with emergency department was better for physicians with longer work experience in PHC centers, have attended ACLS course, had work experience in emergency department, and those in the higher age groups [$p < 0.05$].

Conclusion: The prevalence of emergency cases encountered in PHC centers in Taif city was 6.1% and is in concordance with previous national studies. However, this adds up to a total of 70,600 cases per year. The PHC centers in Taif city are functioning well in terms of availability of medications, equipment and infrastructures. The majority of the PHC physicians in Taif city have received BLS training course [95.3%], however, a large percentage of them did not receive ATLS or ACLS course.

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INTRODUCTION:

In 1978, the World Health Organization identified primary health care [PHC] as basic health care based on practical, scientifically sound, and socially appropriate strategies and technologies that are widely available to all individuals and families in the society [1]. As populations continue to expand and age, in response to life-threatening emergencies, acute exacerbation of chronic diseases, and various normal health issues, growing demand for acute medical services is needed, which nevertheless needs rapid action [2].

It is internationally known that the purpose of an efficient emergency medical system [EMS] is designed to provide universal emergency care to those in need of rapid evaluation, prompt provision of the appropriate steps, and fast transportation to the nearest appropriate medical institution by the best way possible to increase survival, regulate morbidity, and stop disabilities [3–5]. To ensure the presence of solid, comprehensive health systems, emergency medical system [EMS] must be combined with primary care and public health initiatives [4,6–8]. PHC doctors can experience all types of medical emergencies as the first in-line care providers, ranging from minor symptoms to severe life-threatening events [4,6–9]. This wide variety in emergency cases presents a challenge for doctors to be adequately updated and knowledgeable in emergency medicine [10].

Unfortunately, insightful literature identifying and evaluating the effect of factors such as the knowledge, attitude, and practice [KAP] related to emergency treatment of PHC physicians is lacking both nationally and internationally [11]. Some may feel that during the secondary care component of their hospital training, doctors gain expertise in treating acute emergencies, but there are many reasons why specialized training is necessary for the primary care environment [12]. With the extension of general doctor training for 12 months at the cost of secondary care training, doctors were less likely to encounter acute emergencies because of the lower incidence of primary care relative to secondary care [10,13,14].

PHC physicians will experience all types of medical emergencies as the first in-line care providers, ranging from minor symptoms to serious life-threatening events [2–5]. This large variety of emergency cases presents a challenge for doctors to be properly updated and skilled in emergency medicine [10]. Physicians working in the [PHC] setting may come across at least one emergency case per year. Among the most frequent medical emergencies in PHC centers are convulsions,

asthma, shock, and cardiac arrest. PHC centers are typically not adequately equipped for these medical emergencies. All PHC centers should also have a written emergency plan that guides them through the unforeseen occurrence of an emergency. By having the right facilities, education, and procedures, PHC centers can handle emergency cases effectively [15].

Physicians could be transferred from the more standardized setting of the hospital or outpatient department to primary care environment. So, if faced with a patient experiencing a life-threatening incident, they may be disoriented and relatively isolated [15]. During the emergency, many physicians would never have taken the burden of directing the treatment or acting in the lead clinician role [16]. Thus, in all PHC centers, emergency medical services [EMSs] should be structured reasonably well to provide the optimum care for patients in a healthy, relevant, timely and effective manner [7,15,16].

The participation of primary health centers in the provision of emergency medical services has the advantage that the greatest potential gain is gained for the highest possible number of people. Furthermore, it decreases the likelihood that non-emergency cases will overwhelm district and regional hospitals [17,18].

Literature review:

Barriers that prevented the use of primary emergency services were found to decrease the ability to respond quickly to emergency problems, which could partially account for higher use of ER in hospitals. Financial limitations: the most frequently stated obstacle was the lack of facilities and equipment at the PHC level that resulted in modest co-payments for investigation and prescription drugs [19]. Howard et al. [20] found that patients who were visiting their family doctor were much happier than patients who were being treated in an emergency room or walk-in clinic or who were using a telephone health consultancy service. Satisfaction has been associated with the quality of service, the timeliness of the provision of care and the family doctor's expectations.

A hospital study conducted in South Africa found that patients considered superior hospital care and that there was a shortage of PHC funding [18]. All proven challenges to primary care are the inconvenient working hours, lack of transportation, contradictory time requirements and even fear of personal safety [21]. Other studies that assessed the same issue revealed that physicians' communication skills were more important to patients than their professional skills [22–24].

International studies were conducted in Sri Lanka, Turkey, France, Asia, and the United States, showing that the skills and attitude of PHC physicians were not satisfactory and that their degree of competence in emergency management was not satisfactory [25–29]. In the middle east, a study done in Egypt in 2016 found that the majority of the PHC clients surveyed were unhappy with the emergency services rendered. The provision of diagnostic services, medication and the expertise of health care professionals were mostly areas of dissatisfaction. In addition, other areas were also discussed, such as interpersonal relationships and the knowledge given. There was no patient follow-up or an adequate correlation between the EDs in the hospital and primary health care facilities [30].

In Egypt, another study was done in 2018 to evaluate family physicians' perceived competence in emergency skills and satisfaction on emergency services in family practice centers. The study found that 8.6% of the physicians were qualified with master's degree, 51.4% did not attend Basic life support course, 80.0% and 77.1% did not attend Advanced Cardiac Life Support [ACLS] or Advanced Trauma Life Support [ATLS] course, respectively. The study found that males, physicians who had master's degree or attended ACLS reported higher competency in performing emergency skills. The study concluded that deficits in perceived competency in performing emergency skills among family physicians, and high dissatisfaction with current emergency services. This matter necessitates a need for more training courses as BLS [Basic Life Support], ACLS, and ATLS for family physicians [31].

The need for PHC development was acknowledged by authorities for health care in the Kingdom of Saudi Arabia [KSA]. In KSA, the Ministry of Health [MOH] provides health-care facilities at three levels: primary secondary, and tertiary. Primary care is provided through PHC centers that include promotional services, preventive services, and curative therapy [including emergency care] and rehabilitative care and just refer to such services cases that need more sophisticated treatment to the public hospitals that have secondary hospitals levels of care [2,32,33]

Studies conducted in KSA have shown that most PHC physicians would like to learn more information on emergency medicine [34]. In KSA, a study was done in 2007 in Abha, region showed that most PHC physicians had practiced in wound [95.7%], and burn [93.6%] management, and 80% of them believed that emergency services is an essential component of PHC and felt completely confident to deal with emergency cases at PHC level [7]. In 2016, a study was conducted in KSA to

estimate the prevalence of emergency cases reporting to Primary Health Care centers [PHC] in the city of Jeddah. The study explored barriers facing PHC physicians when dealing with emergency cases. This study found that most of studied physicians [83.5%] did not attend ATLS courses and 60.7% never attended ACLS courses, however 97.1% attended BLS courses. It is reported that doctors in the age group 36-45 years, and those who had SBFM had higher scores in perceived competence. In addition, those who reported experience in working in emergency departments and physicians who reported more working years in PHCCs [>5 years] had a significant higher score of perceived level of competency in performing emergency skills [12].

In 2017, a study was done in Saudi Arabia, in the governmental PHC centers in Dammam. It aimed to assess the availability of human and nonhuman resources for emergency medical services at the primary health care [PHC] level. This study revealed that resources for EMS at Dammam PHC centers were deficient in infrastructure and supporting facilities. This result was based on that only 2 out of 13 [15.4%] centers had a place reserved for EMS in each male and female section. Only 30.8% of the centers had a male emergency room located on the ground floor, near the entrance, and with a separate ramp. None of studied centers had the emergency drugs such as met-ergotamine, calcium chloride, and naloxone. None had ER equipment s as cervical collars, mouth gags, or a tracheostomy set. Only one [7.6%] center had a functioning fully equipped ambulance. Five [38.46%] centers were equipped with electrocardiogram and X-ray machines. In the interviews, the informants confirmed the deficiencies identified in the checklist [35].

A recent study done in 2018 to assess PHC physicians' practice related to EMS, the factors affecting it, as well as their learning needs and preferred methods of continuous training in emergency medicine. The most prevalent recorded emergencies were Bronchial asthma [86.5 %], cut wounds [83.3 %], and burns [76.19 %]. Approximately 62% of participants stated that their greatest needs for training were in cardiovascular and central nervous system emergency management. The study concluded that Dammam PHC physicians had a good knowledge, and fair practice concerning dealing with emergency cases, however, most of physicians reported their need for further hands-on emergency training [11].

Rationale:

Data regarding emergency services at the PHC level in Taif are scarce so we need to know the number of actual emergency cases in PHC at Taif

city during the study period because the number of emergency cases increases and most of the patient prefer to visit PHC rather than the hospital especially this time with corona epidemic spread, the number is huge and the staff cannot cover most of the cases very well so we need to know the most important barriers that make difficulty to deal with such emergency cases and to know different PHC in Taif if it is suitable enough to deal with such cases or not, to make sure there is no or decrease the barrier and make PHC will be qualified to manage this cases properly and improve the services and the staff.

Objectives:

This study will aim to explore the barriers facing PHC physicians when dealing with emergency cases. Our main objectives are:

- 1- To estimate the prevalence of emergency cases reporting to PHC canters in Taif city, KSA.
- 2- To assess barriers facing PHC physicians when dealing with such emergency cases.

METHODOLOGY:

Study Design:

A cross-sectional study.

Study Area:

Taif is a city in Makkah Al-Mokarramah Province of Saudi Arabia at an elevation of 1,879 m [6,165 ft.] on the slopes of the Sarawat Mountains [Al-Sarawat Mountains]. It has a population of 579,970 [2010 census]. The city is the center of an agricultural area known for its grapes, roses, and honey.

Study setting:

This study was conducted at Primary Health Care Centers, under the Ministry of Health in Taif city, in the western province of Saudi Arabia. In Taif city there are eighteen primary health care centers all these centers have emergency cases to deal with.

Study Population:

All the primary health care physicians who work in PHC centers, MOH in Taif city, at the period of the study constitute the target population. The study population involves 150 physicians from the family medicine residency board and physicians working in different PHC centers collected from a directorate of health affairs at Taif.

Inclusion criteria:

All PHC physicians in the study settings who agreed to take part in the study were included.

Exclusion criteria:

Physicians out of work and those who refused to participate in the study.

Sample size:

All the physicians working in PHC in Taif city, the total number is 150 physicians.

Sampling technique:

All the primary health care physicians who work in PHC centers, MOH in Taif city, at the period of the study constitute the target population. Their total number was 150 physicians. They were contacted through social media or by personally visiting the PHC centers.

Data collection tool:

A self-administered questionnaire was used for data collection. The questionnaire contains socio-demographic data, questions to identify the level of their training, previous experience, and emergency courses, questions to determine their perceived competence when dealing with emergency cases, frequency of emergency cases in the last year, and their satisfaction with the provided emergency services at their PHC centers. a structured observation sheet was utilise to evaluate the availability of equipment, drugs, ambulance, and other supporting facilities that are needed to deal with emergency cases. This sheet was structured using the Saudi essential drug list at the primary health care level [Al-Mazrou S, 2012], the Saudi Ministry of Health Quality assurance manual, [Al-Mazrou & Salem, 1993] and the Saudi Ministry of Health Primary Health Care manual. [Al-Mazrou et al, 2003].

Data Collection technique:

All physicians were contacted through social media and asked to fill the study questionnaire and also by visiting each PHC in Taif city for an observational sheet.

Data entry and analysis:

Data was collected and stored in an excel file then transferred to an SPSS file. Qualitative data was expressed as number and percentage. Kruskal wallis test and Mann-whitney U test were used to assess the relationship between variables. Quantitative data were presented as mean and standard deviation.

Ethical considerations:

A written permission was obtained from the Program of Family Medicine in Taif Region, the director of the primary care in Ministry of Health in Taif, and all primary health centers directors. The researcher tried his best not to disturb the work in the primary health care centers and visited only after arranging with their directors. The individual consent from each physician to participate in the study was a prerequisite for data collection. All information will be kept confidential and will not be accessed except for scientific research.

RESULTS:

A total of 150 PHC physicians completed the questionnaire, making a total response rate of 100%. Out of them, 52% were males and 48% were females. Their age ranged between 24 and 59 years, with a mean age of 33.1 ± 8.0 years. More than two thirds [71.3%] of the respondents were Saudi nationals. Regarding their degree of qualification, 56.7% of the PHC physicians had obtained MBBS, 27.3% had the Saudi Board of Family Medicine [SBFM] and 10% had family medicine diploma. Nearly one third [32.7%] of the respondents has a work experience of less than one year, and 43.3% had work experience of 1 to 5 years.

Prevalence of emergency cases reported to PHC centers:

Throughout the period from August 2020 to July 2021, there have been 1,160,350 recorded visits to PHC centers in Taif city. Out of them, 70,600 cases have been reported as emergency cases. Therefore, the prevalence of emergency cases reported to PHC centers was 6.1%.

Level of training and previous experiences in emergency settings:

The majority of the respondents [95.3%] had attended a BLS course; nearly half of them [52%] did that in the last year, and 32.7% did that in the past 1 to 2 years. Half of the respondents [50.7%] had attended ACLS course, but only 9.3% did that in the last year. Only few physicians [18%] had attended ATLS course ever. In addition, 69.3% of the respondents had a work experience in an emergency department in a hospital. **Table 1** summarises those results.

Table 1: level of training and work experience in emergency settings among PHC physicians in Taif city. N = 150. [BLS: basic life support, ACLS: advanced cardiac life support, ATLS: Advanced trauma life support]

Training	Frequency	Percent
Emergency department experience		
Yes	104	69.3%
No	46	30.7%
BLS course		
< 1 year	78	52.0%
1 – 3 years	49	32.7%
> 3 years	16	10.7%
Not at all	7	4.7%
ACLS course		
< 1 year	14	9.3%
1 – 3 years	22	14.7%
> 3 years	40	26.7%
Not at all	74	49.3%
ATLS course		
< 1 year	7	4.7%
1 – 3 years	8	5.3%
> 3 years	12	8.0%
Not at all	123	82.0%

Perceived level of competence when dealing with emergency cases:

Nearly half of the PHC physicians said that they will perform cardiac compression and bag and mask resuscitation in all emergency cases [50.7% and 49.3% respectively]. More than one third of them said that they will attempt the following emergency procedure in all cases: nebulization and

oxygen therapy [43.3%], simple sutures [36%], urinary catheterization [35.3%], IV fluids and medications administration [34%] and mouth to mouth breathing [33.3%]. A large percentage of the PHC physicians do not know when to start intubation and defibrillation [48% and 37.3% respectively]. More details are provided in **Table 2**.

Table 2: Perceived level of competence when dealing with emergency cases among PHC physicians in Taif city. N = 150.

Emergency case	Perceived level of confidence. N [%]			
	Do not know where to start	Will do only if no one else is available	Will attempt in most cases	Will attempt in all cases
Cardiac compression	08 [05.3%]	28 [18.7%]	38 [25.3%]	76 [50.7%]
Mouth to mouth breathing	25 [16.7%]	45 [30.0%]	30 [20.0%]	50 [33.3%]
Bag & mask resuscitation	06 [04.0%]	32 [21.3%]	38 [25.3%]	74 [49.3%]
Inserting IV canula	29 [19.3%]	49 [32.7%]	27 [18.0%]	45 [30.0%]
Intubation	72 [48.0%]	43 [28.7%]	22 [14.7%]	13 [8.7%]
Defibrillation	56 [37.3%]	34 [22.7%]	35 [23.3%]	25 [16.7%]
Reading ECG	14 [09.3%]	33 [22.0%]	54 [36.0%]	49 [32.7%]
Nebulisation and oxygen therapy	16 [10.7%]	26 [17.3%]	43 [28.7%]	65 [43.3%]
Simple sutures	26 [17.3%]	29 [19.3%]	41 [27.3%]	54 [36.0%]
NGT insertion	24 [16.0%]	42 [28.0%]	37 [24.7%]	47 [31.3%]
Urinary catheter insertion	21 [14.0%]	43 [28.7%]	33 [22.0%]	53 [35.3%]
Using IV fluid & medications	22 [14.7%]	34 [22.7%]	43 [28.7%]	51 [34.0%]

Factors associated with the perceived level of competence when dealing with emergency cases:

The following variables had been found to have a statistically significant association with the PHC physicians' perceived level of competence in dealing with emergency cases: age group, years of experience in PHC, previous experience in emergency department and having attended an ACLS course.

Physicians in the age group of 36 to 45 years had the highest scores of perceived competence [Md = 37], followed by the age group of > 35 years [Md = 36] and the age group of 24 to 35 years [Md = 32] [$\chi^2 = 7.89$, p -value < 0.05]. Also, the perceived competence increased significantly with the increase in years of experience in PHC. The

median score increased from 28 [the group of less than one year of experience] to 34 [the group of 1 to 5 years of experience] to 36 [the group of more than 5 years of experience] [$\chi^2 = 16.14$, p -value < 0.05]. Physicians who have had experience in emergency department scored better [Md = 34] in perceived competence compared to those who did not [Md = 31] [p -value = 0.05]. Lastly, physicians who attended ACLS course at least once in their life have better scores [Md = 34] in perceived competence compared to those who did not attend a ACLS course at all [Md = 32.5] [p -value < 0.05]. Gender, nationality, BLS and ATLS courses did not have a statistically significant relationship with perceived competence [p -value > 0.05]. Table 3 summarizes those results.

Table 3: Factors associated with the perceived level of competence when dealing with emergency cases among PHC physicians in Taif city. N = 150. [BLS: basic life support, ACLS: advanced cardiac life support, ATLS: Advanced trauma life support]

Factors	Score of perceived level of competence in dealing with emergency cases [from 12 – 48]			p-value
	Median	IQR	Mean rank	
Age group				
24 – 35 years	32	26 – 39	69.4	0.019**
36 – 45 years	37	31 – 41	93.0	
More than 45 years	36	33 – 38	91.7	
Gender				
Female	32	26 – 37	69.3	0.093*
Male	34	28 – 41	81.2	
Nationality				
Saudi	32	26 – 39	71.9	0.113*
Non-Saudi	35	30 – 40	84.4	
Years of PHC experience				
< 1 year	28	24 – 33	55.5	0.000**
1 – 5 years	34	30 – 39	82.5	
> 5 years	36	30 – 41	90.0	
Had emergency department experience				
Yes	34	27 – 41	80.1	0.050*
No	31	26 – 35	65.1	
Had BLS course?				
Yes	33	27 – 39	75.4	0.936*
Never	33	25 – 42	76.8	
Had ACLS course?				
Yes	34	28 – 41	82.8	0.038*
Never	32.5	26 – 36	68.1	
Had ATLS course?				
Yes	31	26 – 42	77.4	0.805*
Never	33	27 – 39	75.1	

* Mann Whitney U test

** Kruskal Wallis test

Frequency of emergency cases encountered by PHC physicians in the past 12 months:

More than half of the PHC physicians did not encounter any of the following cases at all during their past 12 months: acute GIT bleeding [66.7%], acute vaginal bleeding [65.3%], cardiac arrest [62.7%], anaphylaxis [53.3%], myocardial infarction [52%], angina pectoris and severe dehydration [51.7%]. Nearly half of the physicians

had encountered 1 to 2 cases of acute asthma, renal colic and hypoglycemia [50%, 52% and 48.7% respectively]. One third of the physicians had encountered 3 or more cases of acute asthma [32.7%] and renal colic [32.0%]. Additionally, 21.3% and 20.7% of the physicians had encountered 3 or more cases of hypoglycemia and diabetic ketoacidosis respectively. More details are provided in Table 4.

Table 4: Frequency of emergency cases encountered by PHC physicians in the past 12 months:

Emergency case	Frequency of emergency cases in the last 12 months		
	0 cases	1 – 2 cases	More than 3 cases
Acute asthma	26 [17.3%]	75 [50.0%]	49 [32.7%]
Myocardial infarction	78 [52.0%]	53 [35.3%]	19 [12.7%]
Angina pectoris	77 [51.3%]	63 [42.0%]	10 [6.7%]
Cardiac arrest	94 [62.7%]	44 [29.3%]	12 [8.0%]
Severe dehydration	77 [51.3%]	55 [36.7%]	18 [12.0%]
Renal colic	24 [16.0%]	78 [52.0%]	48 [32.0%]
Acute GIT bleeding	100 [66.7%]	36 [24.0%]	14 [9.3%]
Hypoglycemia	45 [30.0%]	73 [48.7%]	32 [21.3%]
Diabetic ketoacidosis	60 [40.0%]	59 [39.3%]	31 [20.7%]
Convulsion	66 [44.0%]	61 [40.7%]	23 [15.3%]
Anaphylaxis	80 [53.3%]	55 [36.7%]	15 [10.0%]
Acute vaginal bleeding	98 [65.3%]	41 [27.3%]	11 [7.3%]

Satisfaction with emergency services provided at PHC centers:

The highest rates of satisfaction with all emergency health services that are provided at PHC centers [including facilities, equipment, trained health care personnel, and medications] were recorded for renal colic [26.7%], hypoglycemia [26.7%], acute asthma [25.3%] and severe dehydration [20.7%]. In contrast, the highest rates of unsatisfaction with all emergency health services that are provided at PHC centers were recorded for: acute vaginal bleeding [32%], acute GIT bleeding [31.3%], cardiac arrest [26.7%], diabetic ketoacidosis [26%] and

myocardial infarction [23.3%]. Some PHC physicians showed their satisfaction with the available emergency services, but they also thought that they need more training; this is particularly for acute asthma [30%], severe dehydration [30%], and anaphylaxis [24%]. Another group of physicians thought that medications are deficient when dealing with angina pectoris [24%], myocardial infarction [21.3%] and diabetic ketoacidosis [21.3%]; while another group of physicians thought that facilities and equipment are deficient when dealing with renal colic [24%] and acute asthma [23.3%]. Table 5 summarizes those results.

Table 5: Satisfaction with emergency services provided at PHC centers in Taif city. [N = 15]

Emergency case	Satisfaction with emergency services provided at PHC centers N [%]				
	1	2	3	4	5
Acute asthma	38 [25.3%]	45 [30.0%]	35 [23.3%]	22 [14.7%]	10 [06.7%]
Myocardial infarction	17 [11.3%]	36 [24.0%]	30 [20.0%]	32 [21.3%]	35 [23.3%]
Angina pectoris	24 [16.0%]	31 [20.7%]	25 [16.7%]	36 [24.0%]	34 [22.7%]
Cardiac arrest	21 [14.0%]	34 [22.7%]	25 [16.7%]	30 [20.0%]	40 [26.7%]
Severe dehydration	31 [20.7%]	41 [27.3%]	34 [22.7%]	29 [19.3%]	15 [10.0%]
Renal colic	40 [26.7%]	34 [22.7%]	36 [24.0%]	22 [14.7%]	18 [12.0%]
Acute GIT bleeding	21 [14.0%]	28 [18.7%]	27 [18.0%]	27 [18.0%]	47 [31.3%]
Hypoglycemia	40 [26.7%]	33 [22.0%]	29 [19.3%]	29 [19.3%]	19 [12.7%]
Diabetic ketoacidosis	22 [14.7%]	35 [23.3%]	22 [14.7%]	32 [21.3%]	39 [26.0%]
Convulsion	26 [17.3%]	31 [20.7%]	33 [22.0%]	25 [16.7%]	35 [23.3%]
Anaphylaxis	24 [16.0%]	36 [24.0%]	31 [20.7%]	25 [16.7%]	34 [22.7%]
Acute vaginal bleeding	22 [14.7%]	32 [21.3%]	30 [20.0%]	18 [12.0%]	48 [32.0%]

1= Satisfied with facilities, equipment, trained health care personnel, and medications available to deal with such cases.
 2 = Satisfied with facilities, equipment, and medications, but need more training for health care personnel [physicians and nurses] when dealing with such cases.
 3= Satisfied with facilities, equipment, and trained health care personnel, but medications are deficient when dealing with such cases.
 4= Satisfied with the medications and trained personnel, but facilities and equipment are deficient when dealing with such cases.
 5= Overall not satisfied with the services provided at our PHC center when dealing with such cases.

Availability of equipment, medications and IV fluids, and supporting facilities that are needed to deal with emergency cases:

Table 6 shows the availability of equipment, medications and IV fluids, and supporting facilities that are needed to deal with emergency cases in 15 PHC centers in Taif city. Regarding emergency equipment, we noticed that 80% or more of the PHC centers have the following equipment: side lamp with stand, dressing drum, dressing trays, dressing table, forceps, scissors, suture materials, needle holder, suction blades, IV stand, cannulas, oxygen mask and oxygen cylinder with standard fitting. Urinary catheters and NGT were available

in less than 50% of PHC centers [46.7% and 40% respectively], while cervical collars were available in 53.3% of the PHC centers. Regarding medications and IV fluids, we found that all types of IV fluids, antihistaminic injections, metoclopramide, Ventolin, and hyoscine were available in 80% or more of the PHC centers. Activated charcoal, rabies vaccine and calcium chloride injections were available in less than half the PHC centers [40%]. Regarding supporting facilities, a laboratory, X-ray machine and equipped ambulance cars were found in 60%, 73.3% and 20% of the PHC centers.

Table 6: Availability of equipment, medications and IV fluids, and supporting facilities that are needed to deal with emergency cases in PHC centers in Taif City. [N = 15]:

Emergency equipment		Medication and IV fluid	
Item	N [%]	Item	N [%]
Side lamp with stand	15 [100%]	Calcium chloride injection	06 [40.0%]
Dressing drum	14 [93.3%]	Antihistaminic injection	14 [93.3%]
Dressing trays	14 [93.3%]	Hydrocortisone injection	10 [66.7%]
Dressing table	14 [93.3%]	Dextrose 5%,10%,50%	12 [80.0%]
Urinary catheter	07 [46.7%]	Normal saline	14 [93.3%]
Forceps	13 [86.7%]	Ringer lactate	14 [93.3%]
Scissors	15 [100%]	Activated charcoal powder	06 [40.0%]
Suture materials	12 [80.0%]	Metoclopramide	13 [86.7%]
Needle holder	12 [80.0%]	Adrenaline injection	09 [60.0%]
Suction apparatus	10 [66.7%]	Ventolin for nebulization	12 [80.0%]
Blades	14 [93.3%]	Anti-tetanic serum	07 [46.7%]
IV stand	15 [100%]	Tetanus toxoid	10 [66.7%]
Splints	09 [60.0%]	Rabies vaccine	07 [46.7%]
Nasogastric tubes	06 [40.0%]	Diazepam	10 [66.7%]
Cannulas	15 [100%]	Furosemide	10 [66.7%]
Cervical collars	08 [53.3%]	Hyoscine	14 [93.3%]
Oxygen mask	15 [100%]	Supporting facilities	
Airways equipment	10 [66.7%]	Item	N [%]
Oxygen cylinder with standard fitting	14 [93.3%]	X-ray	09 [60.0%]
Ambubag	11 [73.3%]	Laboratory	11 [73.3%]
Nebulizer	15 [100%]	Equipped ambulance cars	03 [20.0%]

DISCUSSION:

Primary health care [PHC] is the first level of contact for patients with the national health system and it addresses the main health problems in the community [36]. Management of emergency cases in PHC settings is a critical challenge, which can significantly affect the outcomes of pre-hospital morbidity and mortality [37]. Since emergency cases occur unexpectedly and randomly, it is expected from PHC physicians be prepared to manage such emergency cases with competence. In this study, we focused on the emergency cases that are facing PHC physicians in Taif city, Saudi Arabia, and tried to explore the barriers that are facing those physicians when dealing with it.

In our study, we found that throughout the period from August 2020 to July 2021, the prevalence of emergency cases reported to PHC centers in Taif city was 6.1%. Our finding is in line with the results of another study conducted in Jeddah, Saudi Arabia, which also reported a slightly lower prevalence [5.2%] [12]. Several worldwide studies also reported very similar prevalence for emergency cases that ranged between 3% and 4.6% [16,38].

The most frequently encountered emergency cases were acute asthma and renal colic. During the past

year alone, one third of PHC physicians reported encountering three or more cases of them, and more than half the PHC physicians reported encountering one to three cases of them. Other frequently encountered emergencies included hypoglycemia, for which more than three cases a year were reported by 21.3% of physicians. Aloufi et al. in his study in Saudi Arabia also reported similar rates and showed that hypoglycemia, renal colic and acute asthma were the most commonly encountered emergency cases [12]. Another study by Alsaad et al. which was also conducted in Saudi Arabia, showed that cut wounds, acute , burns, bronchial asthma, acute abdomen and palpitations represent the most common emergency cases encountered in PHC settings [35]. A third study in Abha District attributed the emergency cases in PHC centers to trauma and respiratory causes [7]. Worldwide, however, the frequently encountered emergency cases varied slightly. For example, Toback et al. reported that asthma, shock, anaphylaxis, seizure, and cardiac arrest are the most common emergency cases encountered in PHC centers in the United States [39].

Regarding dealing with emergency situations, nearly half of the PHC physicians expressed their complete competence in performing cardiac compression and bag and mask resuscitation in all

emergency cases encountered. This is higher than what was reported locally in Jeddah, in which 38.8% and 37.9% of the PHC physician would perform cardiac compression and bag and valve resuscitation [12]. In a study in Egypt in 2018, only one fifth of the family physicians expressed their complete competence in performing cardiac compression [22.9%] and bag and mask resuscitation [20%] [31]. Our much higher results can be attributed to the high percentage of PHC physicians who have attended basic life support courses [95.3%]

Our results also highlighted that a large percentage of PHC physicians do not know when to start intubation and defibrillation [48% and 37.3% respectively]. These skills are advanced and would require well trained individuals. The low level of competence in performing those skills could be due to the fact that, only half of the PHC physicians had attended ACLS course [50.7%], and 18% had attended ATLS course. However, cardiac arrest emergencies were infrequent in PHC centers in Taif city according to our result.

Several factors affected the level of competence in dealing with emergency cases. Starting with the age and duration of experience in PHC, our result indicated that the older and more years of experience the PHC physician gets, the better his competence becomes. This is supported by two studies in Saudi Arabia [12,35]. This highlights the need to support junior PHC physicians early on their career and to provide them with the required training courses to help them to adapt quickly and to respond more adequately to emergency cases.

Our results also indicated that having attended ACLS course and having a work experience in emergency department is associated with a much better score in level of competence. In Egypt, Salama et al. reported that PHC physicians who attended ACLS course were more competent in dealing with emergency cases. In addition, Salama et al also highlighted that the level of competence is directly related to the time at which the ACLS course was taking, with higher scores in competence for doctors who attended the course less than one year ago and lower scores for those who attended the course more than three years ago [31].

Regarding availability of equipment and supporting facilities, we found that more than 80% of the 15 PHC centers have the required emergency equipment. The exception was for urinary catheters and cervical collars which were only found in 46.7% and 40% of centers respectively. Cervical collars and urinary catheters were also the least available instruments at PHC centers in

Jeddah and Abha District [7,12]. A laboratory and x-ray machine were present in most PHC centers in Taif city [73.3% and 60% respectively], however, an equipped ambulance cars were only present in 20% of PHC centers. This may lead to delay in transferring emergency cases from PHC centers to hospitals. Alsaad et al. in his study in Dammam PHC centers highlighted the important role of infrastructure in the quality of care provided in emergency cases [35].

Lastly, most of the essential emergency drugs were available in the PHC centers in Taif city. The main exceptions were for activated charcoal, rabies vaccine and calcium chloride which were only present in less than half of the PHC centers in Taif city. Furthermore, PHC centers in Abha, Saudi Arabia also reported similar results. Alsaad et al. explained those finding by the national policy of referring emergency cases requiring the use of those medications to specialized centers [35].

CONCLUSION:

The prevalence of emergency cases encountered in PHC centers in Taif city was 6.1% and is in concordance with previous national studies. However, this adds up to a total of 70,600 cases per year. The PHC centers in Taif city are functioning well in terms of availability of medications, equipment and infrastructures. The majority of the PHC physicians in Taif city have received BLS training course [95.3%], however, a large percentage of them did not receive ATLS or ACLS course.

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