

Extra Clinical Delays within the Emergency Department

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Abstract

Background: King Faisal Specialist Hospital & Research Center (KFSH&RC) is a tertiary center with a complex cohort of patients presenting to its Emergency Department (ED). Our ED staff can have prolonged & repetitive conversations with other specialties for transferring onward patient care due to a variety of reasons (including refusals to admit). In addition time consumed to manage ED flow, answering phone calls from specialty clinics (asking for advice on urgent issues and transfer patients to ED), conversations with patients & their relatives and administrative phone calls to the hospital management (to solve admission disputes, between specialties) can consume a huge portions of the ED physicians time. All these activities during a clinical shift can be classed as extra-clinical delays (ECDs).

Aim: We aimed to find out the time an ED physician spends during his 8 hour clinical shift, dealing with ECDs.

Methods: We collected prospective data (over a 6 months period) using a designed a pro-forma highlighting all the possible ECDs, an ED physician can have during a clinical shift. This pro-forma was handed over to a physician at the start of his/her clinical shift and collected at the finish time.

Results: The majority of participants in our study were junior ED residents (40.45%). Most ECDs were due to phone calls made for specialty consultations (47%), with internal medicine being the most consulted specialty (48%). The mean number of calls made per shift were 6.515 ± 4.659 with approximately two calls per case. 42% of participants could not take comfort breaks during their shift due to ECDs. There was a statistically significant difference between the number of calls made by ED physicians with different job roles (P -value = 0.0007).

Conclusion: A significant amount of time is consumed by an ED physician during a clinical shift for ECDs. This impacts on comfort breaks and eventually on their training and productivity. Further research will be required to explore reasons behind the ECDs and how to minimize them.

Introduction

In the past decade, there has been a global increase in utilisation of the emergency Department (ED) services by patients. It reached up to 130 million visits in the USA, and more than 13 million visits annually in the KSA [1, 2]. In order to fulfil this high demand, with unpredictable workload in a fast paced environment, there has been a growing need for time efficiency awareness within the ED. The Joint Commission (JC) seems to reflect this awareness by including time in the efficient flow of patients within the ED [3]. Effective time utilisation of an emergency physician (EP) is critical in delivering safe and efficient patient care.

Time allocation in the ED depends on the EP's activities, which can be categorised as direct, indirect and non-clinical care. Examples of direct clinical care include taking patient history and carrying out examinations, whilst indirect care includes reading ECGs & reviewing blood results etc. Non-clinical time is consumed in activities such as academic teaching and comfort breaks [4]. EPs can additionally consume unnecessary time to manage Extra Clinical Delays (ECDs), which do not fall in any of the above activities (e.g. time spent in repetitive phone calls to specialties for admitting an eligible ED patient). ECDs have the potential to compromise patient care by engaging EPs unnecessarily.

Studies have shown a significant amount of EPs working time is spent communicating and coordinating with other healthcare professionals, which is essential for multidisciplinary management [5,6]. Interdepartmental professional consultations can take up to 40

% of an EP physician time [7]. Prolonged consultation time lengthens patients ED stay, increases adverse effects, impacts workflow and contributes to ED overcrowding [8,9].

Avoiding ECDs that are not directed to patient care can improve patient experience and enhance satisfaction.

We aimed this study to find out the time spent by EPs during an ED working shift of a tertiary care center with a specific focus on ECDs.

Methods

It was a cross-sectional, questionnaire based study conducted within the ED of KFSHRC-Riyadh, Saudi Arabia. Data was collected anonymously from all working zones (adults, pediatrics and urgent care) during the three shifts (morning, evening and night) over a 6 months period. The questionnaire was distributed to EPs as hard copies.

Statistical tests

The analysis was performed using Stata software version 17. Qualitative data were described as frequency tables and percentages

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Table 1. Baseline characteristics of the participants.

	Categories	N (%)
Physician designation	Consultant	28 (31.46%)
	Fellow	3 (3.37%)
	Specialist	8 (8.99%)
	Senior resident	7 (7.87%)
	Junior Resident	36 (40.45%)
	Intern	7 (7.87%)
ED shift	Morning	42 (47.19%)
	Afternoon	23 (25.84%)
	Night	24 (26.79%)
Shift location within ED	B1 Adult	62 (69.66%)
	B1 Raz	8 (8.99%)
	B1 Peds	12 (13.48%)
	L1 Urgent care	2 (2.25%)
	Protocol Area	5 (5.62%)

Table 2. Phone consultation patterns and outcomes.

Variables	Categories	N (%)
Specialty consulted	Medicine	73 (48.34%)
	OTC	46 (30.46%)
	Surgery	28 (18.54%)
	Others	4 (2.649%)
Reason for calls	Specialty consultation	71 (47.01%)
	Radiology arrangement	33 (21.85%)
	Clinical referral	32 (21.19%)
	Administrative	8 (5.29%)
	Other	8 (5.29%)
Reason for frequent calls	No response from the specialty doctor, designated to receive calls from ED	42 (46.15%)
	Specialty doctor (First on call) busy with other patients	21 (23.07%)
	Specialty delay in assessment of patients referred form ED	17 (18.68%)
	ED referred case not accepted by specialty	9 (9.89%)
	Other	2 (2.19%)
Outcome of the phone call	Case accepted by specialty	75 (83.33%)
	Conflict between two (or more) specialties in accepting an ED referred case	10 (11.11%)
	Other	3 (3.33%)
	Case refused by specialty	2 (2.22%)
	Missing	1

OTC: Organ Transplant Center, ED: Emergency Department.

whereas quantitative data was calculated as means (SD) or median (IQR). The association between professional ID categories and number of calls made per shift was tested using *Kruskal-Wallis test*. A value of $p < 0.05$ was considered statistically significant in all analysis.

Inclusion Criteria

All EPs working within the ED of KFSH&RC during the study period were eligible. This included consultants, fellows, specialists, residents and interns.

Ethical Considerations

The study was approved by the hospital research advisory committee (RAC#2231026). The study was conducted in accordance with the Declaration of Helsinki, ensuring the anonymity of participants and their voluntary participation in the study.

Results

40.45% of the study participants were junior ED residents, 31.46% were consultants while 3.37% were fellows. Approximately half of the data was recorded from the morning shifts and 26.79% from night shifts. The majority of the participants were working in the adult ED area (which is the busiest and deals with high acuity patients). The smallest percentage of physicians were from the lowest acuity area [Table 1].

Table 2 represents the extra-clinical communication variables. 47% of the calls were made for specialty consultations. Out of the total calls made, 46% were not immediately responded. The response from the receiving specialty doctor on 23% of the calls was “he/she was busy with another patient”. 83% of the consulted cases on phone were accepted by specialties, 2% consultations were refused and 11% phone call consultations ended up in a conflict between specialties (consulted specialty suggesting another specialty to be the appropriate for consultation/admission). Medicine was the most commonly consulted specialty (48%) by the ED.

Table 3 shows mean and SD (6.516 ± 4.659) for the “number of calls made in one shift and “number of call made to the same specialty” (1.712 ± 1.209). Approximately two calls for the same patient were made by ED physicians.

Table 4 shows the duration of the ED physicians’ break in minutes. The mean and SD were (13.980 ± 8.062).

Table 5 demonstrates a statistically significant difference between the number of calls made by ED physicians with different designations (P -value = 0.0007). Specialists had the highest median and (IQR) which was equal to 13 (8-15.5).

82.56% of the calls took less than five minutes while 2.33% spent more than fifteen minutes during a call [Graph 1]. 42% of the

Table 3. Average number of calls made.

Calls made	Mean ± SD
Number of calls made in one shift	6.516 ± 4.659
Number of calls made to the same specialty for the same case	1.712 ± 1.209
Number of calls from the specialty clinic received today	2.197 ± 3.690

Mean ± SD: Mean (average) with standard deviation (SD).

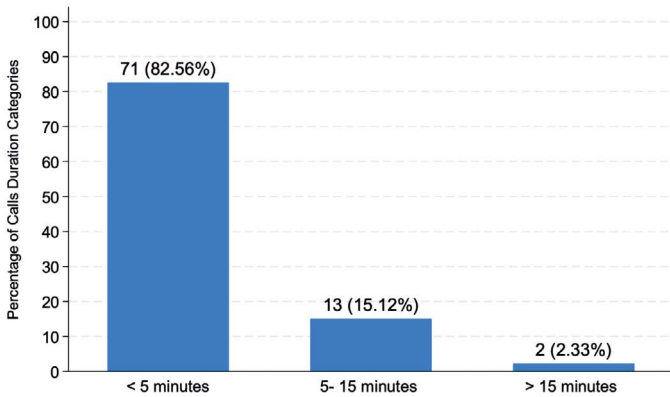
Table 4. Average break duration length.

Question	Mean ± SD
How long was the break (in minutes)	13.980 ± 8.062

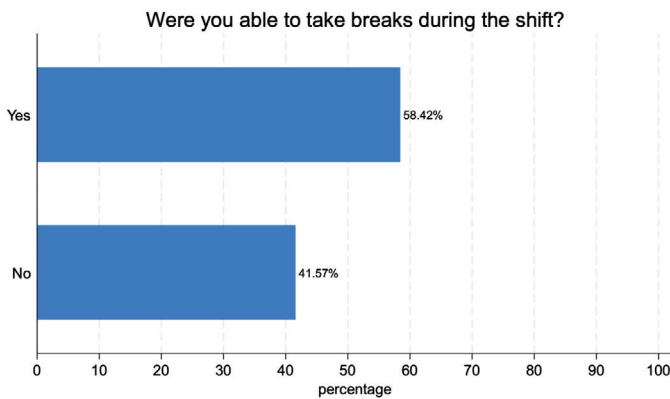
Mean ± SD: Mean (average) with standard deviation (SD).

Table 5. Comparison of calls made in one shift by professional ID categories.

Professional ID:	(n =), n (%)	Median and (IQR)	p-value
Consultant	28 (31.46%)	5.5 (3.5-7)	0.0007*
Fellow	3 (3.37%)	7 (3-7)	
Specialist	8 (8.99%)	13 (8-15.5)	
Senior Resident	7 (7.87%)	5 (5-14)	
Junior Resident	36 (40.45%)	5 (4-7)	
Intern	7 (7.87%)	2 (1-3)	
*significant			



Graph 1. Duration of breaks taken by categories.



Graph 2. Ability to take breaks during shifts.

participants did not manage to take breaks during their shifts [Graph 2]. Graph 3 shows the mean and standard deviation of number of calls made in one shift, which equated to 6.516 ± 4.659 .

Discussion

KFSH&RC is a busy tertiary care center, which services over 95,000 emergency visits yearly hence efficient time management by EPs is a key in dealing with a high patient volume with complexity. ECDs are usually encountered during interdepartmental phone calls hence by recording the nature, reasons, duration & frequency of these calls, an estimation of the encountered ECDs can be made as done in our study.

The study had a prospective design, which allowed for the real-time capture of data, thus providing a better depiction of ECDs.

In a high-pressured clinical environment, ECDs can often be sidelined when the so called bigger issues causing delays affecting patient care are brought under discussion. In reality ECDs can have profound impact on key performance indicators (KPIs) including ED waiting times, clinical outcomes and physician's well-being. ECDs should be factored in, when conducting physicians' appraisals and performance assessments.

Our study showed a notable proportion of ED physicians' time consumed in inter-departmental communications, with 47% of calls made for specialty consultations. This aligns with other studies which indicate EPs spent >50% of their time in indirect patient care [4].

The majority of ED consultations done in our study were with internal medicine followed by Organ Transplant Center (OTC) and

surgery. These findings are also congruent with similar tertiary care centers. KFSH&RC being a regional transplant center also bears the burden of transplant patients.

In our study, 82.56% of calls made were less than 5 minutes duration, which implies most communications were quick, reflecting efficient protocols within our ED. While the majority of consultation calls were brief, many clinical consultations can become long-winded e.g. due to the complexity of a case consuming more than average time.

Studies have shown that EPs professional roles & designations can have a profound impact on the duration and frequency of calls, which was also reflected in our study [5].

The high acceptance rate of cases by specialties (83%) indicates a good relationship of ED with other specialties, yet the existence of conflicts between specialties over ED referred cases is also evident. A study showed 11% of referrals for admission were not agreed between the ED physician and the consulted service [7].

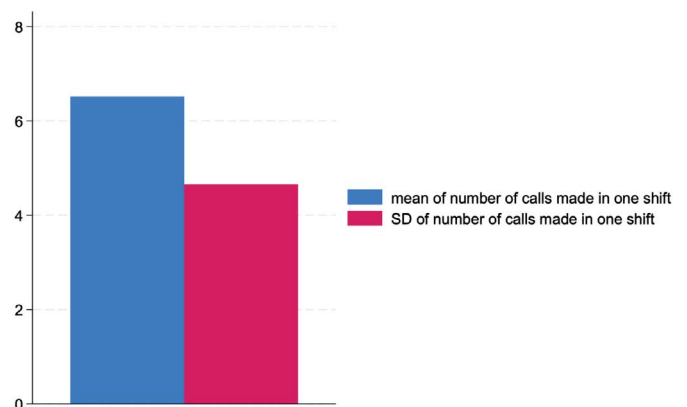
The "no response from the specialty doctor" is the leading reason for frequent calls made in our study. Although the reasons for this is unclear, the "on call specialty service" out of hours and weekends, can significantly delay response to ED calls. These findings go along with a similar research which demonstrated an increase in patient length of stay in the ED due to delayed and prolonged communications, out of hours [10].

Another major reason of ECD in our study was a considerable proportion of time spent communicating with radiology service. These calls are usually made to arrange radiological investigations for ED patients. This delay has the potential to compromise patient safety and raises a potential need for implementing integrated communication platforms and consideration of Artificial Intelligence (AI) assisted technologies.

The 'One hundred Task an hour' study done in 2012, clearly revealed an ED physician spending an average of 77 minutes per shift, performing multitasking activities [6].

A considerable disparity in the number of calls made per shift was also observed. This variability can be due to several factors, such as the time of day, the number of patients, the complexity of cases, or the availability of other staff to share the call load. ED Residents made 47.45% of the total calls with the junior residents sharing a significant load.

The impact of ECDs on physicians' well-being could be assessed from the fact that 42% of physicians could not manage to take any



Graph 3. Mean and standard deviation of number of calls made in one shift.

breaks during an 8 hours shift. A small proportion managed to squeeze a 14 minutes break (on average) in an 8 hrs. shift, which is significantly lower than the average allocated break time in ED operating in Europe and Australia [11,12]. Physician burnout due to lack of optimal rest can be a real threat. A recent study showed a decrease in EP burnout rate, when mandatory rest breaks are applied [13].

Limitations

It is a single center study carried out in a tertiary center with reliance on self-reported data, which may introduce recall bias and limit generalisability. This gap can be filled with future multi-centric and objective data-based research. Additionally, the predominance of data from morning shifts and specific ED zones (Adult area) could skew the representation of ECDs. Moreover, focusing solely on physicians may overlook impact of ECDs on other ED staff, such as nurses and administrative personnel, who also contribute significantly to patient care and ED efficiency.

Conclusion

This study sheds light on the demands placed on ED physicians and highlights the need to develop strategies to manage extra-clinical delays effectively. Further research could focus on identifying ways to streamline and optimize ED workflow to improve staff efficiency and reduce burnout among EPs.

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