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CYTOTOXICITY AND ANTIBACTERIAL ACTIVITY OF THE URGENT AND NON-URGENT VISITS OF EMERGENCY ROOM IN A GOVERNMENTAL HOSPITAL IN ARAR, NORTHERN SAUDI ARABIA

[1]Naif Misfer Alzhrany, [2]Abdulmajeed haddaj M ALRUWAILI, [3]Abdulaziz matar R alanazi, [4]Muhammad abdullah M almalki , [5]Muayad Mahmood Anbarserri , [6]Omar Tabaan M Alenezi, [7]Mohammed Mahdi AlGaraash, [8]Nouf Sajer F Alghorry, [9]Atheer Ibrahim Alqubaysi, [10]Areej Muteb S Alanazi, [11]Ahmad alhamidi alanazi

[1] Physician at Security Forces Hospital,
King Abdulaziz University,Dr.naif09@gmail.com
[2]Intern at Northern Border University,majid.alruwily@gmail.com
[3]Intern from Northern Border University,Drazooza12@gmail.com
[4]Intern , northern borders University,Mbbs.141214@gmail.com
[5]From Imam Muhammad ibn Saud Islamic University,moayed316@hotmail.com
[6]Northern Border University, General Practitioner at PABMH –Arar,ulv-11@hotmail.com
[7]Imam abdulrahman Bin Faisal University,General Practitioner,Dr.Mohammad21@outlook.com
[8]Universtity of Tabuk, Xxno_ofxx@hotmail.com
[9]King Khaled University,Atheer.q1993@gmail.com
[10]Intern at Northern Border University,an2016an@outlook.sa
[11]King Saud University,Intern at King Khalid University Hospital,Benigndr2015@gmail.com

Abstract:

Background: *Most of patients who visit the emergency departments (EDs) in Saudi Arabia have non- urgent conditions, which results in unmet needs and delayed care for urgent patients.*

Objective: *To determine the proportion of urgent to non-urgent cases and causes for non-urgent visits to the Emergency Department (EDs) in Prince Abdulaziz bin Musaed Hospital in Arar, Kingdom of Saudi Arabia.*

Methods: *A cross-sectional study was carried out during May, 2018 included 355 male and female patients of all age groups attending the EDs. Urgent and non-urgent cases were determined by the emergency room physician, whether the case needed to be seen by the ER or it was a cold non-urgent case. Data was collected by personal interview using a predesigned questionnaire including questions which guide us to the relevant needed data.*

Results: *The majority of visitors (66.2%) to the (ED) were females, they represent almost two-thirds (69.2%) to the urgent visits to the (ED) and there was a significant correlation between sex and visiting the ER (P=0.028). Patients aged between 21 and 40 years, accounted for the highest proportion (78.1%) of ED visits. Almost half (46.2%) of patients were employed. Most of patients (76.6%) were uninsured. Eligibility for free medical services was reported by (45.1%). The urgent cases constituted altogether (25.1%) of the study participants while non-emergency cases constituted (74.9%). Coughing, nasal discharge and difficulty breathing were the most frequent causes of visits (13.9%), then acute abdominal pain (10.6%), vomiting and diarrhea (6.8%), fractures, torsions or pain in a bone or joint (or both) (6.8%). We recorded 22.8% of ED visits in the morning shift, 21.4% in mid-night shift and 57.8% in the afternoon shift.*

Conclusion: *in this study, we found that, 25.1% only ware urgent cases although the cases have the eligibility for free medical services in another special hospitals and good proportion of them were covered by health insurance. We recommend the decision makers to hold health education sessions about this issue to decrease the non-urgent cases visits to the ERs to improve the service of really urgent cases. We also recommend Large scale and detailed researches regarding this issue.*

Corresponding author:

Naif Misfer Alzhrany,

ED Physician at Security Forces Hospital,

King Abdulaziz University,

Dr.naif09@gmail.com

QR code

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INTRODUCTION:

EM is a medical specialty responsible for the diagnosis and treatment of an unexpected illness or injury [1]. Emergency management (EM) is the primary link between pre-hospital and hospital medical care, where professional care is always provided to all persons in need [2].

High patient numbers and poor organization as delayed laboratory services and insufficient staff, lead to clear specific effects as overcrowding and deficient service in the ER [3]. Overcrowding of emergency rooms (ER) is a serious public health problem. A large proportion of all emergency department visits (EDs) are non-urgent [4]. The American College of Emergency Physicians described overcrowding as a situation where the need for emergency services exceeded the resources available for patient care in the emergency department, the hospital, or both [5]. One of the main causes of overcrowding is inadequate staff number, and inadequate hospital beds [6]. These factors are responsible for delayed access to care and increased risk of unfavorable outcomes [8].

Non-urgent cases are one of the main causes of overcapacity in the emergency department, a global problem affecting health service providers, health utelizers, health resources and ultimately the economy [9].

The objectives of this study were to determine the proportion of urgent to non-urgent cases and causes for non-urgent visits to the Emergency Department (EDs) in Prince Abdulaziz bin Musaed Hospital in Arar, Kingdom of Saudi Arabia.

SUBJECTS AND METHODS:

This was a cross-sectional descriptive study conducted in the Prince Abdulaziz bin Musaed Hospital in Arar, Kingdom of Saudi Arabia. It included male and female patients of all age groups attending the EDs during May, 2018. patients with acute trauma, surgical and medical conditions. Uncooperative patients and those with existing psychiatric history were excluded from the study. Three hundreds and fifty five randomly selected non-urgent and urgent patients were studied over a period of 20 days. Arriving patients were assessed by the emergency room physician, whether the case needed to be seen by the ER or it was a cold non-urgent case that can wait the outpatient clinics. After being assessed as urgent or non-urgent, the researcher provided the participants with a study information sheet. After allowing a time to read and understand the participants information, participants or the accompanied person approached by the researcher who explained the purpose of the study. On obtaining verbal consent, a 5 minute face-to-face survey was administered in a waiting area used for their assessment to ensure privacy and confidentiality.

Ethical considerations:

We prepared the informed consent and give a brief description of the study rational and objectives to the participant then asking him/her to sign the consent. Anonymity and confidentiality of data was maintained throughout the study. Record retention in password protected computer for at least 7 years. There is no conflict of interest.

Data management and statistical analysis:

We utilized the Statistical Package For Social Sciences, version 16 (SPSS Inc., Chicago, Illinois, USA) to analyze the study data. Descriptive statistics was employed. Chi-square test was used, P value considered significant if less than 0.05.

RESULTS:

Tables of the present study showed that, the majority of visitors (66.2%) to the (ED) were females. In addition, females represent almost two-thirds (69.2%) to the urgent visits to the (ED) were females and there was a significant correlation between sex and visiting the ER (P=0.028). Patients aged between 21 and 40 years, accounted for the highest proportion (78.1%) of ED visits. Almost half (46.2%) of patients were employed. More than two thirds of patients (23.4%) were insured. Eligibility for free medical services was reported by (45.1%). About one quarter only of the visits at these emergency departments were found to be urgent. The non-urgent cases constituted altogether (74.9%) of the study participants while urgent cases constituted (25.1%). As regards the causes of ED visit, coughing, nasal discharge and difficulty breathing is the most frequent cause (13.9%), then acute abdominal pain (10.6%), vomiting and diarrhea (6.8%), fractures, torsions or pain in a bone or joint (or both) (6.8%). The least causes recorded were head injury or brain concussion (0.5%) and cerebrovascular stroke (0.3%). About the volume of ED visits, we recorded 22.8% of ED visits in the morning shift, 21.4% in mid-night shift and 57.8% in the afternoon shift. Conclusion: in this study, we found that, 25.1% only ware urgent cases although the cases have the right to be treated freely in another special hospitals and good proportion of them were covered by health insurance. We recommend the decision makers to hold health education sessions about this issue to decrease the non-urgent cases visits to the ERs to improve the service of really urgent cases. We also recommend

Large scale and detailed researches regarding this issue.

Table (1): socio-demographic characteristics of the attendees of the emergency room, Arar, 2018 (N=355)

Variable	No.	%
Age group		
○ <21	30	8.5
○ 21-30	144	40.6
○ 31-40	133	37.5
○ 41-50	35	9.9
○ >50	13	3.7
Gender		
○ Female	235	66.2
○ Male	120	33.8
Educational level		
○ Primary	5	1.4
○ Secondary	66	18.6
○ Preparatory	9	2.5
○ University or more	275	77.5
Marital status		
○ Single	145	40.8
○ Married	201	56.6
○ Widow/divorced	9	2.5
Working status		
○ Private work	24	6.8
○ Not working	152	42.8
○ Retired	15	4.2
○ Employed	164	46.2
Average family income/month		
○ <5000	53	14.9
○ 5000-9000	100	28.2
○ 9000-19000	137	38.6
○ >19000	65	18.3

Table (2): Health services related characteristics of the attendees of the emergency rooms, Arar, 2018

Variables	No.	%
Cases attending the ER		
○ Non-urgent	266	74.9
○ Urgent	89	25.1
Urgent and non urgent causes of ER visits		
○ Coughing, nasal discharge and difficulty breathing	55	13.9
○ Acute abdominal pain	42	10.6
○ Vomiting and diarrhea	27	6.8
○ Fracture, fracture, torsion or pain in a bone or joint (or both)	25	6.3
○ Sharp chest pain and shortness of breath	24	6.1
○ Fainting and dizziness with or changes in mental state	22	5.6
○ Pain, injury or inflammation of the teeth or mouth	20	5.1
○ Eye injury	17	4.3
○ Headache or migraine	15	3.9
○ Injury and severe bleeding	14	3.5
○ Hypertension	14	3.5
○ Epistaxis (bleeding from the nose)	14	3.5
○ Fever of unknown cause	13	3.3
○ Diabetic coma	13	3.3
○ Acute renal colic	12	3.0
○ Symptoms in the urinary system	8	2.0
○ Considerable anal bleeding	5	1.3
○ Head injury or brain concussion	2	.5
○ Cerebrovascular stroke	1	.3
○ Others as epileptic fit, attack of acute hemolysis, allergy … etc	13	3.3
Volume of ED visits		
○ Morning shift	81	22.8
○ Afternoon shift	198	55.8
○ Night shift	76	21.4
Having health insurance		
○ No	272	76.6
○ Yes	83	23.4
Patient eligible for free treatment in special hospitals		
○ No	195	54.9
○ Yes	160	45.1
- Type of that hospital		
• National guard hospitals	14	3.9
• Army forces hospitals	46	13.0
• Security forces hospitals	20	5.6
• Others ...	80	22.5
Do you know the difference between the outpatient clinic and ER		
○ No	37	10.4
○ Yes	318	89.6

What is the meaning of ER in your mind?		
○ Rapid and unplanned medical care	231	65.1
○ Any needed health care is available	60	16.9
○ Insufficient medical care	56	15.8
○ Availability of physician at any time for any purpose	8	2.3
Type of leave from the ER		
○ Referral to higher level of service	51	14.4
○ Hospital admission	51	14.4
○ Improvement	214	60.3
○ Informal leave due to un-satisfaction	39	11.0
What is your evaluation to the provided services in ER		
○ Good	104	29.3
○ Very good	116	32.7
○ Bad	40	11.3
○ Accepted	34	9.6
○ Excellent	61	17.2

Table (3): socio-demographic characteristics associated with urgent or non urgent visits among the attendees of the emergency room, Arar, 2018

Variable	Responses	Cases attending the ER			P value
		Non-urgent (n=266)	Urgent (n=89)	Total (N=355)	
Gender	Female	184	51	235	0.028
		69.2%	57.3%	66.2%	
	Male	82	38	120	
		30.8%	42.7%	33.8%	
Age group	<21	23	7	30	0.672
		8.6%	7.9%	8.5%	
	21-30	105	39	144	
		39.5%	43.8%	40.6%	
	31-40	100	33	133	
		37.6%	37.1%	37.5%	
	41-50	29	6	35	
		10.9%	6.7%	9.9%	
	>50	9	4	13	
		3.4%	4.5%	3.7%	
Average monthly family income	<5000	38	15	53	0.250
		14.3%	16.9%	14.9%	
	>19000	53	12	65	
		19.9%	13.5%	18.3%	
	5000-9000	69	31	100	
		25.9%	34.8%	28.2%	
	9000-19000	106	31	137	
		39.8%	34.8%	38.6%	
Working status	Working	138	50	188	0.889
		50.9%	56.1%	53.0%	
	Not working	128	39	167	
		48.1%	43.7%	47.0%	

Table (4): factors associated with urgent or non urgent visits among the attendees of the emergency room, Arar, 2018

Variable	Responses	Cases attending the ER			P value
		Non-urgent (n=266)	Urgent (n=89)	Total (N=355)	
What is the meaning of ER in your mind?	Rapid and unplanned medical care	171	60	231	0.337
		64.3%	67.4%	65.1%	
	Any needed health care is available	50	10	60	
		18.8%	11.2%	16.9%	
	Insufficient medical care	40	16	56	
		15.0%	18.0%	15.8%	
	Availability of physician at any time for any purpose	5	3	8	
		1.9%	3.4%	2.3%	
Do you know the difference between ER and outpatient clinic?	No	27	10	37	0.454
		10.2%	11.2%	10.4%	
	Yes	239	79	318	
		89.8%	88.8%	89.6%	
Having health insurance	No	200	72	272	0.169
		75.2%	80.9%	76.6%	
	Yes	66	17	83	
		24.8%	19.1%	23.4%	
Having a right in free medical care in special hospital	No	140	55	195	0.083
		52.6%	61.8%	54.9%	
	Yes	126	34	160	
		47.4%	38.2%	45.1%	

Table (5): satisfaction from provided services of urgent or non-urgent cases attending the emergency room, Arar, 2018

Variable	Responses	Cases attending the ER			P value
		Non-urgent (n=266)	Urgent (n=89)	Total (N=355)	
Did needed investigations done on time?	Delayed and some done in private sector	67	18	85	0.049
		25.2%	20.2%	23.9%	
	Yes	141	40	181	
		53.0%	44.9%	51.0%	
	Not needed	58	31	89	
		21.8%	34.8%	25.1%	
Are you admitted to the hospital?	No	191	81	272	0.001
		71.8%	91.0%	76.6%	
	Yes	75	8	83	
		28.2%	9.0%	23.4%	
What is your evaluation to the provided services in ER	Good	75	29	104	0.096
		28.2%	32.6%	29.3%	
	Very good	90	26	116	
		33.8%	29.2%	32.7%	
	Bad	36	4	40	
		13.5%	4.5%	11.3%	
	Accepted	23	11	34	
		8.6%	12.4%	9.6%	
	Excellent	42	19	61	
		15.8%	21.3%	17.2%	
Type of leave from the ER	Referral to higher level of service	40	11	51	0.056
		15.0%	12.4%	14.4%	
	Hospital admission	44	7	51	
		16.5%	7.9%	14.4%	
	Improvement	150	64	214	
		56.4%	71.9%	60.3%	
	Informal leave due to un-satisfaction	32	7	39	
		12.0%	7.9%	11.0%	

DISCUSSION:

Utilization of the emergency rooms (ERs) in Arar city has increased considerably during the last period of time. This increase is a concern for health planners because of the burden on ER services, lack of continuous service provided by the ER, overcrowding and the higher cost of such services [10].

This was a cross-sectional descriptive study aimed to determine the proportion of urgent to non-urgent cases and causes for non-urgent visits to the Emergency Department (EDs) in Prince Abdulaziz bin Musaed Hospital in Arar, Kingdom of Saudi Arabia. Arriving patients were assessed by the emergency room physician, whether the case needed to be seen by the ER or it was a cold non-urgent case that can wait the outpatient clinics.

The present study showed that the majority of visitors (66.2%) to the ER were females, which is unlike the results founded in a study by Hassan M. et al. in Taif City, Kingdom of Saudi Arabia, and in an another Australian study in which males were the majority of the ER visitors [1,11].

In our study, females represent almost two-thirds (69.2%) to the urgent visits to the (ED) were females and there was a significant correlation between sex and visiting ER (P=0.028). Adult patients with age between 21 and 40 years, accounted for the highest proportion (78.1%) of ED visits in our study, which is consistent with other studies conducted in UAE [12], Australia [13] and Spain [14]. Another study done in Jeddah city, Kingdom of Saudi Arabia [15], same results were reported.

Despite major differences between the hospital

departments included in the study and their patients, about one quarter of the visits at these emergency departments were found to be urgent. The emergency cases constituted altogether (74.9%) of the study participants while non-emergency cases constituted (25.1%). This results are similar to what found in Jeddah city [15], in which the emergency cases constituted altogether (35%) of the study participants while non-emergency cases constituted (65%). Similar figures were reported by other countries, in Australia [16], UK [17], and USA [18, 19], with less-urgent cases in their ED as only (12- 15%) of patients were considered as urgent cases. In another study in Taif city, KSA emergency cases represented 1.3%, while the non-urgent cases represented 98.7% , which was more in non-urgent cases than results recorded in ours. Also one third of the visits in France to the emergency departments were found to be non-urgent [20]. The percentage of non-urgent visits should be interpreted with caution. In fact, to define a visit as urgent or non-urgent is extremely difficult. This increase in the number of non-urgent cases visiting ED with primary care problems resulted in ED crowding and increasing waiting time for real urgent cases, high-cost care, and reduced quality of care [21]. In Saudi Arabia, increasing utilization of EDs by non-urgent cases is the leading cause of overcrowding [22].

Almost half (46.2%) of patients were employed. More than two thirds of patients (76.6%) were uninsured. Eligibility for free medical services was reported by (45.1%) whereas in Hassan M.'s [1] majority of patients (94.5%) were uninsured and eligibility for free medical services was reported by majority of them (96.7%) whereas eligibility for treatment in a second hospital was reported by 24% of them.

As regards the cause of ED visit, in the present study, As regards the cause of ED visit, coughing, nasal discharge and difficulty breathing is the most frequent cause (13.9%), then acute abdominal pain (10.6%), vomiting and diarrhea (6.8%), fracture, torsion or pain in a bone or joint (or both) (6.8%). The least causes recorded were head injury or brain concussion (0.5%) and cerebrovascular stroke (0.3%). While the study conducted at Al-Kharj, KSA [23] showed that respiratory tract infection is the main complaint followed by miscellaneous complaints such as mild conjunctivitis, allergic rash, minor burns, gastrointestinal problems, aches, and pains. In Sweden, Backman, et at. [24] reported ED patients main complaints were digestive, musculoskeletal, or traumatic symptoms. Also in Marwan Bakarman et al. [15] trauma/RTA, fever, GIT and respiratory symptoms were mainly reported.

In our study we noticed that the volume of ED visits is quite high with a noticeable increase in the afternoon and early evening shift from 2:00 pm to 12:00 am and it drops again after 12:00 am. We recorded 22.8% of ED visits in the morning shift, 21.4% in mid-night shift and 57.8% in the afternoon shift. In Jeddah, 43.8% of ED visits were in the shift between 4:00 pm and 12:00 mid-night and they reported a low level after 12:00 am which is similar to our results [15]. This pattern is similar to that seen in other countries [25]. Hassan M. [1] agreed with our results in his in Taif city. They recorded that most of the patients (62.8%) arrived between 4 pm and 12 am whereas 36.5% arrived between 8 am and 4 pm and only less than 1.0% arrived between 12 am and 8 am. We found a significant correlation between recurrent visiting of ED and each of if the patient needed investigations or not and if he was admitted to the hospital or not.

CONCLUSION AND RECOMMENDATIONS:

This study was done to approach the type of ED visits and the factors affecting it in order to minimize the overcrowding problem in the ED as a first step of improving health services specially the urgent one in our city. We found that, 25.1% only ware urgent cases although the cases have the right to be treated freely in another special hospitals and good proportion of them were covered by health insurance. We recommend the decision makers to hold health education sessions about this issue to decrease the non-urgent cases visits to the ERs to improve the service of really urgent cases. We also recommend Large scale and detailed researches regarding this issue.

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