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Emergency department visits for non-urgent conditions in Iran: a cross-sectional study

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ABSTRACT

Objectives To determine the percentage of non-urgent (NU) visits in an Iranian emergency department (ED), to explore why patients with NU conditions refer to EDs and also to assess the association between patients' characteristics and their visits.

Design A cross sectional study based on face to face survey.

Setting A territorial, teaching and military hospital in Tehran province, Iran.

Participants and data collection All patients who visited the ED during the 2-week period were recruited. Data were collected using a validated questionnaire.

Results Of 1884 patients who visited the ED, 1217 (64.6%) patients were triaged as NU while 667 (35.4%) were urgent and semiurgent visits cases. The most important reasons for NU visits were seeking prompt (36.6%) and less costly care (35.9%). We found that NU visits have increased with younger patients, during weekends and night shifts, and with patients suffering from recurrent symptoms lasting in 1 week or less.

Conclusions EDs are a common source of care for NU problems in Iran. The most invaluable solution is building up special clinics for providing healthcare services to NU patients during the weekends and, in the busy and night shifts. Receiving higher fees from NU patients could also be adopted with caution. Promoting awareness and knowledge of both healthcare providers and patients about the main role of EDs will contribute in improving their performance. As a long-term solution, adopting the family physician programme and ameliorating the referral system are recommended.

Strengths and limitations of this study

- This is the first study to be conducted in a military hospital in low-income and mid-income countries in order to determine the percentage of non-urgent (NU) visits to the emergency department (ED).
- Large sample size was one of the main strengths in our study.
- Data were collected by the research team during all shifts over 2 weeks in which all patients who visited the ED were recruited.
- However, it was a large hospital, conducting the study in one hospital might limit the generalisability of its findings.

BACKGROUND

Emergency departments (EDs) were first founded to provide prompt, high-quality, continuously accessible and unscheduled services for a wide range of urgent diseases and injuries.[1 2] EDs became highly dependent and widely spread worldwide in the recent years.[3 4] Globally, several reasons are accounted for the crowding in EDs as a notable problem.[5] The increase in the number of non-urgent (NU) visits to the EDs contributes in aggravating this problem.[6] NU cases are those patients who don't experience life-threatening conditions nor require rapid care. In other words, they could receive the needed care in the primary healthcare or their medical investigation could be safely delayed without adverse consequences.[7 8]

NU visits to EDs may yield in increased costs,[9 10] lower continuity of care[11 12] and timely care needed for urgent and semiurgent cases (USU).[13] However, NU visits to EDs are still unresolved matter worldwide and greatly burden the quality of provided health services.[14] This seems to be more serious in low and middle-income countries (LMICs) which suffer from resource constraints, meanwhile attempting to achieve the universal health coverage of their population.[15] Thus, special attention should be paid to efficiency mechanisms and cost-containment strategies.

So far, several studies have been undertaken to identify the influential factors which result in the growing number of NU visits to EDs.[4 5 16–21] To the best of our knowledge, this is the first study conducted in an ED at a military hospital in Iran aiming at measuring the percentage of NU visits and identify its associated factors as well.

Description of the healthcare system in Iran

In the recent three decades, the Iranian health system has undergone several reforms, faced

many challenges and accomplished numerous successes. After the Islamic revolution in 1979, the country has experienced remarkable improvements in health outcomes such as life expectancy at birth which increased from 61.6 years in 1975 to 77.4 years in 2017.[22] Similar to other countries, Iran is currently passes an epidemiological transition in which the burden has dramatically moved from the communicable diseases towards the non-communicable diseases which represent a substantial health problem.[23]

By establishing the Ministry of Health and Medical Education (MOHME) in 1985, provincial universities of medical sciences became responsible for managing the health centres and 70% of hospitals.[19] Interestingly, the provincial universities of medical sciences supervises the health network in each province. Although the referral system in Iran is from the primary to the secondary and tertiary healthcare setting, patients tend to bypass this pathway and go directly to the secondary and tertiary setting, which in turn reflects a weakness point within the Iranian referral system.[24 25]

METHODS

Design

A cross sectional, based on face-to-face survey was conducted. Our study aimed at measuring the percentage and identifying the leading causes of NU visits to the ED of a military teaching hospital over 2 weeks as a period for data collection.

Setting

The study was undertaken in a territorial, military, teaching hospital of 700 active bed and located in Tehran province. The hospital management board has signed a contract with the Armed Forces Medical Services Insurance Organization (AFMSIO) to co-work on rendering services to patients insured by this organisation.

Recently, the hospital was accredited by MOHME and excellently top-ranked the list of all other hospitals. Its ED provides 24/7 emergency care and successfully runs a residency programme in emergency medicine. The ED's staff includes two emergency medicine specialists (EMSs), 10–15 nurses and 4–5 nurse's aide in each shift.

Data collection and analysis

All the patients who visited the ED during our study period were recruited. Data were collected using a validated questionnaire,[26] encompassing four sections: (1) information about the visits, for example, date, time and so on; (2) patients' demographic characteristics including age, gender, marital status, health insurance coverage, educational level and the number of their visits to the ED; (3) main reasons behind seeking medical care; (4) the leading causes for referring to the ED (online supplementary appendix 1). The questionnaire was completed for each patient with the assistance of a triage nurse. The Canadian Triage and Acuity Scale was used in order to classify the visits. Consequently, the visit was considered NU when lies into levels 4 or 5.[27 28] Data analysis was performed using SPSS V.18. Descriptive statistics (eg, mean and SD), χ^2 test and logistic regression were applied. P value ≤0.05 was the reference value for statistical significance.

Ethical considerations

The participation and withdrawal in/of the study was on voluntary basis.

Patients and public involvement

Patients were not involved in study designing, results' interpretation nor drafting the manuscript. The patients and the general public will know about the study findings and its conclusions via the published material in peer-reviewed journals.

RESULTS

During the study period, 1884 visits to the ED were reported. The mean age of study participants was 44.1±20.87. Most of them were males with a mean age of 42.75±21.17 (n=1039, 55.1 %) while females were 845 (44.9%) and the age mean was 45.76±20.39. Patients (less than 49 years old), unemployed, low-educated, insured, dependent and enrolees in AFMSIO programme were accounted for 57.1%, 47%, 55.4%, 97%, 60% and 90% of the total ED visits (1884), respectively. Meanwhile, patients visiting the ED for the first time, during the weekends, within the night shifts and experiencing symptoms for 1 day or less before seeking care represented 41.6%, 72%, 38.4% and 51% of the total visits to the ED, respectively (table 1).

Logistic regression analysis was found that the young age, weekends, night shifts and symptoms experiencing in 1 week or less were the main influencing factors (table 2).

The triage process, carried out by nurses, showed that just five patients (0.3%) lie into level 1, 43 patients (2.3%) into level 2, 619 patients (32.9%) into level 3 whereas 1188 patients (63.1%) had been categorised as level 4 and 29 patients (1.5%) as level 5. In general, 1217 patients (64.6%) had been classified as NU cases while 667 patients (35.4%) as USU cases. 44 patients (2.3%) had been referred directly to the acute care unit in the ED, 1775 patients (94.2%) to the EMS for screening, and 65 patients (3.5%) to the hospital outpatient clinics. Among the patients investigated by the EMS, 46.6% were admitted to the ED acute care unit.

1821 patients (96.7%) reported that the main reason for their visits to the ED was checking their complaints and symptoms. Seeing the physician and renewing the prescriptions, asking for sick leave and other reasons were the causes for 46, 6 and 11 visits, respectively.

As stated in table 3, two among these reasons were considered as substantial reasons. These were seeking prompt and cheaper care in the ED, (n=445, 36.6%) and (n=438, 35.9%), respectively. Only 61 patients (5%) stated that their urgent diseases and conditions were the reason behind visiting the ED.

Table 1 Sociodemographic characteristics of the patients referred to the ED

Characteristic		Frequency n (%)	Patient group, n (%)	
			NU visits (n=1217) n (%)	USU visits (n=667) n (%)
Sex	Male	1039 (55.1)	675 (55.5)	364 (54.6)
	Female	845 (44.9)	542 (44.5)	303 (45.4)
Age group (y)	Younger age group (<49)	1075 (57.1)	777 (63.8)	298 (44.7)
	Older age group (>49)	809 (42.9)	440 (36.2)	369 (55.3)
Education Level	Non-academic education and degrees	1043 (55.4)	658 (54.1)	385 (57.7)
	Academic education and degrees	841 (44.6)	559 (45.9)	282 (42.3)
Employment status	Unemployed	886 (47)	572 (47)	314 (47.1)
	Employed	484 (25.7)	342 (28.1)	142 (21.3)
	Retired	336 (17.8)	180 (14.8)	156 (23.4)
	Self-employed	68 (3.6)	41 (3.4)	27 (4)
	Student	110 (5.8)	82 (6.7)	28 (4.2)
Being pregnant	Yes	16 (1.9)	10 (1.8)	6 (2)
	No	829 (98.1)	532 (98.2)	297 (98)
Health insurance coverage	Insured	1829 (97.1)	1177 (96.7)	652 (97.8)
	Uninsured	55 (2.9)	40 (3.3)	15 (2.2)
Visit shift	Morning	527 (28)	303 (24.9)	224 (33.6)
	Afternoon	634 (33.7)	428 (35.2)	206 (30.9)
	Night	723 (38.4)	486 (39.9)	237 (35.5)
Visit day	Weekends	1356 (72)	846 (69.5)	510 (76.5)
	Other weekdays	528 (28)	371 (30.5)	157 (23.5)
Head of families/ dependents	Head of families	756 (40.1)	466 (38.3)	290 (43.5)
	Dependents	1128 (59.9)	751 (61.7)	377 (56.5)
Type of health insurance organisations	Uninsured	55 (2.9)	40 (3.3)	15 (2.2)
	Iran Health Insurance Organization	19 (1)	7 (0.6)	12 (1.8)
	Armed Forces Medical Services Insurance Organization	1699 (90.2)	1105 (90.8)	594 (89.1)
	Social Security Organization	60 (3.2)	38 (3.1)	22 (3.3)
	Other	51 (2.7)	27 (2.2)	24 (3.6)
Duration of symptoms before seeking care	One day or less	961 (51)	659 (54.1)	302 (45.3)
	One week or less	747 (39.6)	459 (37.7)	288 (43.2)
	>One week	176 (9.3)	99 (8.1)	77 (11.5)

ED, emergency department; NU, non-urgent; USU, urgent and semiurgent.

Interestingly, 1338 patients pointed out that they visited the ED as a result of lacking healthcare centres in their surrounding area. Our findings revealed that 34.7% of the total study participants and 36.4% of NU patients preferred the hospital as a site for receiving treatment whereas 32.6% showed no preferences towards the place.

Most patients (n=1404, 74.5%) declared that they themselves had decided to visit the ED for receiving care while other patients were urged to do so by their family members (n=301, 16%), general practitioners (n=165, 8.8%) or others (n=14, 0.7%). Compared with the aforementioned results, 77.3% among the NU patients decided by themselves to seek care in the ED meanwhile the family members, general practitioners and other people had guided 14.5%, 7.8% and 0.4% of NU patients to visit the ED, respectively.

DISCUSSION

In our study, 64.6% and 35.4% of the total 1884 visits had been classified as NU and USU visits, respectively. NU and USU visits were significantly associated with the patients' age, night shift, day of the visit (weekends), and duration of symptoms experiencing before demanding care. Seeking prompt and cheaper care were the main reasons that led most of NU patients to receive care in the ED. 5% of the patients stated that the urgency of their health

Table 2 The results of logistic regression analysis

Variables	Total
Age group (y)	0.468 (0.378–0.579)*
Educational level	0.856 (0.688–1.066)
Employment status	0.973 (0.885–1.071)
Health insurance coverage	1.113 (0.496–2.496)
Visit shift	1.161 (1.027–1.313)*
Visit day	1.374 (1.100–1.716)*
Head of families/dependents	1.157 (0.889–1.505)
Type of health insurance organisations	0.876 (0.683–1.124)
Duration of symptoms before seeking care	0.816 (0.703–0.948)*
Gender	0.870 (0.668–1.132)
Being pregnant†	1.209 (0.423–3.454)

*p≤0.05.
†In females.

conditions was the cause behind their visits. Interestingly, 71% of the patients in our study visited the ED because they have no other options as a result of other healthcare centres lack in their area.

Our results showed that NU visits represented (64.4%) of the total visits whereas it represents only 20.8% in Jalili *et al* study.[18] In other countries, studies have been carried out in Taiwan, Malaysia, Italy, Nigeria and Turkey showed that 52%, 55%, 19.6%, 60% and 22.1% of the total visits to the EDs were NU, respectively.[28–32] It should be noted that the discrepancy in the methodologies, contextual factors (eg, lower costs of emergency services) in addition to NU definitions were accounted for the differences in these results.[8]

Table 3 Reasons for NU visits to the ED

Reasons	No. (%)
Proximity	103 (8.5)
Closure of other centres or office	39 (3.2)
Being referred by a clinic or a physician's office	102 (8.4)
Having medical records in this hospital	359 (29.5)
Perceived urgent problems/urgency of the problem	61 (5)
Receiving better-off quality care	41 (3.4)
Dissatisfaction with the clinic or physicians' offices	24 (2)
Receiving prompt care	445 (36.6)
Seeking lower costs and cheaper care	438 (36)
Transported by EMS ambulances	4 (0.3)
Being an employee at this hospital (the patients themselves or their families)	22 (1.8)
No reasons mentioned	17 (1.4)
Others	58 (4.8)

ED, emergency department; EMS, emergency medicine specialist.

Age of patients was negatively associated with the number of visits to ED. This was consistent with the results of previous studies conducted in Malaysia,[33] Canada,[11] France,[34] USA,[35–40] Italy[41] and Hawaii.[42]

We found out that NU visits to the ED were increasing during the night shifts and this could be linked to the limited access to healthcare services at night.[43] This result was in line with Jalili *et al* study[26] but contradictory to another study conducted in Brazil and revealed that the NU visits increase during day shifts.[44]

Additionally, closure of healthcare centres and physicians' clinics during holidays (ie, formal anniversaries) as well as weekends (ie, Thursdays and Fridays in Iran) may explain the increase in both USU and NU visits to the ED.[45] The above result was compatible with other studies.[26 32 46 47]

Furthermore, the present study discovered that the duration of symptoms preceding seeking care was also notably associated with NU visits. Backman *et al* found that about 43% of NU visits had been reported within 1 day or less of appearing symptoms.[48] Barbadoro *et al* found that the emerging symptoms within a week or less were the most likely cause of NU visits.[49] In another study, it was found that the patients were interested in visiting the ED as soon as their symptoms appear in order to convince the health professionals about their serious conditions.[30]

Receiving quick (36.6%) and inexpensive (35.9%) care in the ED the substantial reasons for NU visits in this study. Similarly, in the literature, receiving faster care has also been determined as a main reason for the NU visits.[26 50]

In our study, to be enrolled in AFMSIO insurance programme and consequently receiving care free-of-charge also contributed in the growing number of ED visits, and this was consistent with the results of previous studies.[26 51]

This study confirmed that Iran, as a middle-income country, contrast some other high-income countries regarding some crucial issues. For example, ED services in USA are typically viewed as expensive care for all insured and uninsured patients. Therefore, raising the fees for NU cases could be one of the suggested solutions to keep up providing usual, rationale, cost-effective, quality care for USU patients. However, 97.1% of all patients and 96.7% of NU patients who visited the ED were insured, but we have to be cautious about imposing more fees for ED services as 47% of NU patients were unemployed thus it might affect them as a vulnerable group within the community via causing more financial hardship by extra out-of-pocket payment. Rather, further research is recommended to assess the impact of increasing the fees on population with different health insurance coverage.

Our results also showed that some NU patients needed specialist care but this should not necessarily happen in the ED. In other words, para-clinical departments, mobile centres and physician offices can properly play a role in addressing and providing these specialised care services.

To the best of our knowledge, this was the first study conducted in a military hospital in LMICs. Regarding

resource constraints in LMICs,[52] policymakers need to pay more attention to financing, efficiency and cost containment mechanisms, especially in ED. Considering the universal health coverage (a sustainable development goal), effective reforms have to be implemented in order to replenish the necessary resources and efficiently allocate them in an effective manner to accomplish the aforementioned goal. In the present study, we endeavoured to address this critical dilemma in EDs via introducing a clear landscape of the current status in a large Iranian military hospital thereby recruiting a large number of participants.

Despite of its large size, performing the study in only one hospital may limit the opportunity of findings' generalisability. Further researches are recommended to be carried out in different setting nationwide in order to give more robust, comprehensive and lucid results.

CONCLUSION

This study showed that the ED is a common destination for patients of NU conditions in Iran. Due to the lower costs and insurance coverage, patients prefer to seek care in ED rather than physicians' offices or other private centres. One of the suggested solutions is to establish special clinics for rendering healthcare services to the NU patients in case of busy-working shifts, during weekends as well as the night shifts. Increasing the fees for ED services can be another suggestion but meanwhile should also covered by the insurance in case of urgent conditions and this in turn will prevent any financial hardship.

Promoting awareness of both healthcare providers and patients about the role of ED will yield in improving the services provided to USU patients. As a long-term solution, the execution of effective family physician programme and referral system, across the country, may help in better-off situation for all families as well as patients of various conditions. More studies have to be undertaken in order to determine the root causes behind the NU visits to ED. A factual appraisal of the proposed solutions is essential to decide about the required resources and how to allocate them efficiently to avoid the financial burden resulting from the NU visits to the ED in Iranian hospitals.

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