Emergency Department Overcrowding in the Western Region of Saudi Arabia

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Abstract

Introduction: Emergency department (ED) overcrowding is a global public health threat that affects both patients and ED staff. In Saudi Arabia, ED crowding is a challenge to the Ministry of Health. To date, the direct relationship between patient perceptions of ED crowding and their satisfaction has not been fully explained. We aim to assess the perception of our population on ED overcrowding and how it affects their satisfaction level.

Methods: A quantitative, cross-sectional study where data collection took place through a pre-structured online questionnaire targeting all accessible adult population in the Western Region of Saudi Arabia.

Results: Most of our 373 participants agreed that the decreased number of available emergency departments, lack of coordination, and short staffing were the main reasons of emergency departments overcrowding. The majority were neutral regarding staff incompetence and around 22% of them disagreed. More than half of our participants (59.8%) were unsatisfied, 62.2% of them reported delayed services as the reason behind their dissatisfaction. All participants who reported a delay in the provided services, reported an overall dissatisfaction with the emergency department's provided care and services (P-Value <0.001)

Conclusions: There is a need to provide more ED departments in the western region, designing educational programs for emergency physicians and all the ED staff, and designing awareness campaigns for the public to educate them on the concept of urgent cases and how to access healthcare properly to avoid ED crowding.

Keywords: Emergency Department, Overcrowding, Satisfaction, Saudi Arabia.

Introduction

The Emergency Department (ED) is considered the center of any healthcare organization and its main role is to treat critical cases in a timely manner. There has been a noticeable increased demand on the ED to meet the expectations of the community and provide its members with the best quality of medical care (1). The simplest definition for ED overcrowding is an imbalance between the demand of patients visiting the ED and the available resources to meet these needs (hospital beds, staffing, etc.). The Australian College for Emergency Medicine defines overcrowding as a dysfunction of the ED when the numbers of patients awaiting transfer, visits, diagnosis, and/or treatment exceed the ED's physical and staffing capacity (2). ED overcrowding is a global public health issue that can harm both patients and physicians (3). There is no reliable consensus on measuring ED overcrowding despite being the subject of international research for two decades (4). The Association of Academic Chairs of Emergency Medicine (AACEM) has published data that shows that the rates of ED patient boarding rose by almost 130% (from 7.0% to 16.0%) from 2012 to 2019. Additionally, the rates of boarding patients for more than 24 hours have increased double (from 0.78% to 1.45%, then increased to 1.64%) (5).

ED overcrowding has been proven to cause avoidable mortality and morbidity among patients. The effects of ED overcrowding include worsened patient outcomes due to long waiting times, increased hospital admissions, ambulance diversion, misdiagnosis, medication errors, offering inadequate care to patients, premature discharge, and patient discomfort due to long waiting times in the waiting rooms, and increased need for return visits (6,7). Furthermore, ED overcrowding is dangerous for the ED staff as well. It has been documented that overcrowding in the ED leads to decreased productivity, increased human errors, consequent legal actions, increased violence against the ED staff, and burnout (6). A study by Wang et al. suggested that overcrowding of the ED was correlated with patient satisfaction (8). Dong-uk et al. have also reported that ED overcrowding has been shown to decrease patient satisfaction and profit loss in medical establishments (7).

As discussed above, the literature suggests that the effects of ED overcrowding result in overall low patient satisfaction and compromised medical care. It is worth noting that a small number of the currently published studies document this effect. Globally and locally in Saudi Arabia there has been slow progress in alleviating the issue of ED overcrowding and its harmful effects on both patients and medical staff. In this study, we aim to assess the perceptions of our population on ED overcrowding and how their perceptions affect their satisfaction levels. Gaining the patients' insights will help us improve the quality of healthcare services provided in the ED and highlight the importance of this issue.

Methodology

This is a quantitative, cross-sectional study where data collection took place through a pre-structured online questionnaire targeting all accessible adult population in the Western Region of Saudi Arabia.

This questionnaire was filled in by a total of 373 participants (above 18 years) who access health care in the western region of Saudi Arabia. The study was conducted from August to May of 2021. Data collection took place via an online questionnaire that was approved, along with all the methods used in the current study, by the research ethics committee unit of Taif University. We obtained written informed consent from all the participants and from legal guardians of illiterate participants.

The questionnaire had three sections. The first section measured the demographic characteristics of the respondents (age, gender, nationality, employment status, level of education, whether the participants visited the ED, and the date of their last visit to the ED). The second section was designed to determine the participants' perception of the ED services, overcrowding, and the reasons for overcrowding. The final section measured the participants' level of satisfaction with the quality of the delivered services in the ED. We obtained written consent from all of the participants. Data were analyzed using SPSS (Statistical Package for Social Sciences) version 28. Qualitative data variables were expressed by using frequency and percentage.

Results

Out of our 373 participants, (34.6%) were aged between 40 and 50 years old, followed by participants aged from 18-25 (32.4%). Most of the participants were females (62.5% females versus 37.5% males). Around 99.7% of the respondents were educated, while 52.3% were employed. Approximately 94.6% of the participants reported visiting the ED before, mostly during the last six months (29.5%). The full demographic characteristics of the participants are shown in (Table 1).

We explored the reasons the participants perceived as the cause of emergency department overcrowding. Most of our participants agreed that the decreased number of available emergency departments, lack of coordination, and short staffing were the main reasons. However, most of them were neutral regarding staff incompetence and around (22%) of them disagreed (Table 2).

Table 1: Baseline Characteristics of the whole cohort (n=373)

Variable	Count	Percent (%)
Age Group		
18 - 24	121	32.4
25 - 29	23	6.2
30 - 39	31	8.3
40 - 49	129	34.6
50 and more	69	18.5
Gender		
Male	140	37.5
Female	233	62.5
Education		
Educated	372	99.7
Not educated	1	0.3
Employment		
Employed	195	52.3
Not employed	178	47.7
Previous emergency department visitations		
Yes	353	94.6
No	20	5.4
Time of the last emergency department visit		
Less than a month ago	68	18.2
During the last six months	110	29.5
Around one or two years ago	77	20.6
Three to four years ago	79	21.2
More than 10 years ago	16	4.3
More than 20 years ago	23	6.2

Table 2. Perception of the reasons for ED overcrowding (n=373)

Statement	Strongly Agree		Agree		Neutral		Disagree		Strongly disagree	
	Count	%	Count	%	Count	%	Count	%	Count	%
Lack of ED facilities in hospitals	84	22.5	168	45.0	59	15.8	51	13.7	11	2.9
Lack of coordination	78	20.9	169	45.3	67	18.0	46	12.3	13	3.5
Short staffing	77	20.6	163	43.7	90	24.1	28	7.5	15	4.0
Staff Incompetence	36	9.7	77	20.6	109	29.2	82	22.0	69	18.5

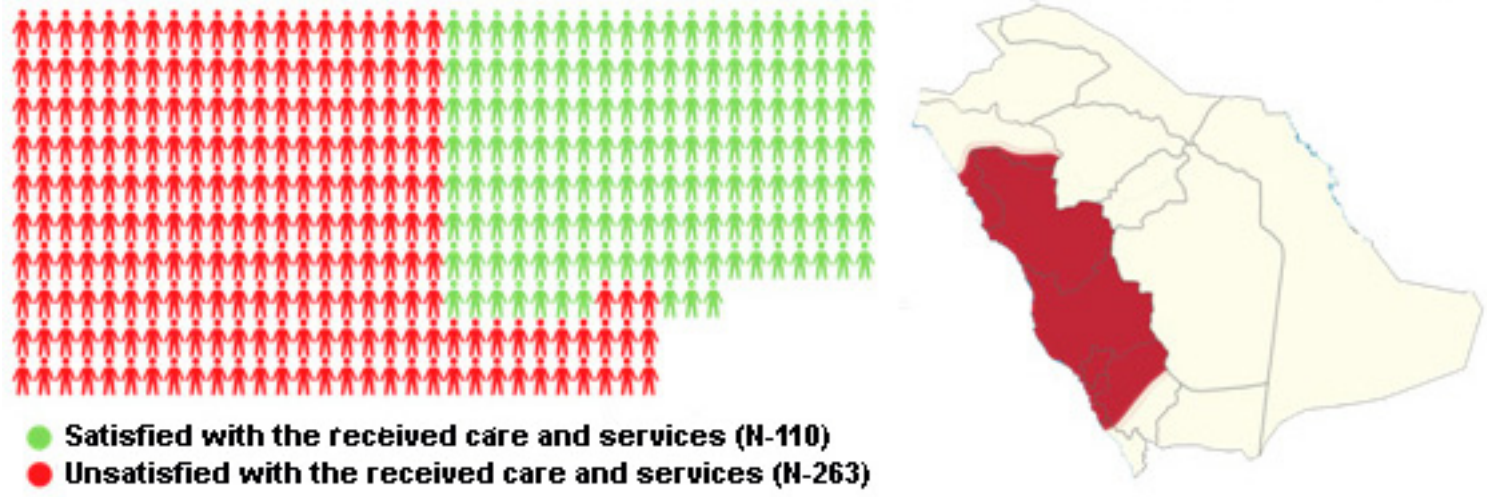
Additionally, 43% of our participants added additional reasons for Emergency department overcrowding, and the most common reason provided was staff's negligence, followed by disorganization and Lack of awareness of the concept of emergency departments among participants (Table 3).

Table 3. Additional reasons provided by 45.3% of the patients

Other cause	Frequency (n)	Percent (%)
Staff's negligence	22	17.7
Disorganization	19	15.3
Lack of awareness of the concept of emergency departments among patients.	19	15.3
Decreased number of beds	16	12.9
Few Hospitals in the area	12	9.7
Lack of emergency physicians	9	7.3
Patients not being sorted correctly	9	7.3
Lots of emergency cases	8	6.5
There are no specializations for ER departments	3	2.4
Lack of experience and training	3	2.4
Long break time	2	1.6
The patients' relatives stay with them in the ED waiting rooms	2	1.6

Furthermore, we investigated the degree of satisfaction with the quality of care and provided services in the emergency department which revealed that more than half of our participants (59.8%) were unsatisfied. Figure1 shows a visual representation of our cohort of participants' satisfaction.

Figure 1: Visual representation of our participant's satisfaction after receiving care in the emergency department



Participants who were unsatisfied were asked to clarify the reason behind their dissatisfaction; most of them, (62.2%) reported delayed services as the reason behind their dissatisfaction. We asked all participants even those who were satisfied with the provided ED care if they were satisfied with the waiting time in the emergency department, and the percentage of dissatisfaction increased to 70.5% (Table 4).

Table 4: Level of patient satisfaction with ED services.

Variable	Count	Percent (%)
Are you satisfied with the quality of care provided at your ED?		
Yes	150	40.2
No	223	59.8
If you answered the previous question with (No), please specify why?		
Delayed services	196	62.2
Crowdedness	60	19.0
Negligence	33	10.5
Critical Cases	26	8.3
Are you satisfied with the period of waiting time at the ED		
Satisfied	110	29.5
Dissatisfied	263	70.5

Finally, we compared our participants' characteristics with the level of satisfaction. Gender, education and employment showed insignificant P-value. However, when we compared the satisfaction levels of those who experienced a delay in the emergency department, we discovered that all participants who reported a delay in the provided services, reported an overall dissatisfaction with the emergency department provided care and services (P-Value <0.001) (Table 5) .

Table 5. Relationship between patient characteristics and satisfaction levels

Factor		Satisfied		Dissatisfied		P. value
		Count	% within factor	Count	% within factor	
Gender	Male	52	37.1	88	62.9	0.12
	Female	58	24.9	175	75.1	
Educated	Yes	110	29.6	262	70.4	0.517
	No	0	0.0	1	100.0	
Employed	Yes	63	32.3	132	67.7	0.212
	No	47	26.4	131	73.6	
Satisfaction level	Patients who did not experience delayed ED services	110	80.9	26	19.1	<0.001
	Patients who experienced delayed ED services	0	0.0	237	100.0	

Discussion

The setting of the ED is detrimental to patient satisfaction with its services. The patients' satisfaction levels need to be analyzed to improve the quality of care, patient experience, and meet the needs and expectations of our community. Patient satisfaction surveys have been proven to be an excellent way to gain a clear insight into patients' perceptions. Additionally, they are an important tool for quality improvement.

The reported causes of ED overcrowding include an increased number of patients coming to the ED as well as those waiting to be moved to their wards, as well as resource shortage (9). Crowding in ED has been established as a challenge to the Saudi Ministry of Health, especially at the referral hospitals. Furthermore, no national initiatives to reduce ED crowding have been revealed. A survey in which directors from 10 ED in Riyadh provided their insights showed that half of the participants stated that overcrowding is an issue in their departments, and 40% mentioned it is a constant problem. The most significant causes of overcrowding were delayed patient discharge (90%), limited inpatient beds (70%), the prolonged stay of ED cases (70%), and delayed disposition plans (60%). Additional data from King Faisal Specialist Hospital and Research Center revealed that more than 505 of the patients had an average waiting time of six hours, and around 15% of the cases waited more than 24 hours (10). In Saudi Arabia, the main causative factor for ED overcrowding is a large number of patients with non-urgent medical problems attending the ED for non-urgent reasons, increasing the waiting times for themselves and acutely ill patients. Efstathiou et al. reported that more than 50% of the participants reported visiting the ED to access healthcare (11). Another Saudi study conducted in the Eastern region found that ED visits have increased by almost 30%, and 60% of the visitors presented with non-urgent conditions. They also found that the length of stay in the ED has increased (12). Previous studies have highlighted the importance of measuring patients' satisfaction to improve the overall quality of healthcare (13). Patients' non-clinical perception of their care environment affects their satisfaction level. Additionally, satisfaction level is affected by the ability of the staff to effectively manage patients' expectations. Satisfaction level is also affected by the overall ED performance, patient compliance, and presence or absence of any medico-legal concerns (14) . Around 22.5% of the participants strongly agreed that the main reason for ED overcrowding is the low number of hospitals equipped with an ED. Additionally, 45.3% of the patients provided additional reasons. These included, decreased number of beds (12.9%), the presence of few hospitals in the area (9.7%), lack of emergency physicians (7.3%), insufficient experience and training provided to the staff (2.4%). These reasons are similar to the reasons reported by Jayaprakash et al. They included inadequate outpatient access to primary care, inadequate out-of-hours service, bed shortage, patient self-referral, staff shortages, and lack of medical staff experience (15).

Around 59.8% of the participants are dissatisfied with the quality of care provided in their ED. These rates are higher than the rates reported by Alazmi, where more than 80% of the respondents attending Farwanyia hospital in Kuwait were dissatisfied with emergency care services. (16) On the contrary, in Australia, Dinh et al. reported that around 84% of the respondents believed that the care they received in the ED was very good or excellent (18).

In our study, the main reasons for dissatisfaction included delays in services (62.2%), crowdedness (19.0%), negligence (10.5%), and an increased number of critical cases (8.3%). Another study in Kuwait by Alazmi and Almutairi revealed that 55.8% of the patients were dissatisfied with the overall cleanliness, 48.5% of the patients were dissatisfied with the comfort of the waiting area, and 46.4% were unhappy about the long waiting time for the first visit (17).

There was a statistically significant relationship between waiting time and ED dissatisfaction, as 100% of the patients who were dissatisfied with the waiting time were also dissatisfied with the quality of services provided in the ED (p-value <0.001). These results agree with what was reported by Dinh et al., that waiting time is highly predictive of patient satisfaction with the ED. They noticed a linear decrease in median satisfaction scores for each hour of waiting time in the ED (17). Another Moroccan study has shown that around 94% percent of the participants were dissatisfied with the overall ED care, and the most patient-reported problem was waiting time (79.2%) (19).

Conclusion

In short, we can conclude that ED overcrowding is an issue in the Western Region of Saudi Arabia. There are multiple areas for improvement that need to be addressed. These include providing more ED departments in the region, designing educational programs for emergency physicians and all the ED staff, and designing awareness campaigns for the public to educate them on the concept of urgent cases and how to access healthcare properly. All of this will help us improve patient satisfaction rates and provide them with a better quality of care.

Limitations

The study has the traditional limitations of cross-sectional studies as non-response and response bias. The sample size is small and therefore not indicative of the perception of all Saudi patients. Further studies across the kingdom are needed to establish the relationship between patients' perceptions and ED overcrowding and their satisfaction with the provided care.

Declarations

• Ethics approval and consent to participate:

The study along with all of its methods was approved by the Research Ethics Committee at Taif University, School of Medicine. We obtained a written informed consent from all the participants and from legal guardian of illiterate participant, which is available upon request from the corresponding author.

Authors' contributions

AMA, RHK, and SKA led the writing of the manuscript and statistical analysis. EMA, SMA, MAA, and YHA collected the data and revised and edited the manuscript, SAA assisted with the writing and revision of the manuscript. All authors read and approved the final manuscript.

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