

# Overutilization of Emergency Department by non-emergent cases in Aseer Region in Saudi Arabia

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**Abstract:** Background: By reviewing the data of the registration in emergency department of Abha Maternity Children hospital (AMCH) in one year you will find a total number of emergency visits exceeding 120,000 cases per year, Only 12,000 of them needed admission, that gave the idea that majority of cases treated in emergency departments are of minor non urgent nature which can be treated in primary health care clinic (PHCC) instead of causing the unneeded overcrowding and overutilization of the limited resources in emergency and will lead to delay in picking up and treating the real emergencies, so this study was designed to investigate the reasons lead to this problem and try to prove that improvement of PHCC services and population awareness about it and also that health insurance are key solution of this problem.

**Methods:** Questionnaire based cross-sectional study on group of 300 patients, male & female of different ages & nationalities who visited the emergency department with non-emergency reasons in Aseer region. To identify reasons of overutilization of emergency department by non-emergency cases in Assir Region & why they are not going to primary health care centers (PHCC). Inclusion criteria depends on the Canadian Triage Acuity Scale (CTAS) we included in the study cases presented to emergency department and triaged as level 4 and 5, and excluded levels 1,2 and 3. Questionnaire is composed of twenty eight direct questions investigating all the hypothesized causes and was filled up by 6th year medical students of King-Khalid University (KKU)-Abha and analyzed the data & results by SPSS & R statistic programs and Chi-Square test, under the supervision of the principle investigator the Consultant and Head department of Pediatric Emergency Medicine in AMCH.

**Results:** About 50% (of total study population) of patients that visited ED are aging 13-30, followed by 38% of population ages 31-60. About 52% of total population that visited ED comes from Abha city. About 41.33% of total population that visited ED has a university level of education. About 96% of total study population drives their own personal car to come to ED (the remaining 4% came by ambulance but also with non-urgent conditions). About 46% of total population did NOT specify their job when taking the survey. Moreover, the only significant statistic is the 'student' job which represents 26.67% of total population that visits ED (No insurance?). There are 2 significant statistics that depict the most common time that ED is being visited. Indeed about 89% of total patients visit ED 7pm-11am (this portion is split in half between 7pm-3am and 3am-11am). About 73% of total patients are familiar with other hospitals other than ED (they are aware of its existence). About 37% of the total patients who tried primary health care assign 'bad' for the service evaluation, followed by about 27% rated the primary care service as 'Excellent' and lastly comes 25.66% of total patients assign 'Fair' as a rating for the primary health care. About 75% of total population comes to ED without any referral from a primary care doctor (25% are being referred). About 81% of total patients have NOT been taught or told of the advantages and conveniences of going to the primary health care rather than ED. To the best of their knowledge, about 68% of total patients claimed that their friends/family members prefer going to ED instead of primary care. About 63.33% of total patients come to ED even if there is an available doctor in their local primary care location. About 69% of total patients comes to ED regardless of ED is being nearby their house or not (indicating loss of interest and trust in PHCC). About 92% of total patients that comes to ED never experience any bad service or a doctor mistake in primary care(maybe because they never used it). About 64% of total patients strongly believe that the medical services provided in ED are faster and better. About 70% of total patients strongly believe that ED

doctors are more expertise than the ones in primary health care. About 63% of total patients strongly believe that extending operation hours (opening hours) of PHCC would help mitigate the problem of ED overuse. About 57% of total patients strongly believe that educating/explain to them how classifies the cases/ situations in term of urgency would help mitigate the problem of ED overuse. Only 29.33% of total patients come to ED to inquire an urgency estimation for their situation. About 85.33% of total patients come to ED without any appointment. The responses to the question "Do you come to emergency department because of the easy transfer to specialist doctor?" were NOT significant since the total answers was somewhat distributed evenly between 'Yes' and 'No'. About 75% of total patients are being aware that ED is highly exposed to infectious diseases than primary health care. Only about 22% of total patients come to ED because they need a sick leave. About 90% of total patients would NOT mind prioritizing an urgent situation and delay theirs. Only 12.67% of total patients carry insurance coverage.

**Conclusion:** The solutions to reduce the ED overuse based on our results are: -Extending the operation hours of PHCC. -Since the capability and expertise of doctors in ED seem to be highly advanced than doctors in primary care, so an extra training for doctors of primary care in ED would help increase their experiences. -Educate people" especially in their teenager and early adulthood age and students" and inform them about the primary care and its advantages/conveniences since most of the survey population claimed that they are not familiar with primary care (we can do schools based increase awareness programmes) . Also we think that health insurance is a key solution to this problem because minority " Only 12.67% of total studied patients carry insurance coverage" might indicate that insured patients are more satisfied with their insurance based medical care and not needing to present to emergency department for minor non urgent problems.

**Keywords:** PHCC services, ED, AMCH.

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## 1. INTRODUCTION

Non-urgent Emergency Department (ED) visits are typically defined as visits for conditions for which a delay of several hours would not increase the likelihood of an adverse outcome <sup>(1)</sup>. Most studies that were performed in U.S found that at least 30% of all ED visits are non-urgent. There is widespread interest in intervention to discourage non-urgent ED visits. A 2005 survey found that 30% of emergency physicians working in hospitals that have implemented practices to discourage non-urgent visits <sup>(2, 3, and 4)</sup>. Visiting the ED instead of another care site (e.g. physician's office, retail clinic, urgent care) for a non-urgent condition may lead to excessive healthcare spending, unnecessary testing and treatment, and represent a missed opportunity to promote longitudinal relationships with primary health care physicians <sup>(5)</sup>.

Emergency departments are the only place in Saudi Arabia (S.A) health care system where individuals can access to a full range of services at any time regardless of their ability to pay or the severity of their condition. Today, the ED is becoming a primary resource for more and more people. The ED is also considered as a strong linkage between pre-hospital and in-hospital medical care, providing professional care for everyone at anytime <sup>(6)</sup>. More precisely, ED is the medical specialty with key missions, including evaluating, managing, treating, and preventing unexpected illness and injury <sup>(7)</sup>. Therefore, several studies in Western societies examined factors that are associated with ED and their trend over the years <sup>(8)</sup>.

According to the Canadian national guidelines <sup>(9)</sup>, which are followed by Saudi Ministry of Health (MOH) hospitals, patients must visit primary health care centers for examination, tests, and treatment, but it will be referred to ED if it is an emergency case, and some emergency cases require ED directly. This study aims to estimate non-urgent ED visits at the Saudi MOH hospitals in Asseer region. It also aims to identify predictors of non-urgent ED utilization and assess patients' knowledge of primary health care.

Sundus O. Dawoud et al, conducted a cross-sectional survey that was at the EDs of King Abdul-Aziz Hospital, King Fahd Hospital, and Al-Thaghor Hospital in November 2013 with the aims of estimating emergency service utilization for non-urgent cases, identifying the predictors of ED utilization for non-urgent cases, and measuring patients' knowledge of primary health care centers (PHCCs), showed that a- significantly higher proportion of patients without emergencies did not attempt to see a doctor at an outpatient clinic prior to visit the ED (58.7% versus 41.3% for urgent cases). <sup>(10)</sup>

According to U.S. Government Accountability Office report, the crowding at emergency departments is increasing overtime, and a 2003 U.S. study concluded that insufficient inpatient capacity and the inability of hospitals to move

patients from the emergency department into inpatient beds—was a major factor. As a result of troubles with in-hospital patients' throughput, emergency department patients are: (A) waiting longer to be seen in the emergency department; (B) waiting longer to be admitted as an inpatient if necessary, and; (C) increasingly leaving the emergency department without being seen. Also, there has been an increase in hospitals diverting ambulances to other hospitals because of emergency department crowding <sup>(11)</sup>.

## 2. OBJECTIVE

The results of reviewing the data of the registration in emergency department of Abha Maternity Children hospital (AMCH) show that the total number of emergency visits exceeding 120,000 cases per year, Only 12,000 of those cases are emergency cases, that give us the idea that the majority of the cases treated in emergency departments are in fact non urgent conditions that could be treated in primary health care centers (PHCCs) instead of causing the unnecessary overcrowding and overutilization of the limited resources in emergency departments which will lead to delay in picking up and treating the real emergencies, therefore this study was designed to investigate the reasons lead to this problem and aimed to prove that improvement of PHC services and population awareness about it, and health insurance are key solution of this problem.

## 3. METHODS

We conducted a questionnaire based cross-sectional study on a group of 300 patients, male & female of different ages & nationalities who visited the emergency department with non-emergency reasons in Aseer region. Inclusion criteria were based on the Canadian Triage Acuity Scale (CTAS). We have included in this study cases that were presented to the emergency department and triaged as level 4 and 5, and excluded levels 1, 2 and 3. The questionnaire that was conducted is composed of twenty-eight direct questions investigating all the hypothesized causes and was obtained by 6th year medical students of King-Khalid University (KKU)-Abha.

The data were analyzed using the Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL, USA), version 20.0. Descriptive statistics were performed for all variables. The chi-square was used to assess the relationship between categorical variables. The investigation was done under the supervision of the Consultant and Head department of Pediatric Emergency Medicine in Abha Maternity & Children Hospital.

## 4. RESULTS

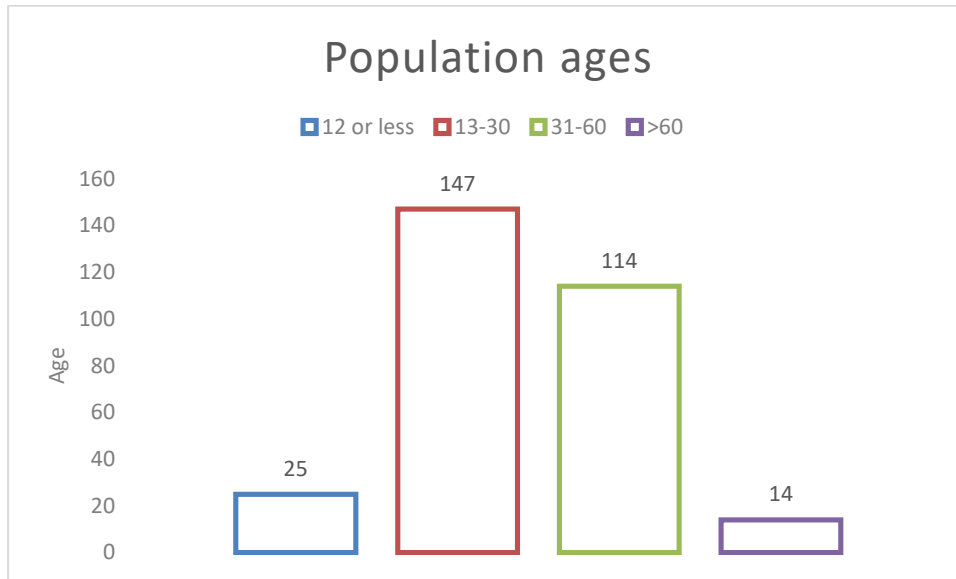
Three hundred patients were included in this study. Female patients represent about 80% of all participants (Table 1). About 50% of the total sample of the patients were in range of 13-30 years old, followed by 38% of patients aged 31-60 years old (Table 2).

**Table 1: Gender count represents the population from both genders.**

Gender	Count	Percentage (%)
Men	61	20.33
Women	239	79.67
Total	300	100

**Table 2: Population Age**

Age (years old)	Count	Percentage %
12 or less	25	8.33
13-30	147	49
31-60	114	38
>60	14	4.67
Total	300	100

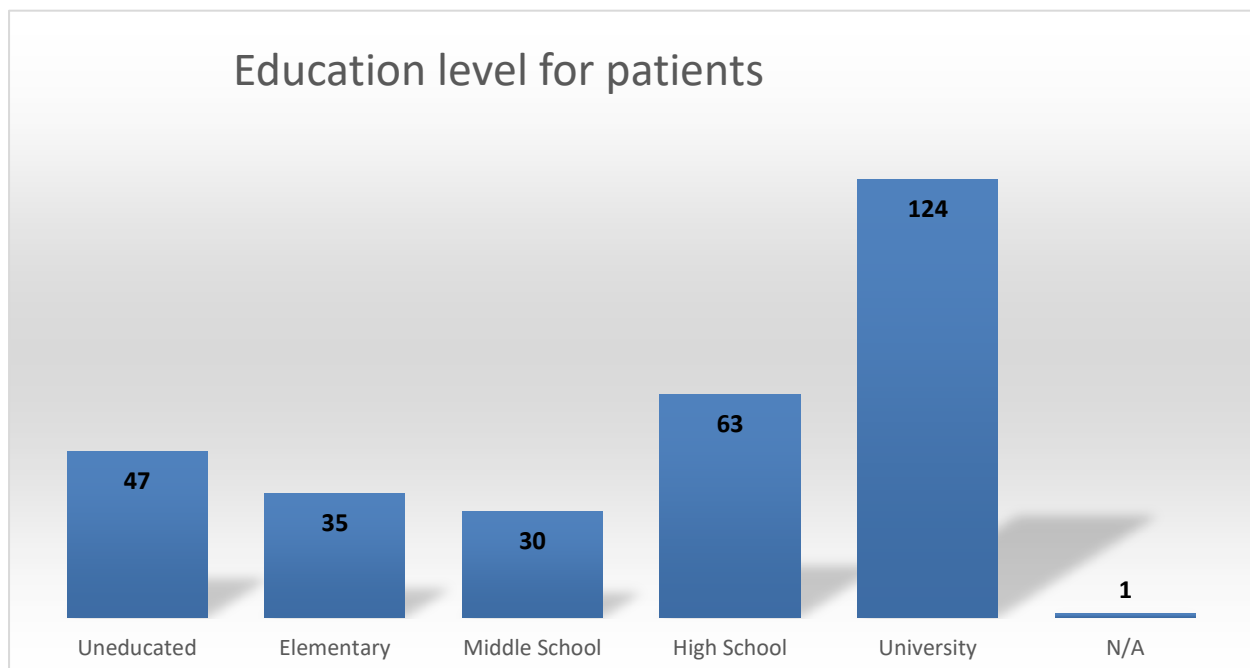


**Graph 1.**

As shown in (Table 3) that about 41.33% of the patients have a university level of education.

**Table 3: Level of education for the sample population**

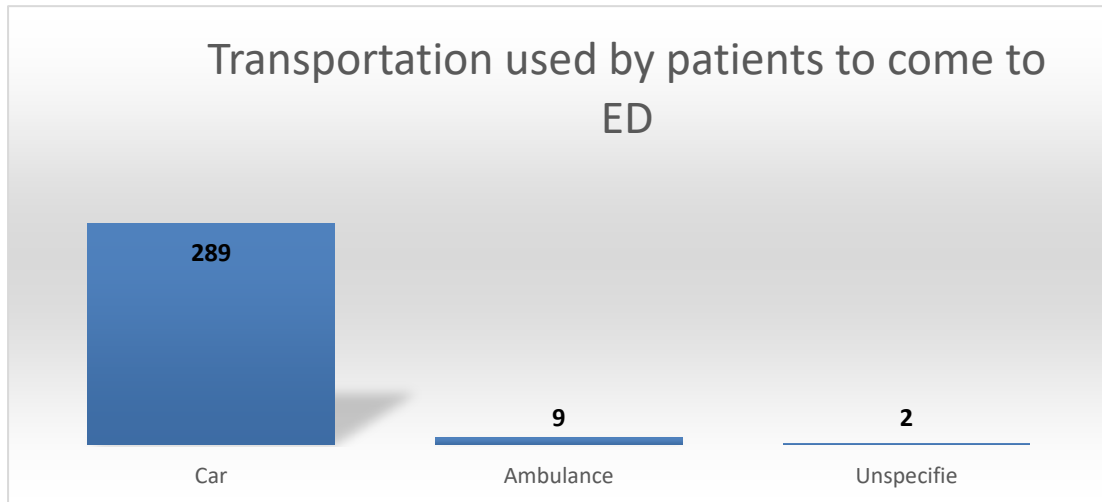
Education Level	Count	Percentage %
Uneducated	47	15.66
Elementary	35	11.67
Middle School	30	10
High School	63	21
University	124	41.33
Unspecified	1	0.67
Total	300	100



**Graph 2.**

As also showed in this study that around 96% of patients that were participated they drive their own personal car to come to ED (the remaining 4% came by ambulance but also with non urgent conditions).

Transportation	Count	Percentage %
Car	289	96.33
Ambulance	9	3
Unspecified	2	0.67
Total	300	100



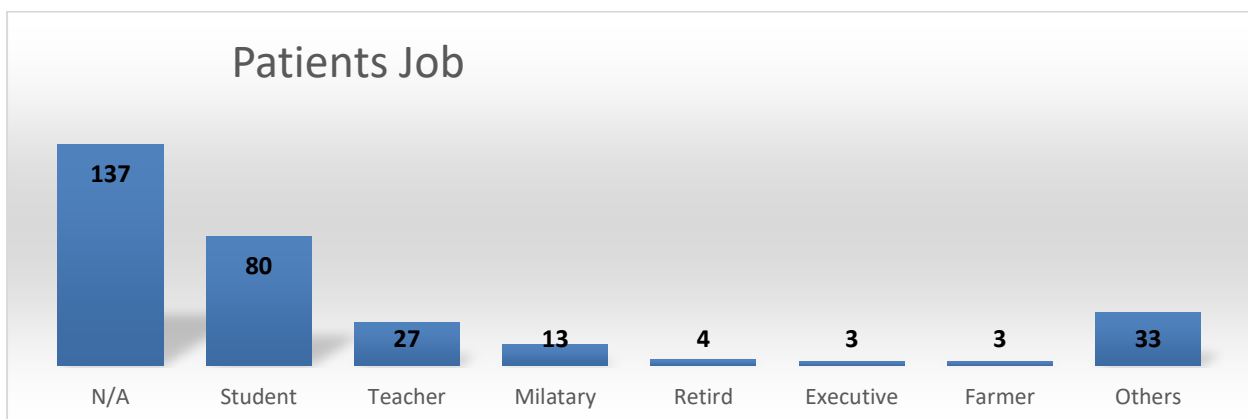
**Graph 3.**

About 46% of total population did NOT specify their job when taking the survey. Moreover, the only significant statistic is the ‘student’ job which represents 26.67% of the total sample who visits ED and as those students have no job they probably don’t carry any health insurance which could help in prevention of the ED overuse in government hospitals.

**- Job of survey population:**

Job	Count	Percentage %
Unspecified	137	45.66
Student	80	26.67
Teacher	27	9
Military	13	4.33
Retired	4	1.34
Executive	3	1
Farmer	3	1
Others	33	11
Total	300	100

*Others is not significant as it counts for the rest of the people job. There are at most 2 persons have the same job.*

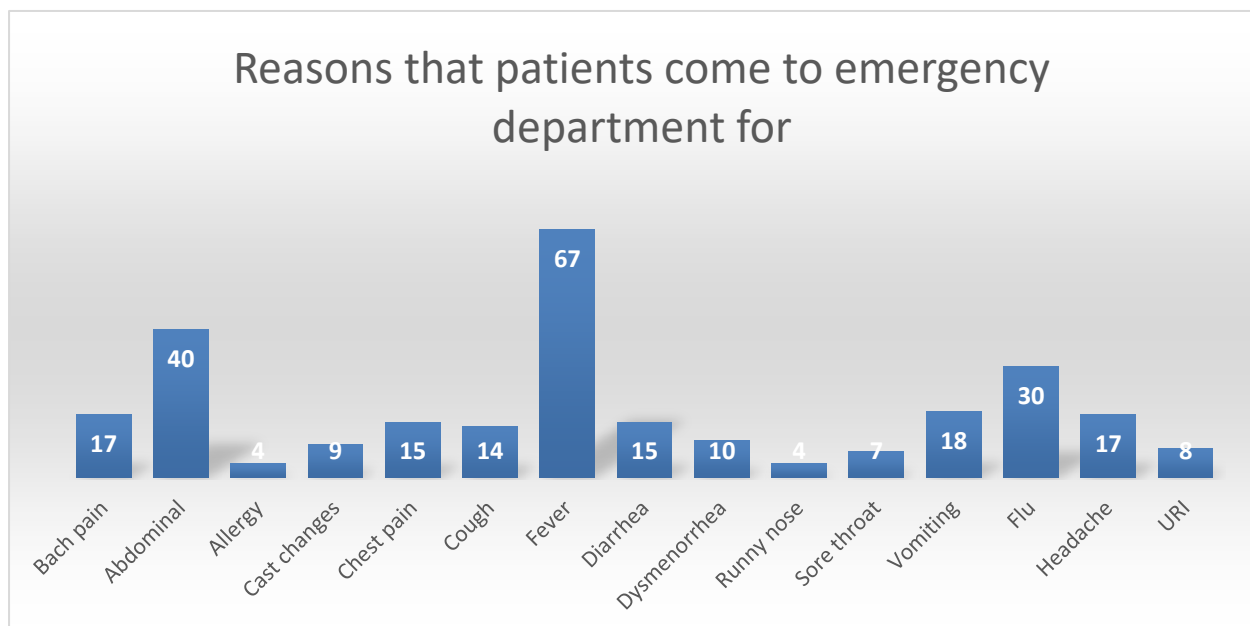


**Graph 4.**

Most frequent situation that leads patients to visit ED is ‘Fever’ that forms 22.33% of total collected situations, followed by 13.33% presenting Abdominal situation, then it comes last the ‘Flu’ situation that presents 10% of total situations.

- **Reasons for visiting the emergency department:**

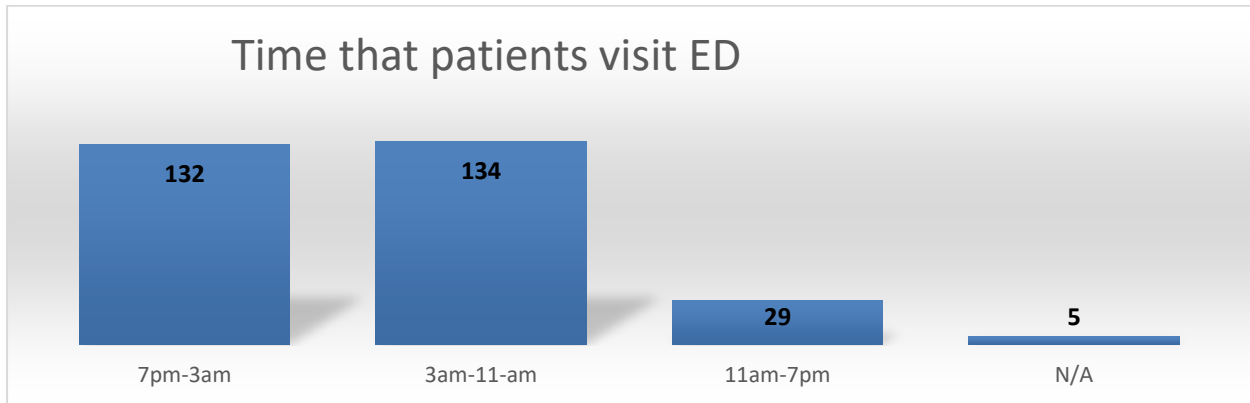
Situation	Count
Back pain	17 (5.67%)
Abdominal	<b>40 (13.33%)</b>
Allergy	4
Cast changes	9
Chest pain	15 (5%)
Cough	14
Fever	<b>67 (22.33%)</b>
Diarrhea	15 (5%)
Dysmenorrhea	10
Runny nose	4
Sore throat	7
Vomiting	18 (6%)
Flu	<b>30 (10%)</b>
Headache	17 (5.67%)
URI	8



**Graph 5: Shows classification for situations (for 4 times and more) that patients came to emergency department for.**

There are two significant statistics that depict the most common time that ED is being visited. Indeed about 89% of total patients visit ED 7am-11pm (this portion is split in half between 7am-3pm and 3pm-11pm). Strangely enough that is meeting the PHCCs working hours in the region, indicating the non-justified overutilization of ED by nonemergency patients in these times.

Time	Count	Percentage %
7am-3pm	132	44
3pm-11pm	134	44.67
11pm-7am	29	9.67
Unspecified	5	1.66
Total	300	100



**Graph 6.**

About 73% of total patients are familiar with other health care facility other than ED (they are aware of its existence). And about 98% of the patients that know about other health care facility other than ED, claim Primary cares.

**- Do you know any other health care facility other than emergency department?**

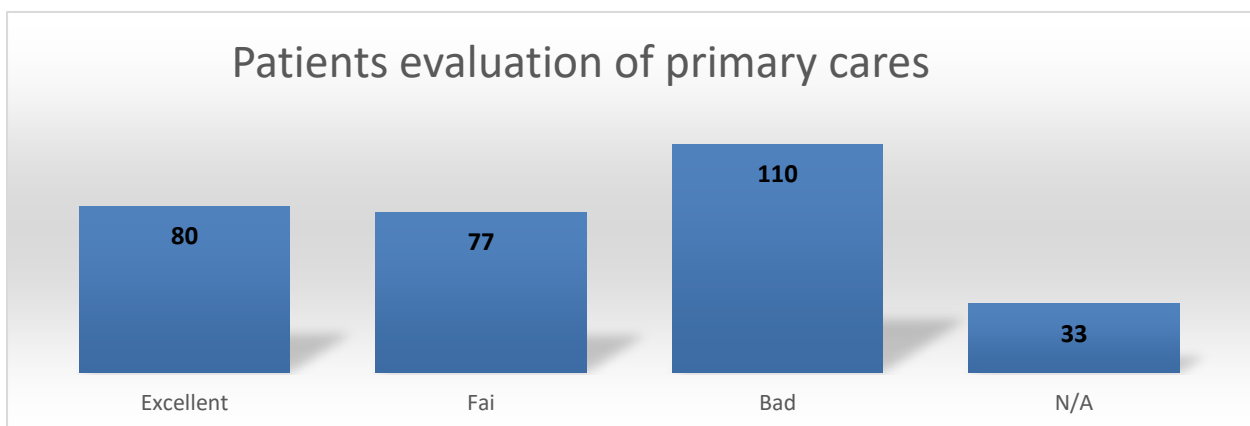
Response	Count	Percentage %
Yes	219	73
No	70	23.33
Unspecified	11	3.67
Total	300	100

**- If yes, specify the health care facility (other than emergency department)?**

Hospital	Count	Percentage %
Primary care	215	98.17
Unspecified	4	1.83
Total	219	100

About 37% of the total patients who visited primary health care center assign 'bad' for the service evaluation, followed by about 27% rated the primary care service as 'Excellent' and lastly comes 25.66% of total patients assign 'Fair' as a rating for the primary health care.

Evaluation	Count	Percentage %
Excellent	80	26.67
Fair	77	25.66
Bad	110	36.66
Unspecified	33	11
Total	300	100



**Graph 7.**

About 75% of total population comes to ED without any referral from a primary health care physician which is one of the factors affecting ED overuse, while only 25% are referred cases.

**- Are you referred by a primary care doctor?**

Response	Count	Percentage %
Yes	75	25
No	224	74.67
Unspecified	1	0.33
Total	300	100

The study showed that approximately 81% of total patients have NOT been taught or told about the advantages and conveniences of going to the primary health care centers rather than ED.

**- Have you been told or notified of the primary care conveniences?**

Response	Count	Percentage %
Yes	58	19.33
No	242	80.67
Total	300	100

In contrast, more than 68% of total patients declared that their friends/family members prefer going to ED instead of primary health care centers to the best of their knowledge.

**- To the best of your knowledge (based on your discussions with your friends/family), do you think that most of them prioritize emergency department over primary care?**

Response	Count	Percentage %
Yes	205	68.33
No	95	31.67
Total	300	100

And over 63% of total patients come to ED even if there is an available doctor in their local primary health care center, which shows that this is the main factor influencing the overcrowded and overused of ED. And indicating the loss of patient interest and trust in PHCC even if available.

**- Is the reason of visiting emergency department the unavailability of a doctor in the primary care?**

Response	Count	Percentage %
Yes	110	36.67
No	190	63.33
Total	300	100

We found that 207 patients (69%) comes to ED regardless if it is being nearby their house or not and most of those patients are with non-urgent conditions used to go to the ED even if they knew that primary health care centers (PHCCs) could manage their cases.

**- Is the reason for coming to emergency department, because it is located nearby your house?**

Response	Count	Percentage %
Yes	93	31
No	207	69
Total	300	100

However most of the patients those represent about 92% of the total sample used to visit ED while they never experienced any bad service or a doctor mistake in primary health care (maybe because they never used it),

**- Did you experience any bad service such as a doctor mistake in the primary care that makes you avoid going there?**

Response	Count	Percentage %
Yes	23	7.67
No	277	92.33
Total	300	100



Important reason as shown by approximately 64% of total patients is that they strongly believe that the medical services provided in ED are faster and better. And about 70% of total patients strongly believe that ED doctors are more experienced than the ones in PHCC.

- **Do you think hospital services provided in emergency department are faster and better than primary cares?**

Response	Count	Percentage %
Yes	192	64
No	108	36
Total	300	100

- **Do you think doctors in emergency department are more expertise than primary cares?**

Response	Count	Percentage %
Yes	208	69.33
No	92	30.67
Total	300	100

About 63% of total patients strongly believe that extending working hours (opening hours) of PHCCs would help in mitigate the problem of ED overuse.

- **Do you think extending operation hours of primary cares would help?**

Response	Count	Percentage %
Yes	189	63
No	111	37
Total	300	100

About 57% of total patients strongly believe that educating/explaining to them how to classify the cases/ situations in term of urgency would help in mitigate the problem of ED overuse.

- **Do you think educating people on how to classify emergent cases depending on urgency level would help?**

Response	Count	Percentage %
Yes	171	57
No	129	43
Total	300	100

About 85.33% of total patients come to ED without any appointment.

- **Are you visiting emergency department based on appointment?**

Response	Count	Percentage %
Yes	44	14.67
No	256	85.33
Total	300	100

The responses to the question “Do you come to the emergency department because of the easy refer to the specialist doctor?” were NOT significant since the total answers was somehow distributed evenly between ‘Yes’ and ‘No’.

- **Do you come to emergency department because of the easy transfer to specialist doctor?**

Response	Count	Percentage %
Yes	149	49.67
No	151	50.33
Total	300	100

About 75% of total patients are aware that ED is highly exposed to infectious diseases than primary health care centers.

- **Are you aware that emergency departments are more exposed to infectious diseases?**

Response	Count	Percentage %
Yes	226	75.33
No	74	24.67
Total	300	100

Only about 22% of total patients come to ED because they need a sick leave which is another overcrowding reason.

- **Do you come to emergency department because you need sickness leave justification?**

Response	Count	Percentage %
Yes	35	21.67
No	265	88.33
Total	300	100

Only 12.67% of total study population carry insurance coverage, we believe that the reason behind this is that insured patients are more satisfied with their insurance based medical care and not needing to present to emergency department for minor non urgent problems..

- **People count that carry insurance?**

Response	Count	Percentage %
Yes	38	12.67
No	262	87.33
Total	300	100

About 90% of total patients would NOT mind prioritizing an urgent situation and delay theirs. Indicating the ease of applying policies redirecting those patients to more delayed health care facilities away from ED.

- **Are you ok with prioritizing a more urgent situation and delay yours?**

Response	Count	Percentage %
Yes	271	90.33
No	29	9.67
Total	300	100

## 5. CONCLUSIONS

There is good evidence that ED overuse is affected by primary health care centers (PHCC) disuse. The potential benefits of PHCC are not being promoted socially that might be a reason for its disuse among both the younger and the older groups. Analysis of our data showed that the emergency services in Saudi hospitals are over utilized by non-emergent cases.

Based on the results of our study we could suggest some ways and means that may prevent the ED overuse such as:

- Try to improve the PHCC image by extra training programs for the doctors working in primary health care centers that aim to improve their experiences in management of emergency cases.
- Educate people especially in their youth and early adulthood age and students (we can give school based awareness programs) through media and social media and applying special lectures at school to increase their awareness and their families about the PHCC and its advantages/conveniences.
- Health care system should develop a health insurance policy that is commensurate with the expectation of the population.
- Finally, policies aimed to reduce the non-urgent visits to the EDs should be applied such as not receive non-urgent cases and direct them to outpatient clinics or PHCCs.
- Extending the working hours of the PHCCs even was suggested by majority of study population it will not be helpful in reducing the ED non-urgent visits because most of these visits occurred during the PHCC working hours.

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