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Nurses' perception of emergency department overcrowding: A qualitative study

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Abstract:

INTRODUCTION: One of the most important wards of the hospital is the emergency department (ED). Due to the increasing number of referrals, overcrowding has become a significant problem. It means an increase in patients' referrals and swarms at the ED, limiting their medical staff access. This study investigates the nurses' experiences and perceptions about the reasons for ED overcrowding.

MATERIALS AND METHODS: Twelve emergency nurses were purposefully selected to take part in this study. Data collection was through face-to-face semi-structured interviews until data saturation was finalized. Data analysis was conducted using Graneheim and Lundman's conventional content analysis.

RESULTS: Nurses' experiences with the reasons for ED overcrowding came into two main categories. The first was "increased referral to the emergency department," which had three subcategories: "increased referral due to health system reform plan," "increased referral due to corona pandemic," and "improper triage." The second was "increased patients' length of stay at the ED" with seven subcategories including "shortage of bed," "shortage of nursing staff," "lack of physical space," "turtle para-clinic," "on-call specialists' delay," "timely medical record documentation requirements," and "delaying in patients' transfer from the ED to the ward."

CONCLUSION: The results showed ED overcrowding is inevitable. Intentional or unintentional changes in the health system, such as implementing the health system reform plan or the corona pandemic, can also increase overcrowding. Findings showed ED overcrowding increased referrals and patients' length of stay. This study suggests the health system authorities pay more attention to this phenomenon and look for solutions.

Keywords:

Emergency department, emergency nursing, overcrowding, qualitative research

Introduction

One of the most important wards of the hospital is the emergency department (ED). Its performance has a significant impact on other wards and patient satisfaction. The aim is to provide the best quality services in the shortest time with the available resources and staff. The ED is a complete and independent unit in a hospital and at the same time is cooperating with all active hospital wards; its process includes admission, triage, stabilization, treatment,

and procurement of medical-care services to patients.^[1]

The hospital's ED faces many clients who expect the best quality services on time. Those who refer to it are in a critical condition in terms of the physical; taking care of them as soon as possible with the best quality is one of the medical and nursing staff duties.^[2,3] It provides emergency services for those with different conditions, 24 h a day, 7 days a week. Due to the increasing daily number of clients, overcrowding has become a significant problem for the ED. It means an increase in

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the patient population and swarms at the ED, limiting their medical staff access. There are many causes for population growth, including increasing age, increasing chronic diseases, lack of equipment and beds, lack of physical space at emergency wards, improper triage, and lack of nursing and other medical staff.^[4-12]

Overcrowding at the ED is undesirable; attention should be paid to its causes to eliminate them. Otherwise, side effects will happen. Various studies showed an association between emergency overcrowding and mortality, increased time in the ED, reduced care quality, patient dissatisfaction, medical staff burnout, increased medical errors, conflict with other wards, and increased costs.^[10,13-15]

The effective management of these problems and challenges depends on their deep understanding. Qualitative research methods are valuable in providing rich descriptions of complex phenomena; tracking unique or unexpected events; illuminating the experience and interpretation of events by actors with widely differing stakes and roles; giving voice to those whose views are rarely heard.^[16] Considering the side effects of overcrowding at emergency on the provision of health care, its importance and consequences, and the lack of relevant studies, the present study was conducted to explore nurses' experiences and perceptions about ED overcrowding factors.

Materials and Methods

A qualitative study, using content analysis, was undertaken. Semi-structured interviews were carried out with 12 emergency nurses in four ED between February 2020 and May 2020. The inclusion criterion was at least 1 year of work experience in the ED. All semi-structured interviews were conducted with the participants by the first author in a private room. Interview sessions took 30–70 min, depending on the participant's tolerance and their level of interest in describing their experiences.

It began with purposive sampling and continued until data saturation. Sampling was performed on those who had sufficient knowledge and experience about the subject.^[17] Twelve emergency nurses, who met the inclusion criteria, were interviewed; 15 interviews were conducted. The initial questions were asked to get familiar with the subject, and then more specific questions associated with the aim of the research were asked. A question was asked, "Define a routine at the ED please." Other questions were also asked to share details of their feelings and experiences with the researcher. Then exploratory and in-depth questions such as "Can you explain more?" were proposed based on their answers. They continued until data saturation.

Saturation means continuing data collection until the previous data are repeated and no new information is obtained.^[18] After interview 12, data saturation was obtained by the research group; three more interviews were conducted to ensure there were no new data.

Data were analyzed simultaneously, using Graneheim and Lundman^[19] method through five steps: writing the entire interview immediately after each interview, reading the full text of the interview for achieving a general understanding of its content, determining the units of meaning and primary codes, classifying similar primary codes into more comprehensive classes, and determining the hidden content of the data. Therefore, immediately after the interview, the text was transcribed, typed, and read several times. The initial codes were extracted, and then they were merged and classified based on their similarities. Finally, the concept and hidden content of the data were extracted.

To ensure the trustworthiness of the data, four criteria of credibility, dependability, confirmability, and transferability were used, according to Lincoln and Guba.^[20] The researcher had a long-term visit to the research locations, which helped gain the participants' trust and understanding of the environment. Participants' review was also used to verify the data and codes; after the coding, the interview text was returned to ensure the accuracy of the codes and interpretations. Furthermore, participants tried to have maximum diversity in age, gender, experience, education level, and workplace. Supervisors reviewed the transcripts of the interviews. In addition to the supervisors, the extracted codes and classifications were given to several people familiar with medical emergencies and qualitative research methods; they were reviewed. There was a high agreement about the extracted results. Finally, the categories and quotes from the interviews were translated into English by a translator and then edited by a professional editor.

The Ethics Committee of the Tehran University of Medical Sciences (IR.TUMS.VCR.REC.1397.642) approved the study; the authorities' consent was obtained. The interview's time and place were also coordinated with the participants, so they had enough time to talk and participate in the interview by setting their plans. They were informed about the study's aim, the interview method, the data confidentiality, and their freedom to enter or leave the study; their written consent was obtained.

Results

The results of 12 emergency nurses' interviews (five male nurses and seven female nurses) were studied. Their age was 25 to 51 years. Their experience was 2 to 21 years.

Eight of them had a bachelor's degree in nursing, and the rest had a master's degree. Seven worked in state hospitals and five in other centers (private, charity, and social security) [Table 1]. In a total of 15 interviews, 535 initial codes were extracted, which due to semantic approximation, merged a lot, and finally, the two categories of "increasing the number of referrals to the ED" and "increasing the patient's length of stay at the ED" were determined [Table 2].^[21]

Increasing the number of referrals to the emergency department

Any factor that leads to an increase in ED admissions can potentially lead to emergency overcrowding. After data analysis, some factors such as "increased referral due to health system reform plan," "increased referral due to corona pandemic," and "improper triage" have increased the patient's admission to the ED.

Increasing referral due to health system reform plan

After implementing the "health system reform plan" in Iran, due to the reduction of costs and increased patient referral to hospitals, and the increased bed occupancy rate, a lot of pressure was imposed on the health staff, including nurses. Still, at the same time, other items such as providing hospital space, increasing hospital beds, and staffing were not provided. According to most of the participants' points of view, one of the outcomes was overcrowding, especially in EDs.

After implementing the health system reform plan, due to the reduction of medical expenses and, on the other hand, increasing physicians' incomes due to hospitalization, the number of referrals and hospitalizations increased significantly. Therefore, the workload was increased for us; the ED was much more crowded than before (P. 7).

Increased referral due to corona pandemic

The corona pandemic posed many challenges to the health system. One of them was the overcrowding of

medical centers, especially EDs. The increased numbers of true and false news about COVID-19 and the people's concern increased the number of referrals to medical centers and ED overcrowding. People rushed to the EDs at the primitive sign of illness. Participants cited various reasons, such as fear, free services to corona patients, rejection by private centers, and so on, as the most important reasons people increasingly refer to hospitals.

People rushed to the hospital and the ED when they see the slightest sign of a cold. Many also had cold symptoms and were discharged on medication. However, until we want to respond to them, we had lost so much energy, and the ED became crowded (P. 11).

Improper triage

The first place patients contact the hospital emergency department is the triage unit. The main goal of triage is identifying critical patients quickly and prioritizing them. If triage is not done correctly, it can cause problems such as ED overcrowding.

The triage nurse must be well-experienced. Those who do not have a problem should not be allowed to enter the ED because of compulsion and bystanders insist. If they are supposed to work like this, all beds will be filled in the first shift (P. 6).

Increased patients' length of stay at the emergency department

The long waiting time and length of stay at the ED result from the wrong admission process in three phases: entering into the ED, providing care at the ED, and patient discharge. Increased length of stay for medical services and delays in providing care to patients are among the causes of overcrowding at the ED, ultimately affecting the level of satisfaction and quality of services. This category consists of seven subcategories: "shortage of bed," "shortage of nursing staff," "lack of physical space," "turtle para-clinic," "on-call specialists' delay," "timely medical record documentation requirements,"

Table 1: Demographic characteristics of participants

	Degree	Sex	Age	Experience in the emergency department (year)	Interview (min)	Hospital
1	Bachelor	Female	51	21	45	State
2	M.Sc.	Female	38	16	53	Private
3	Bachelor	Male	25	2	30	State
4	M.Sc.	Female	32	8	64	State
5	Bachelor	Male	35	10	70	State
6	Bachelor	Female	26	2	52	Private
7	Bachelor	Male	26	2	43	State
8	M.Sc.	Male	27	3	48	Social security
9	Bachelor	Female	29	5	36	State
10	M.Sc.	Female	30	5	51	Charity
11	Bachelor	Male	35	7	45	State
12	Bachelor	Female	37	12	38	Private

Table 2: Nurses' experiences with the reasons for emergency departments' overcrowding came

Categories	Subcategories
Increasing the number of referrals to the emergency department	Increased referrals due to the health system reform plan
	Increased referrals due to corona pandemic
	Improper triage
Increasing patients' length of stay at the emergency department	Shortage of beds
	Shortage of nursing staff
	Lack of physical space
	Turtle para-clinic
	On-call specialists' delay
	Timely medical record documentation requirement
	Delaying in patients' transfer from the emergency department to the ward

and "delaying in patients' transfer from the ED to the ward," indicating the reasons for the length of stay at the ED and its overcrowding.

Shortage of bed

Participants believed one of the reasons for ED overcrowding was the lack of beds, both at the EDs and at the wards. They noted many reasons for that. However, this shortage had negative consequences for the provision of health services. One of them was the hospital ED overcrowding and the difficult admission of new patients, both on their referrals and those transferred by the emergency medical services (EMS).

Sometimes not only are all the beds occupied but also we put the patients on stretchers. Compared to a few years ago when I was here, the ED beds have only increased a few. The number of clients has increased a lot; the result is: everyone says the ED is always overcrowded (P. 1).

Shortage of nursing staff

The medical services provision is precisely affected by human resources. The nursing team is responsible for patients' care and providing services. The shortage of them can overshadow the availability and quality of health services. Participants believed staff shortages, especially nurses, were a significant cause of the hospital ED overcrowding.

When we have a shortage of nurses, we are forced to work overtime, not only me but also all my colleagues. The result is nurses' burnout. You have to take blood, take medicine, write reports, and do thousands of other things. It makes the work slower done; the patients stay longer, and the ED overcrowding (P. 5).

Lack of physical space

Lack of physical space is one of the causes of ED overcrowding. The ED's total area and its various parts create many problems for the patients and the medical staff; one is overcrowding.

Our department is so small that if the EMS brings a few patients or has a few own referrals, there is no space for no one (P. 12).

Turtle Para-Clinic

Participants believed one of the causes of emergency overcrowding was the delay in responding to para-clinical departments such as radiology and laboratory.

This is not a permanent problem, but when the hospital is overcrowded, radiologists are also involved. It so happened that we had a patient connected to a ventilator and the physician requested a portable X-ray. Therefore, radiologists' delay causes delays in work, the length of patient stays, and overcrowding (P. 4).

On-call specialists' delay

On-call specialists at the bedside on time and having a positive effect and increasing the effective treatment chance can reduce overcrowding by caring for patients in the EDs. They believed that on-call specialists' delayed presence would cause overcrowding at the ED and patients' dissatisfaction.

In those hospitals with specialists, the patient's care is faster, and they are either discharged or sent to the ward, and the ED will not crowd. However, some centers do not have a resident and do not even have an emergency medicine specialist, and the general practitioner cannot discharge the patients alone. They have to stay at the ED to find a specialist (P. 10).

Timely medical record documentation requirements

One of the requirements of medical services is recording and reporting the procedures. This is also important at the ED due to the necessities, emergencies, and time constraints. Participants were notified about the documentation requirements and the need for long-term writing as a factor for slowing workload and emergency overcrowding.

They brought a system to the ED and said it was paperless. This system removed the paper and added it; we had to register both on the computer and in the paper report. Despite all, the ED now needs a writer staff. If you do not write the report but provide the best services, it is not important from the authorities' point of view. You will be condemned the end (P. 9).

Delaying in patients' transfer from the emergency department to the ward

One of the main reasons for the overcrowding of EDs is the lack of emergency patients' transfer to hospital wards. This phenomenon itself may be the result of other causes, which were discussed above. Therefore, the occurrence of it causes ED overcrowding.

We rescued the CPR patient (successful cardiopulmonary resuscitation). Now we do not care how much time was

taken from us. Then, he connected to the ventilator and took medication until something else is done. There was also an intensive care unit (ICU) admission order for him; they, unfortunately, did not always have an empty bed. The result was hilarious. At the ED, we have to take care of the ICU patient (P. 8).

Discussion

Many participants noted several reasons for ED overcrowding. Still, they can be categorized into two general categories: over-patient admission and the length of stay at the emergency department. They generally believed effective factors could not be observed independently, but a set of factors was involved in the problem's occurrence and persistence. At the same time, they stated that overcrowding is one of EDs' ongoing features. Still, in special cases, such as the corona pandemic or the health system reform plan's implementation, this became more apparent. EDs have pressures to provide timely and high-quality services. As the demand for emergency services increases, hospitals face a condition that demand exceeds supply; this leads to longer waiting times and longer stays at the ED. Both these factors underlie emergency overcrowding.^[22] Many participants believed the increased number of referrals to the ED was one of the main causes of overcrowding.

A health system reform plan to increase efficiency, equity, and effectiveness in the health system, as one of the most strategic issues worldwide, was considered by all governments. It transformed the Iranian health system with the same approach in 2013. This project was implemented to increase people's health satisfaction and reduce their concerns and treatment costs throughout the country.^[23-25] The study results in Qom city showed that the number of patients referred to the ED increased from 51,475 in 2012 to 61,449 in 2016. Also, the percentage of patient discharge (less than 6 h) before and after the reform plan was reduced from 86% to 75%; the rate of hospitalization (less than 12 h) was from 96% to 76%.^[26] Desirable outputs such as reducing people's payments at the state hospitals, improving access, and providing specialized services in deprived locations were the positive results of this plan. Although it had positive results such as increasing patient satisfaction, and reducing the number of individuals and unofficial payments, this also faced some challenges. In line with this study, some studies showed that after implementing the health reform plan, due to lower treatment costs, hospital referrals, and hospital capacity oversaturation, there was overcrowding at state hospital EDs.^[23,27-29]

COVID-19 is spreading rapidly worldwide; its spreading in China caused a widespread global outbreak and public health challenge. The World Health

Organization (WHO), on January 30, 2020, declared COVID-19 as a sixth international public health concern. The COVID-19 pandemic poses many challenges for the health system. One of the most important of them is the overcrowding of EDs.^[30-32] The COVID-19 pandemic increased patients' referrals to medical centers. EDs had to separate non-corona patients from corona ones. Due to the high prevalence, nurses and other medical staff had to wear protective clothing and modify or completely change some routine care. All of them caused patients to spend more time at the EDs and medical staff absent due to exhaustion or infection, which reduced the active medical staff; the implementation of new protocols increased the patients' length of stay and as a result overcrowding in the ED. More patients were admitted to both the ED and other wards; there was a severe shortage of beds.^[33-35] On February 19, 2020, the first case of COVID-19 was officially reported in the Qom province of Iran, 2 months after the initial pandemic in Wuhan, China.^[36] Participants believed after the prevalence of COVID-19, both the number of patients referred by ambulance and patients' referrals increased. They said wearing protective clothes, their colleagues' absence due to COVID-19, and burnout slowed down the caring process. They also had to follow all relevant instructions. The result was patients' length of stay and ED overcrowding.

The main aim of triage is to identify patients with critical conditions and prioritize them quickly. Because of ED crowding, when the demand for emergency care is higher than normal capacity, triage becomes essential and necessary. Under-triage or inability to identify and differentiate critically ill patients from less urgent can delay time-sensitive care delivery and endanger their lives. This can endanger their lives and can cause emergency overcrowding.^[37-44] In contrast, over-triage can lead to more resource waste and ED overcrowding by pouring less critical patients into the critical section, staff burnout, and other conflicts.^[13,40,44] Participants also believed inappropriate triage causes burnout, increased hospitalization, and overcrowding.

Regardless of the various reasons that can increase the number of referrals and hospitalization at the ED, they should adequately manage hospitalized patients in the standard time mentioned in many studies (6 h). When patients leave the ED slowly, any other factor may be cited as a secondary cause of ED overcrowding. For example, EDs chaos can increase the need for more nurses, and their shortage can cause overcrowding. This process creates a fault cycle that results in emergency overcrowding.^[1,10,14,43] Most study participants believed the increase in the number of hospitalizations is one of the main causes of overcrowding. Some studies showed that the length of patients' stay is the cause of overcrowding

and a faulty cycle.^[4,7,8,41] Trzeciak and Rivers' study showed the main cause of ED' overcrowding in the United States was insufficient beds.^[10] The results of a systematic review study showed unnecessary visits, insufficient staff, and lack of beds were the main causes of overcrowding.^[14] Forster *et al.*^[39] showed the increase in bed occupancy is strongly associated with the length of stay at the ED. According to the study results in Iran, the patient's non-transfer to the ward or ICU due to the lack of an empty bed was the most important reason for more than 24 h of hospitalization at the ED. Other causes of delay were being under the supervision of several medical services, lack of accurate diagnosis, failure to perform magnetic resonance imaging/computed tomography (MRI/CT) scan, the probability of improvement at the ED, and delay in presenting test results.^[41] The results of an Ethiopian study showed the lack of beds, waiting for specialized consultations, and the results of diagnostic procedures were the main reasons for patient's length of stay at the ED.^[4]

EDs are very complicated systems; any activity leads to overcrowding. Poor ED infrastructure, which does not support the patient care process from admission to discharge, contributes to overcrowding.^[42] Due to the increase in the number of emergency clients and their complexity, ED infrastructure has not improved much. The old emergency sites and buildings do not meet many clients and their complicated care.^[22,37] The study participants believed the infrastructure of some EDs in Qom province did not meet the new needs. They believed having multiple rooms without proper connection was like separate islands that prolong the caring process. This discrete infrastructure can increase caring time and, consequently, stay in the ward, which causes overcrowding. It should be noted improving the physical infrastructure, in the short term, can prevent overcrowding at the ED, but if other factors such as the nurses' shortage are not taken into account, the larger the ED, the more overcrowding!

In Kocher *et al.*'s^[6] study, advanced experiments and imaging were significantly associated with increased patients' length of stay and overcrowding. A Turkish study showed a direct association between the length of stay at the ED and the number of consultations required to determine the staying or discharging and the need for treatment by other services.^[38] The present study participants also stated that delays in laboratories and radiologists' response and on-call specialists' delays in performing patient visits or consultations are important factors in the length of stay at the ED. The results of some studies showed the use of rapid laboratory tests, which are performed at the patient's bedside, significantly reduces the length of stay at the ED.^[45-47] Some studies suggested a dedicated radiologist should be at the ED.

For example, in one study, increasing the radiologist's attendance time from 9 h to 16 h reduced the test report time by more than 30 min.^[48] Participants believed if this was done in a timely manner, patients would be discharged more quickly or receive hospitalization orders that could be sent to inpatient wards to reduce overcrowding.

Emergency nurses spend a significant portion (22% to 32%) of their time writing reports and documents. The use of an electronic record system portal can help them save time.^[49,50] Contrary to these studies, participants believed the electronic system's implementation had increased their workload in the present study. Due to the new launch of this system and the failure to delete papers, they had to record in both systems; this causes more delays.

Limitations

This study was conducted in a single province in Iran. It examined the overcrowding phenomenon at the ED from the emergency nurses' point of view. Like all qualitative studies, the generalizability of the final results is limited. It is necessary to study at different times, locations, and cultural and social conditions. However, an explicit and honest discussion with a few nurses manifests ED overcrowding, which can be compared to routine literature.

Conclusion

This study concludes that ED overcrowding is inevitable. Although health system changes, whether intentional or unintentional, such as implementing the health reform plan or the corona pandemic can increase this overcrowding. Participants believed in implementing the health reform plan, pouring down patients to medical centers due to the cost reduction and physicians' tariffs. The COVID-19 pandemic, both real and unreal, causes fear and anxiety due to many symptoms; patients go to medical centers and EDs more than before. However, participants noted the need for efficient infrastructure and a new process to well admit/discharge emergency patients as soon as possible. If this does not happen, patients' length of stay, in addition to the initial crowds, will also exacerbate overcrowding. This study, in Qom province, was on the ED nurses' experiences and perceptions, thus it could not reflect all about this phenomenon. It showed patients' length of stay and too many referrals are the most important reasons for overcrowding at EDs. It suggests the health system authorities should pay more attention to this phenomenon and look for solutions. Otherwise, we will see side effects such as reduced care quality and medical staff inefficiency, especially nurses. If so, the health system's main

clients, patients, and bystanders will be discontented and suffer irreparable damage.

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Conflicts of interest

There are no conflicts of interest.

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