

Research Article

Primary Healthcare Emergency Services in Alexandria, Egypt 2016

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ABSTRACT

Background and purpose: This study evaluated the quality of emergency services at the primary care level and how it can be improved.

Methods: A cross sectional study was conducted to assess emergency services delivery in randomly 16 primary health care facilities (rural and urban) from the eight health districts in Alexandria city, Egypt. Data were collected about equipment, facilities, drugs, physicians' practices and attitudes, patients' utilization of and satisfaction with primary care emergency services. Standard univariate statistics were used. Student t-test, chi-square, Monte Carlo test, Mann-Whitney U and Fisher exact tests were used as tests for significance at the 5% level of significance.

Results: All the PHC facilities had no written clinical practice guidelines for providing primary emergency services, no guidelines for pediatric emergency triage, assessment or treatment and no referral guidelines. Lack of some essential equipment and drugs was evident. The median attitude score towards emergency cases was 82.3% for physicians 81.9% for nurses. Most physicians (94.1%) and nurses (85.0%) had

practiced emergency care in the primary health care. More physicians as compared to nurses (58.8% versus 50.7%) reported greatest need for continuing medical education in the management of pediatric emergencies. More than half of physicians endorsed hospital training (58.8%) while 48.4% endorsed practical training in PHC settings. Many patients (87.1%) used the PHC facilities for emergency services. The most common reason for visiting PHCCs for emergency services were for trauma (31.1%). Large proportion of patients (64.3%) was dissatisfied with the emergency services provided by the PHC facilities.

Conclusion: The present study indicated unsatisfactory primary emergency services in terms of structure, process and outcome. The services need to be improved and defects revealed by the present study should be taken into considerations hand-in-hand with available resources in order to upgrade the quality of the primary emergency services.

Keywords: Primary emergency services; Structure; Primary care providers; Patient satisfaction

Introduction

Primary health care (PHC) is defined by the World Health Organization (WHO) as essential health care made universally accessible to individuals and families in the community by means acceptable to them through their full participation and at a cost the community and the country can afford. Primary Health Care (PHC) includes services like; family planning, maternity care, child care, dental care, health educational services, communicable diseases control, emergency care and environmental health services [1].

Since 1997, Egypt has engaged in a Health Sector Reform Program. The issue of "quality" figures into all three components of the reform program strategy: 1) implementing an integrated family practice care model; 2) developing a new social insurance financing mechanism through the establishment of a Family Health Fund (FHF); and 3) strengthening the role of the Ministry of Health and Population (MOHP) in regulation through a facility accreditation program. It abolished its former health offices, maternal and child health centers and dispensaries and amalgamated these services into PHC centers (PHCCs), which provide both curative and preventive aspects of care [2].

Due to the imminent danger to life and permanent physical damage from emergencies, attention must be given to the delivery of emergency care at all levels of health services whether it is at PHC level or hospital. Emergency care at PHC requires ensuring the presence of qualified staff 24 h/day [3]. The number of assigned staff should meet the caseload requirements of the emergency department (ED). While on duty, staff should only be assigned to the emergency room [2].

Rather than attempting to create an emergency medical care system *de novo*, planners should consider the use of established primary care centers. In addition to their traditional missions of providing preventive and primary care, these facilities could serve as casualty collection points for the initial evaluation and management of pediatrics, maternal, trauma and medical patients with urgent problems. With proper training in the principles of triage and emergency stabilization and a simple kit of essential equipment and supplies, the staff should be able to handle most problems on site. When a patient's condition requires resources not possessed by a primary care center, he or she could be transferred to the nearest hospital [3].

The involvement of primary health care centers in the provision of emergency medical care has the advantage that the greatest

possible good is done for the largest possible number of people and in addition; it reduces the risk of district and regional hospitals becoming overwhelmed by non-emergency cases. An analysis of demand and utilization of hospital emergency departments (ED) suggests that there are an increasing number of presentations that do not require traditional ED type treatment [4].

Research identified some of the factors that affect the provision of high quality emergency services at the primary care level. These are; good governance and collaboration among other health sector partners, sufficient health sector financing which would in turn result in adequate health infrastructure, availability of equipment, basic medicines and motivated efficient workforce [5-7]. The present work evaluated the quality of emergency health services at the primary care level and how it can be improved.

Primary care services delivery in Alexandria are provided through a widespread network of urban and rural PHCCs providing services to 4 532 200 people. This was 5.291% of total Egypt population (Egypt demographic 2012). Data regarding emergency services at PHC level in Alexandria is absent. Therefore, relevant data from health service providers and recipients are very important to health care policy-makers for effective and optimal management of the current services.

This study was conducted to answer the following research question: "To what extent do primary health care (PHC) units and centers serve in providing high quality emergency services in Alexandria?"

The specific objectives

1. Assess the structure of emergency health care services at PHC level.
2. Assess attitudes and practices of PHC service providers towards emergency care.
3. Identify felt-needs of service providers for continuing medical education in emergency care.
4. Assess pattern of utilization of PHC emergency services of the health care recipients (consumers).
5. Assess the degree of satisfaction of the consumers with PHC emergency services.

Methods

The descriptive epidemiological cross sectional study was carried out during December 2015 throughout July 2016. Randomly selected two of primary health care facilities (one rural and one urban) from each health district in Alexandria were included in the study (n=8 districts and 16 PHC facilities). The target populations were primary health care facilities (physical structure of emergency services), all PHC workers (service providers) of the selected settings (n=243) (physicians=38, nurses and assistant nurses=205) as indicated by data of Health information System 2014, patients (clients) attending emergency services in the selected facilities as well as PHC records.

Simple random sampling was carried out for patients. Registration record for each of the 12 PHCC is used to enroll

patients for the study. Records showed that a number of 50244 patients attended the selected 16 PHCC in the previous 3 months and using significance level of 5%. The pilot study of 3 randomly selected PHC facilities indicated that average patient utilization of emergency care was 75.0% of the total attendants. For calculating the adequate sample size in prevalence study [8].

$$n = Z^2 P (1-P) / d^2$$

Where, n is the required sample size, Z is the statistic corresponding to 95% level of confidence (standard value of 1.96), P is expected prevalence (that can be obtained from a pilot study conducted by the researcher) and d is precision (corresponding to effect size) (3%). Thus n=794 patients.

The sample is further increased by nearly 10% to account for contingencies such as non-response or recording error. Thus the total required sample size was 882 patients. The total number of patients interviewed in each center was proportionally recruited according to patient attendance list in each PHC facility.

Methods and tools for data collection

The Donabedian triad of structure, process and outcomes was used as a framework for assessing the quality of primary care emergency services [9]. All data collection tools were pilot-tested.

Observation: A structured observational checklist was developed using the Egypt Ministry of Health Quality assurance manual [2], Egypt essential drug list at primary health care level [10] and Egypt Ministry of Health Primary Health Care Manual [11]. Experts from Alexandria Faculty of Medicine and Alexandria General Directorate of Health Affairs comprising specialties in primary health care, emergency medicine, community medicine and health administration assessed the preliminary observation sheet and provide structured comments with respect to face validity and comprehensiveness.

Items included in the observation checklist were

- Written clinical practice guidelines for providing primary emergency services.
- Guidelines for pediatric emergency triage, assessment and treatment (ETAT) are available.
- Referral guidelines.
- Emergency room schedule per day.
- Physical description: presence of devoted place for emergency services and/or minor surgeries, location in the center (i.e., ground floor, near the entrance, separate entry, presence of sloped entry for the trolley, etc.).
- Manpower structure: List of emergency room staff (physicians and nurses) who have been trained in first aid and cardiopulmonary resuscitation (CPR).
- Separate drug cabinets for emergency services.
- Devoted registry for emergency case.
- The three least available equipment necessary for emergency services are: nasogastric tubes, cannulas

and urinary catheters. Others include dressing, trolley, dressing drum, forceps, scissors and suture material and mouth gag, oxygen cylinder with standard fitting, IV stands and tracheostomy sets).

- Sterilization equipment: Autoclaves and/or hot-air ovens.
- Available drugs for emergencies: activated charcoal, naloxone injections, anti-histamine injections, calcium gluconate injections, anti-tetanic serum injections, morphine, hydrochloride injections, dextrose, normal saline, adrenaline and anti-scorpion venom).
- The presence of supporting facilities: X-ray facilities, laboratory and equipped ambulance car.

Each item in the structure observation list will be scored on three point-scale (0=not met, 1=partially met, 2=full met).

Record reviewing: A transfer sheet was prepared to retrieve the following data from PHC record:

- Total number of emergency cases attending the center during the previous three months.
- Number of emergency cases referred to the district hospital in the same period.

Direct interviewing

Providers' attitudes and practices: All primary health care physicians were interviewed using a structured interview format which included the following: demographic data (age, gender, specialty), years since graduation, work experience in PHC service, training in first aids and emergency care, attitudes towards primary emergency service at PHC level, emergency service practice of primary care medical staff and perceived needs for continuing medical education in primary health care emergency services and their preferred methods of continuing medical education.

Patients' utilization and satisfaction with primary health care emergency services: Each selected patient was interviewed using a structured interview format (Annex 4) regarding the following data: socio demographic characteristics: age, gender, residence, marital status, average monthly income, education and occupation, pattern of utilization of PHC services for emergencies and the most common reason for visiting PHC for emergency services. Those that did not use emergency service were asked about the most commonly cited barrier for not using such services. Those that used PHC emergency services in the past year were interviewed regarding their satisfaction with the emergency services provided at PHC level.

Patients' satisfaction with aspects of care used in this study was [7]

- Accessibility (5 items): the possibility of the patient obtaining the services he/she needs at a time and place where he/she needs it, in sufficient amounts and at a reasonable cost.
- Availability (5 items): Convenient infrastructure, service providers, diagnostic facilities, drugs.

- Interpersonal relationship (5 items): the respect, care and attention to patient's complaint, privacy and confidentiality contact shown by the providers, clinical examination and physician-patient time.
- Informativeness: giving information in relation to care or services to the patient.
- Continuity of care: Referral to hospital or diagnosis center if necessary.
- Effectiveness: The outcome of care.

Well-trained researchers visited each PHCC for a full working day and collect data using the structured study tools. All patients were cooperative. The response rate of providers was (n=230, 94.7%). Non-response (n=13, 5.3%) was mostly from physician participants due to work overload. Non-respondents did not differ statistically from the respondents as regards age, gender and specialty.

Ethics

Ethical clearance for this study was obtained from the Research Ethics Committee of Alexandria Faculty of Medicine. A copy of the protocol was presented to the Ministry of Health, The Directorate of Health Affairs and the directorate of each PHCC before getting permission. All study procedures were carried out in accordance with the *Declaration of Helsinki* regarding research involving human subjects. The interview formats were anonymous. Objectives, purposes, expected benefits of the study and type of collected information were explained to the participants. An informed consent was obtained from every participant before the interview. Confidentiality of data was ensured and maintained throughout the whole study.

Satisfaction scale reliability

The results indicated high internal consistency reliability, with an alpha coefficient of 0.84 for the overall scale and item-rest correlations that range from 0.63 to 0.77.

Data management

After completing data collection, the raw data were coded, processed and analyzed using SPSS PC+ software package Version 20.0. Three statements addressed attitude of service providers towards emergency care Total score ranged 3-10 was expressed as % of maximum possible score

Eighteen items addressing patients' satisfaction by primary care emergency services scored on four-point Likert scale (strongly dissatisfied=1, strongly satisfied=4), total score ranged 18-72 was expressed as % of maximum possible score. Standard univariate statistics were used to describe frequency, percentages, mean and standard deviation. Skewed distributed data are presented as median and interquartile range. Student t-test, chi-square, Monte Carlo test, Mann-Whitney U and Fisher exact tests were used as tests for significance at the 5% level of significance.

Results

Emergency structure

Figure 1 shows the functioning availability of emergency

facilities, equipment and drugs in the studied primary healthcare settings. There were no written clinical practice guidelines for providing primary emergency services, no guidelines for pediatric emergency triage, assessment and treatment and no referral guidelines. Of the 12 PHC settings, drug bags for emergency services were in 4 (33.3%), separate drug cabinets for emergency services were found in 3 (25.0%) and devoted registry for emergency services in 9 (75.0%) of the settings. Regarding physical description of the emergency room, all the settings had devoted place for emergency services and /or minor surgeries. Emergency services in all of the centers were located on the ground floor and in 25.0% of PHCs they were near the entrance. None had a separate entry for the emergency room. Sloped entry for the trolley was found in 16.7% of the centers.

As for manpower, the total number of physicians per center ranged from 1 to 3 with a median of 1. For nurses, the figure ranged from 1 to 5 with a median of 2.2. Only 3 (25.0%) of PHC

settings had a list of emergency staff (physicians and nurses) trained in first aid and cardiopulmonary resuscitation (CPR). The study showed a deficiency in some support facilities. There were no X-ray facilities or equipped ambulance cars in any of the PHCCs. However, all the PHC settings had laboratory facilities.

In Figure 2, the three least available equipment necessary for emergency services were nasogastric tubes (25.0%), cannulas (50.0%) and urinary catheters (75.0%). A trolley was available in only 16.7% of the settings. On the other hand, dressing drum was available in all PHCCs. Of the 12 settings, there were forceps (83.3%), scissors (91.7%), suture material (33.3%), mouth gag (16.7%), oxygen cylinder with standard fitting (25.0%) and intravenous stands (50.0%). There were no tracheostomy sets in any PHCCs. Sterilization equipment (autoclave and hot-air ovens) was available in 66.7% and 83.3% of centers respectively. The three least available

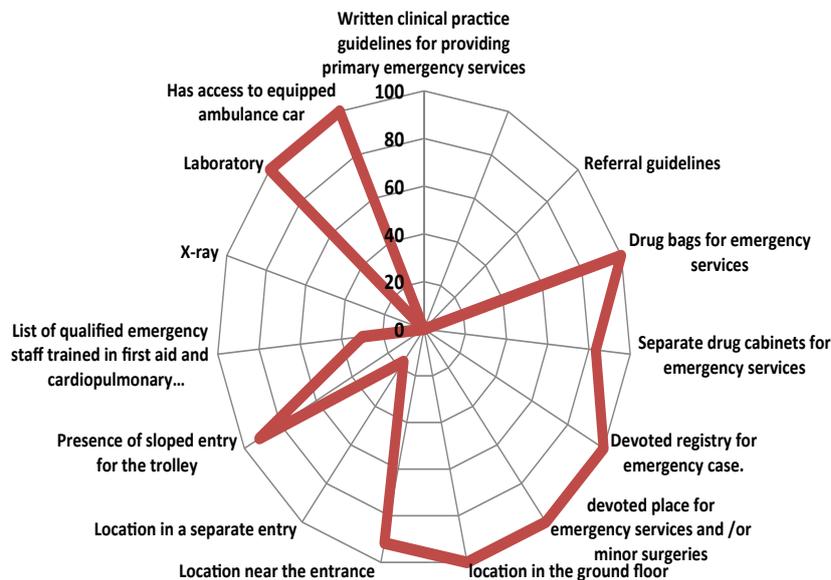


Figure 1: Radar chart of emergency facilities available and functioning at primary health care (PHC) facilities in Alexandria.

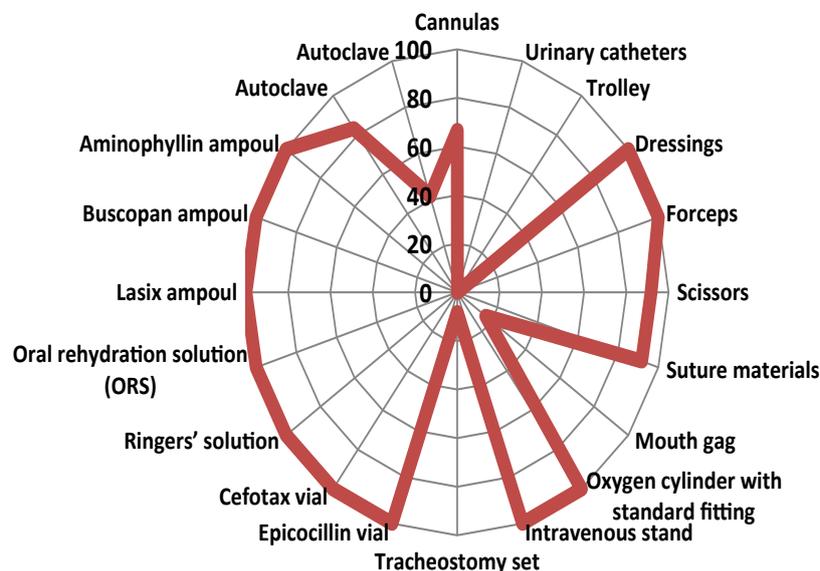


Figure 2: Radar chart of emergency equipment available and functioning at primary health care (PHC) facilities in Alexandria.

emergency drugs were: activated charcoal (8.3%), naloxone injections (33.3%) and antihistamine injections (83.3%). The other drugs were available in PHCCs as following: anti-tetanic serum (25.0%), calcium gluconate injections (50.0%), pain killers (25.0%), hydrochloride injections (75.0%), dextrose 5% (41.7%), normal saline (75.0%) and adrenaline (16.7%). There was no anti-scorpion venom in any of the PHCCs (Figure 3).

Out of 4187 cases attending the PHC facilities for different reasons, 3140 (primary emergency case load was 75.0%) were attending for primary emergency services. Of the emergency cases, the proportions varied considerably between units/center. The highest proportion was (31.7%) in Nezarat El Menia FHU and the lowest was (1.8%) in Somokhrat FHU. Only one severe emergency case was referred to the district hospital.

Background characteristics of primary care medical staff

A total of 230 service providers were included in the study. The present study included 17 primary health care physicians and 213 nurses. As for qualification, of the physicians, 76.5% were GP, 17.6% were specialists and only 5.9% were family physicians. Most of the nurses (94.4%) were nursing school graduates. Minorities were either had technical nursing institute (2.8%) or nursing bachelor certificate (1.9%). The mean age of physicians was 32.5 (standard deviation 11.79) years, while that for nurses was 37.6 (SD 9.1) years, this difference was statistically significant (p=0.033). Nearly two-thirds of the physicians (64.7%) were in the young age group of 20-29 years while for nurses, the highest proportion (40.4%) were in the age group of 30-39 years, p=0.005. Most of nurses (93.0%) were females as compared to 58.8% of physicians, the difference was statistically significant (p=0.000). The average years since graduation for nurses 18.9 (SD 8.4) years was significantly longer than that for physicians 9.6 (SD 7.6), p=0.000. Moreover, the work experience in primary care for nurses 16.3 (SD 7.8) years was significantly longer than that for physicians 8.8 (SD

6.3), p=0.000. Most of the studied primary care physicians (76.5%) and physicians (77.5%) had training in first aids and emergency care.

Attitudes of primary care medical staff towards emergency services

As shown in Table 1, when asked about their attitudes towards emergency cases, there were no statistical significant differences noted between physicians and nurses as regards attitude items towards emergency care (P>0.05). The median attitude score % for physicians was 82.3 (Inter Quartile Range 9.8) while that for nurses was 81.9 (IQR 9.1). Half of physicians (49.8%) agreed and 47.1% of nurses strongly agreed that emergency services were an essential component of primary health care. Most of the physicians (88.2%) and nurses (92.0%) thought that the majority of emergency cases treated at PHCCs were true emergencies. However, 11.8% and 8.0% of them respectively did not consider that the majority of emergency cases were true emergencies. As for self-confidence, only 5.9% of physicians and 16.4% of nurses felt that they were not competent to deal with emergency cases. However, 76.5% and 62.9% of them respectively were competent to some extent.

Emergency service practices of primary care medical staff

Figure 4 illustrates that the majority of primary care medical staff (n=197, 85.7%) had practiced emergency care. However, 33 (14.3%) had not practiced. Figure 5 depicts practice of primary care physicians and nurses by category of emergency service. Overall, most physicians (94.1%) and nurses (85.0%) had practised emergency care in the primary health care. All the studied physicians and 94.5% of nurses had practiced the management of wounds. Significantly higher proportions of physicians as compared to nurses had practiced burns (68.0% versus 45.5%), management of poisoning (37.5% versus 11.0%),

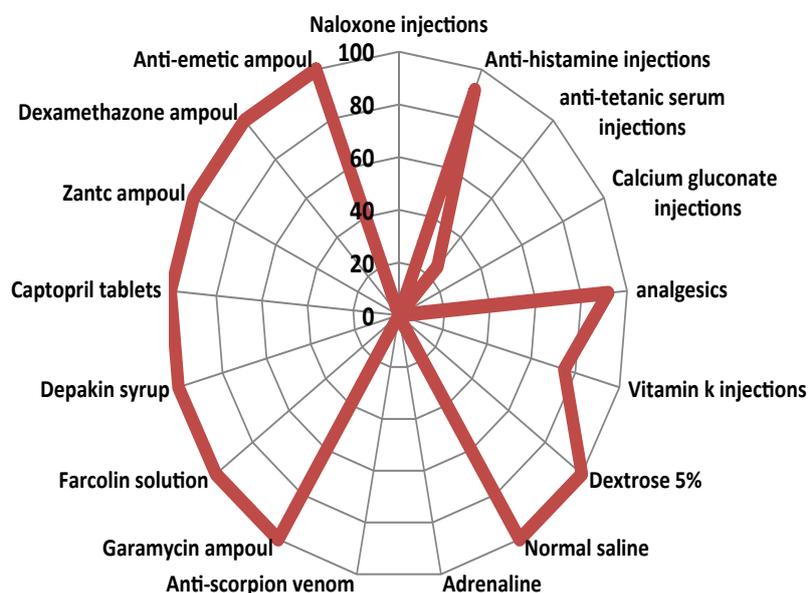
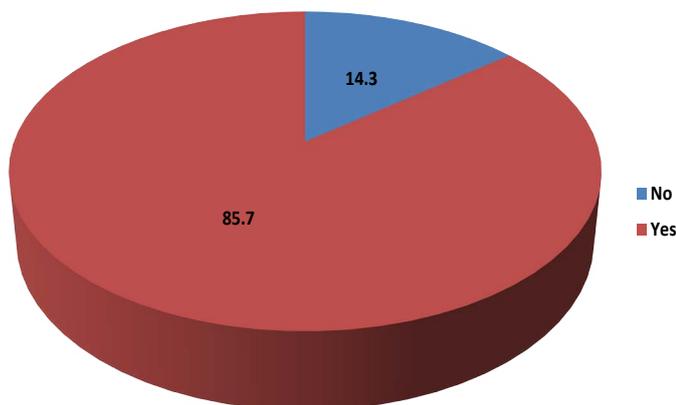
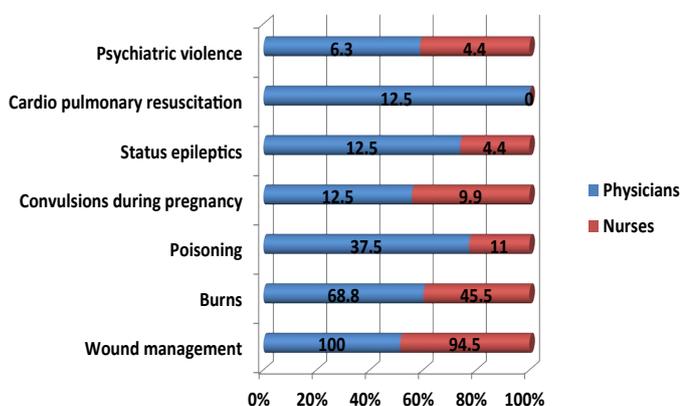


Figure 3: Radar chart of emergency drugs available and functioning at primary health care (PHC) facilities in Alexandria.

Table 1: Attitudes of primary care medical staffs in Alexandria towards emergency services.

Item	Physicians (n=17)		Nurses (n=213)		Statistical significance (p value)
	No.	%	No.	%	
Belief that emergency service is an essential component of primary healthcare services					
Strongly disagree	0	0.0	4	1.9	^{FE} p=0.890
Disagree	4	23.5	16	7.5	
Agree	5	29.4	106	49.8	
Strongly agree	8	47.1	87	40.8	
Perception of emergency care in PHC					
True emergency cases	15	88.2	196	92.0	^{FE} p=0.420
Not true emergency cases	2	11.8	17	8.0	
Feel adequate self-confidence to respond to emergency cases at the primary care level					
Not at all	0	0.0	3	1.4	^{MC} p=0.344
Not competent	1	5.9	35	16.4	
Competent to some extent	13	76.5	134	62.9	
Very competent	3	17.6	41	19.2	
Attitude scores % (total score=100%)					
Minimum – maximum	63.6 – 100.0		27.3 – 100.0		^{MW} p=0.526
$\chi \pm$ SD	86.1 \pm 9.7		84.3 \pm 11.4		
Median (IQR)	82.3 (9.8)		81.9 (9.1)		

**Figure 4:** Emergency service practice among primary care medical staffs in Alexandria.**Figure 5:** Practice of primary care physicians and nurses in Alexandria by category of emergency service.

management of status epileptics (12.5% versus 4.4%) and cardio pulmonary resuscitation (12.5% versus none). The least

practiced emergency situation by the physicians was psychiatric violence (6.3%) as compared to 4.4% of nurses (Table 2).

Felt-needs of service providers for continuing medical education in emergency care

In Table 2, more than half of physicians (52.9%) and 41.8% of nurses felt greatest need for knowledge in emergency care. However, significantly more physicians (76.5%) felt greatest need in training in emergency care in PHC as compared to 51.7% of nurses, $p=0.016$. More physicians reported that their greatest needs for continuing medical education in the management of pediatric emergencies (58.8%) as compared to 50.7% of nurses. However, more nurses (24.0%) endorsed obstetric emergency as an area for continuing medical education as compared to 11.7% of physicians. The differences were statistically significant where $p=0.022$.

A statistical significant difference was found between physicians and nurses as regards the most preferred training methods for receiving continuing medical education training in emergency care, $p=0.016$. In Figure 4, more than half of physicians endorsed hospital training (58.8%) while 48.4% endorsed practical training in PHC settings. Lectures were reported by lower proportions of physicians (17.6%) and nurses (16.9%). Similar proportion of physicians and nurses (17.7%) endorsed training in cardiovascular emergency. The least preferred method was printed materials (none of physicians and 9.9% of nurses).

Socio demographic characteristics of patients attending PHC facilities

The present study included a total of 822 interviewed patients: 69.4% were from rural and 30.6% were from urban

Table 2: Perceived needs of continuing education and training of primary care medical staffs in Alexandria to health emergency care.

Item	Physicians (n=17)		Nurses (n=213)		Statistical significance (p value)
	No.	%	No.	%	
Felt needs of Knowledge in emergency care in PHC					
No need	2	11.8	13	6.1	MC p=0.717
Little need	6	35.3	111	52.1	
Great need	9	52.9	89	41.8	
Felt needs of training in emergency care in PHC					
No need	1	5.9	3	1.4	MC p=0.016 *
Little need	3	17.6	100	46.9	
Great need	13	76.5	110	51.7	
Endorsed areas of emergency care for continuing medical education					
Cardio vascular emergency	3	17.7	38	17.7	MC p=0.022 *
Central nervous emergency	1	5.9	8	3.8	
Orthopedic emergency	1	5.9	8	3.8	
Pediatric emergency	10	58.8	108	50.7	
Obstetric emergency	2	11.7	51	24.0	
The most preferred method of continuing medical education in emergency care					
Practical training in PHC settings	4	23.5	103	48.4	MC p=0.016 *
Hospital training	10	58.8	53	24.9	
Lectures	3	17.6	36	16.9	
Printed materials	0	0.0	21	9.9	

MC p=p value of Monte Carlo test; * Significant at 0.05 level

areas. The age of the interviewed persons ranged from 13 to 86 years with a mean of 34.6 (SD 15.8) years and a median of 32 years. The most common job was government employee (30.8%) followed by student (29.2%) and army or police soldier (19.1%). Education status was as follows: 12.1% were illiterate, 26.2% had reached secondary and 22.8% had reached intermediate level.

Patients' utilization of primary health care emergency services

Table 3 shows pattern of utilization of emergency services in patients attending PHC facilities.

The majority (87.1%) of the interviewed patients had used the relevant PHCC for emergency services in the past year. However, 12.9% never used such services. Of users, only 5.0% were rarely users. Nearly similar proportions used primary emergency services either sometimes (27.0%), often (27.7%) or always (27.4%). Table 4 shows that the 4 most common reasons for visiting PHCCs for emergency services were for trauma (31.1%), obstetrics and gynecology (27.6%), poisoning (23.3%) and abdominal (20.9%).

The last visit to using emergency services at PHC facility was in less than one year for the majority of patients (82.4%). More than a tenth (12.9%) had visited between 1 to less than 3

years and 4.6% visited between 3 to less than 5 years. Just only one patient (0.1%) had visited since more than 5 years.

Among those who did not use primary emergency services in the past year (n=114), 53.9% used emergency services in other healthcare settings either governmental or private hospital. The most frequently mentioned reason for not using PHC emergency services was that the lack of facilities and equipment (33.3%). Lower proportions reported Long distance to the facility/poor transportation (18.4%) or Lack of staff experience in emergency care (16.7%). Similar proportion (15.8%) reported either Ignorance of the existence of emergency services within PHC or Lack of primary care medical staff.

No statistical significant differences were found between pattern of emergency service utilization at PHC and age (p=0.942), gender (p=0.414), residence (p=0.618), marital status (p=0.763), average monthly income (p=0.301), educational level (p=0.740) and occupation (p=0.667).

The degree of satisfaction of the consumers with PHC emergency services

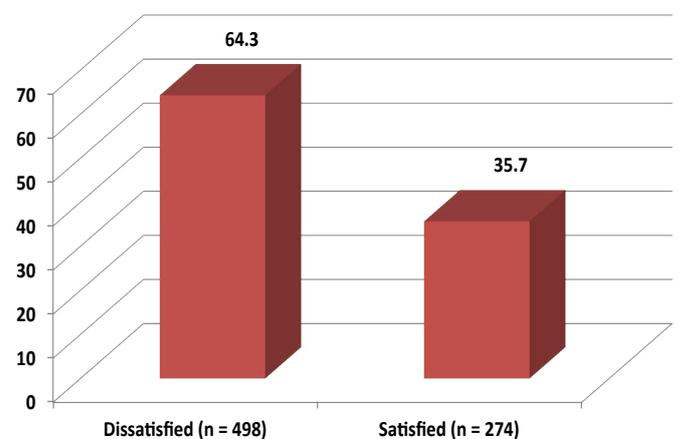
The 768 patients who used PHC emergency services were inquired about their satisfaction with the services. Table 4 shows the satisfaction among emergency health care recipients. When asked about the accessibility of services, the most unsatisfactory

Table 3: Pattern of utilization of emergency services in patients attending PHC facilities of Alexandria.

Utilization pattern	No. (n=882)	%
Frequency of visiting emergency services at PHC facility		
Never	114	12.9
Rarely	44	5.0
Sometimes	238	27.0
Often	244	27.7
Always	242	27.4
The most common type of emergency reported (n=768)		
Trauma	239	31.1
Obstetrics and gynecology	212	27.6
Poisoning	179	23.3
Abdominal	98	20.9
Ophthalmology	26	3.4
Cardio vascular	6	0.8
Respiratory	5	0.7
Coma	3	0.4
Last visit to using emergency services at PHC facility (n=768)		
Less than one year	633	82.4
1-<3 years	99	12.9
3-<5 years	35	4.6
5 years or more	1	0.1
Perceived barrier for not using emergency services at PHC (n =114)		
Ignorance of the existence of emergency services within PHC	18	15.8
Long distance to the facility/ poor transportation	21	18.4
Lack of facilities and equipment	38	33.3
Lack of staff	18	15.8
Lack of staff experience in emergency care	19	16.7

factor in the opinion of patients were lack of directional signs to emergency rooms (15.9%) and transportation cost (15.1%). Regarding availability item, the proportions of patients dissatisfied with lack of drugs, diagnostic facilities and skilled healthcare providers were 39.7%, 37.3% and 22.3%, respectively. Regarding inter-personal relationship, the most unsatisfactory factors were clinical examination (25.2%), physician patient time contact (22.3%) and privacy and confidentiality (20.4%). The item about informativeness showed that 20.4% of the interviewed patients were dissatisfied because they felt they were given insufficient information. Almost one fifth of patients (21.8%) were dissatisfied because of the lack of ease of referral to hospital or diagnosis center when necessary. The item about effectiveness of emergency services showed that 18.8% of the interviewed patients were dissatisfied with the outcome of care. Overall, mean satisfaction score % of the studied patients was 74.4% (SD 12.1, median 75.0, IQR 17.0). Only 35.7% of them were satisfied with the emergency services provided by the PHC facilities. However, 64.3% were dissatisfied (Figure 6).

Table 5 shows the satisfaction among primary health care

**Figure 6:** Satisfaction level of patients attending PHC facilities in Alexandria by primary care emergency services.

recipients by socio demographic characteristics. The urban population (79.8%) was significantly dissatisfied by the emergency services given by PHCCs than rural populations (62.9%), $p=0.014$. Widowed patients (81.3%) were significantly

Table 4: Satisfaction of patients attending PHC facilities in Alexandria by primary care emergency services (n=768).

Domain	Item	Strongly dissatisfied (%)	Dissatisfied (%)	Satisfied (%)	Strongly satisfied (%)
Accessibility of service	Distance to the facility	0.2	12.4	63.5	23.9
	Waiting time	0.2	11.6	66.0	22.2
	Directional signs to emergency room	0.1	15.9	58.7	25.3
	Transportation cost	2.3	15.1	56.9	25.7
	Service cost	0.2	13.5	58.3	28.0
	Building and the infra-structure	5.0	14.7	48.1	32.2
Availability	Registration procedure	0.2	13.0	63.8	22.9
	Skilled healthcare providers	2.6	22.3	44.1	31.0
	Diagnostic facilities	2.4	37.3	46.4	13.9
	Drugs	2.6	39.7	44.8	12.9
	Respect	5.0	15.6	54.5	24.8
Inter-personal relationship	Care and attention to patient's complaints	2.5	19.2	54.0	24.4
	Privacy and confidentiality	1.6	20.4	54.8	23.2
	Clinical examination	6.8	25.2	49.9	18.1
	Physician-patient time contact	6.6	22.3	56.2	14.9
Information	Information given in relation to care or services to the patient.	1.6	20.4	59.6	18.4
Continuity of care	Referral to hospital or diagnosis center if necessary	0.2	21.8	57.5	20.5
Effectiveness of emergency services	The outcome of care	1.0	18.8	61.7	18.5
Satisfaction scores % (total score=100)					
Minimum – maximum			25.0 – 100.0		
Mean ± SD			74.4 ± 12.1		
Median (IQR)			75.0 (17.0)		

IQR: Inter Quartile Range

Categories are not mutually exclusive

dissatisfied with primary emergency services than married (61.1%), single (64.4%) or divorced participants (66.7%), $p=0.005$. Satisfaction with primary emergency care was significantly associated with educational level of the studied patients, $p=0.022$. University graduated patients had (77.1%) were significantly dissatisfied with the primary emergency care than those had secondary or middle certificate (67.9%), those had basic education (62.2%), those had no formal education (57.7%) and those who were illiterates (60.2%). Occupation of the studied participants was significantly associated with their satisfaction with primary emergency care, $p=0.019$. Retired patients (80.0%) were significantly dissatisfied than other occupation categories [trade work (75.0%), skilled work (73.5%), professional work (66.1%), students (64.8%), housewives (60.4%), children (59.7%), or those who were not working (59.6%)].

Discussion

Overcrowding in hospital emergency departments (ED) is a growing problem that results in delayed or obstructed care and costs much each year. Studies show that access to a primary health care reduces ED use, but more research is needed to determine how to best direct patients to primary care services and improve

the quality of primary emergency care [12]. Updated knowledge, communication and procedural skills, trained medical and paramedical staff, necessary equipment and medications and appropriate practice organization are vital to provide optimum care which may even save lives of patients [13].

The present study showed that emergency services at PHC level in Alexandria are inadequate in terms of structure, process and outcome of services. The services need to be modified and defects revealed by the present study should be taken into consideration hand-in-hand with available resources in order to upgrade the quality of the emergency services provided at PHCCs in the region. It is mandatory to monitor PHCCs regularly for the supply of essential drugs and necessary equipment for emergencies. Equipped ambulances should be provided to key PHCCs, especially those in remote areas [13].

Traditionally, decisions about health services were made on the basis of health-provider views on what is in the best interest of the patient. The attitudes and practice of emergency care among health providers are important determinants of the quality and outcome of care [14]. In the current work, PHC staff had overall positive attitudes and reported good practice in emergency care at the primary care level. However, nearly one fifth of physicians

Table 5: Satisfaction of patients attending PHC facilities of Alexandria with emergency services according to socio-demographic characteristics.

Characteristics	Total (n=768)	Dissatisfied (n=498)		Satisfied (n=274)		Statistical significance (p-value)
		No.	%	No.	%	
Age (years)						
Mean ± SD	31.4 ± 20.4		31.4 ± 20.7		32.2 ± 19.9	^{MW} p=0.901
Age groups (years)						
<6	133	90	67.7	43	32.3	$\chi^2_3=2.454$ (p=0.484)
6-18	109	69	63.3	40	36.7	
19-60	476	299	62.8	177	37.2	
61-80	50	36	72.0	14	28.0	
Gender						
Male	366	243	66.4	123	33.6	$\chi^2=1.306$ (p=0.253)
Female	402	251	62.4	151	37.6	
Residence						
Urban	89	71	79.8	18	25.4	$\chi^2=6.089$ (p=0.014) *
Rural	679	427	62.9	256	37.7	
Marital status						
Married	398	243	61.1	155	38.9	^{MC} p=0.005 *
Single/child	289	186	64.4	103	35.6	
Widowed	75	61	81.3	14	18.7	
Divorced	6	4	66.7	2	33.3	
Average monthly income						
Not sufficient						$\chi^2=1.827$ (p=0.401)
Sufficient to some extent	158	108	68.4	50	31.6	
Quietly sufficient	461	295	64.0	166	36.0	
	149	91	61.1	58	38.9	
Educational level						
Illiterate	211	127	60.2	84	39.8	$\chi^2_4=11.394$ (p=0.022) *
No formal education	123	71	57.7	52	42.3	
Basic education	111	69	62.2	42	37.8	
Secondary/middle education	240	163	67.9	77	32.1	
University education/higher	83	64	77.1	19	22.9	
Occupation						
Not working	109	65	59.6	44	40.4	$\chi^2_7=15.037$ (p=0.019) *
Trade work	32	24	75.0	8	25.0	
Skilled work	68	50	73.5	18	26.5	
Housewife	182	110	60.4	72	39.6	
Professional work	115	76	66.1	39	33.9	
Student	88	57	64.8	31	35.2	
Retired	40	32	80.0	8	20.0	
Child	134	80	59.7	54	40.3	

* Significant at 0.05 level

did not believe that emergency service is an essential component of PHC services and 16.4% of nurses claimed that they are not competent to respond when encountering emergencies. Health education strategies should be adopted tailoring the attitudes of the care providers towards emergency care. Accessibility to guidelines and protocols are vital to update the knowledge of general practitioners and algorithms for the management of different medical emergencies that can be displayed in the emergency management room for quick reference [15].

Findings of the present work call for prudence in interpreting high emergency service use as an indicator of poor

control of health problems. In the present study, during the open hours, there was over-utilization of primary emergency services by patients with non-urgent complaints. It results in a waste of resources, stress among the emergency room staff and an increase in waiting time for patients requiring attention. Similar to the findings in other countries, inappropriate use of the primary emergency services is a major problem in Alexandria. Studies have shown that the majority of patients come with minor self-limiting complaints and that the maximum workload is at evening time [16,17]. Focused public education campaigns on the PHC services available and appropriate use of the emergency services are necessary. There

is a need for finding alternative solutions to out-of-hours care. After-hour family medicine clinics provide a desirable primary care service that most patients would choose over the ED if more were available [18].

In the present study, wound, burn and poisoning were the common emergencies managed by the primary care providers. Similarly, Hernández et al., in Murcia described prevalence and types of emergencies commonly treated at the primary health care. Almost a half of the patients attended the clinic for wounds. Further research is needed to determine whether and in what ways primary care provider participation actually improves patient care. It is possible to identify more precisely the cases in which a provider can make participate [19].

Some of the emergencies can be managed completely at a family practice while others should be referred to hospital after initial management. The extent to which a patient should be managed may be determined by the degree of severity of the condition, expertise of the doctor and distance to the nearest hospital [13]. In the present work, out of emergency cases attended; only one case was referred to the district hospital. Explanations for this finding could be that they were non-urgent cases (defined as patient with non-alarming vital signs) and urgent cases may access directly to the hospital emergency. However, lack of appropriate referral at PHC level could be the reason. The triage system must be adapted to allow channeling of PHC patients to the appropriate level of care. It would be helpful to create a standard letter that can be used when referring a patient to the appropriate level of care [20].

The present study investigated potential barriers that discouraged using primary emergency services. These factors reduce rapid-response capacity for urgent problems, which may partly account for higher hospital ER use. Financial limitations; lack of facilities and equipment at PHC level that result in modest co-payments for investigation and prescription drugs was the most frequently mentioned barrier. Nearly one fifth of patients also indicated inadequate accessibility to PHC emergency service. A hospital study conducted in South Africa found that patient perceived that the treatment at the hospital is superior and that PHC lacked resources [20]. Diamant et al. identified significant non-financial barriers as the inconvenient office-hours, the need to provide care for others, a lack of transportation, having competing time demands and even a fear for personal safety are all established barriers to receiving primary care [21]. Field et al. reported that patients present to the ED for their medical care because they lack access to primary care physicians [22].

Results showed that similar to other regions in Alexandria governorate, most PHC physicians and nurses were without postgraduate qualifications. Continuing medical education therefore becomes a necessity to improve and maintain the professional skills of practicing service providers. Studies conducted in Saudi Arabia showed that the majority of PHC physicians would like to acquire more knowledge about emergency medicine [23,24].

The present study revealed an important need for a wide

range of continuing medical education programs targeting emergency medicine (particularly on the management of pediatric and obstetric emergencies) to be tailored to the needs of the primary health care physicians and nurses. One of the methods of continuing medical education that was highly valued by physicians is clinical experience in hospitals. This may reflect a strong perceived need for further training in clinical emergency medicine.

Patient satisfaction surveys highlight those aspects of care that need improvement in a health care setting, they are critical for developing measures to increase the utilization of PHC services, they can help to educate medical staff about their achievements as well as their failures, assisting them to be more responsive to their patients' needs, they allow managerial judgment to be exercised from a position of knowledge rather than guesswork in the important task of managing public expectations and resources [25].

In this study, the majority of the studied PHC clients were dissatisfied in general with the emergency services provided. Areas of dissatisfaction were mostly in the availability of diagnostic facilities, medication and the skills of health care providers. Moreover, others areas such as the interpersonal relationship and information provided were also stated. There was no follow-up of the patients or an appropriate link between the hospital EDs and primary health care facilities.

Several studies have revealed similar results to the present findings. They showed that physicians' communication skills were more important to patients than their professional skills [26-28]. However, Howard et al. [29] found that patients who visited their family physician were significantly more satisfied than patients who obtained care at the emergency department or a walk-in clinic or who used a telephone health advisory service. Continuity of care, timeliness of care provision and having expectations met by the family physician has been associated with satisfaction. Strategies that increased patient's satisfaction have to be emphasized such as increasing financial and human resources to enhance access to primary care services, after-hours clinic with evening and weekend services, in addition to providing physician backup to a nurse-staffed telephone triage service [29].

Health care policy-makers will need to gain a better understanding of what contributes to people's satisfaction and well-being in order to be able to determine where funds should be allocated to promote both efficiency and client well-being [30]. It is mandatory to provide PHCCs with good directional signs leading to the emergency location. Physicians dealing with emergency cases should pay more attention to giving detailed information to their patients and more health education regarding their illness. Finally, interpersonal relationship and thoroughness of care should be stressed in training for service providers.

Considering the influence of demographic variables on patient satisfaction, simply controlling for demographic differences, might result in the needs of important demographic groupings being overlooked. The present study indicated that urban, widowed, more educated and retired patients were

significantly dissatisfied. In support to this finding, Babic-Banaszak et al. [31] reported that less-educated patients were generally more satisfied, since they are less demanding. Weeks et al. [32] reported that patients in rural settings were more satisfied with the primary care they received. Primary care providers in rural settings provided a broader range of services than those in urban ones. This increased breadth may be attributable to the lack of availability of integrated specialty care services in rural settings.

Future Scope

In future research it would be helpful to examine patient satisfaction for emergent problems in other geographic areas and different primary care systems. Future research could benefit from a more comprehensive satisfaction instrument that assesses satisfaction with level of care expectations and the nature and severity of the problem. Such information could also be used to inform quality indicators.

Conclusion

The study did not include other primary health workers in the emergency team rather than physicians and nurses. This may affect external validity and applicability of the results to other groups. In PC it was difficult to approach and interview patients having an unscheduled urgent appointment, although they might have been eligible, but some refuse to participate and replaced with risk of selection bias. However, the investigator was trained to approach the patients consequently at arrival. Some items in the observational checklist were settled as present based on self-report in some PC settings which may result in differential misclassification bias.

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