Knowledge and attitude towards emergency department utilization in Riyadh

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Abstract

Background: Because the emergency department (ED) is such an important element of health care, efficient usage must be taken into account while planning and creating the scope of service for emergency care. Our study's goal is to assess the participants' knowledge and attitude towards ED. Concerns among the general public over the use of emergency rooms (ER).

Materials and Methods: A cross-sectional study was carried out among the sample of Saudi Arabia's population of Riyadh City in the year 2020. There were 440 people who responded. The information was gathered with a self-administered questionnaire. Statistical Package for Social Sciences (SPSS) version 23.0 was used to analyze the data. Results: As a result of the findings, 22 symptoms were reported as the cause of ER visits, ranging from acute, urgent, and cold symptoms. Of these, 45.7% of those polled said they visited an ER if they get sick, then seek primary care, online consultation, and community pharmacy, which was 28.2%, 17.5%, and 8.6%, respectively. Around 14.32% of the visitors had a chronic condition, with asthma accounting for 41.3%, diabetes for 23.8%, and hypertension for 11.1%. In terms of the frequency of visits, 66.4% said they visit the emergency care once in every 3–6 months, and 47.7% said they visit once in a month. With a mean score of 16.16 ± 3.02/high in knowledge, the results revealed that the participants possessed a high degree of knowledge, with a significant difference among married group (F = 4.83, P < 0.05 = 0.003), and those from 24 to 29 years of age (F = 3.26, P < 0.05 = 0.012). Conclusions: Because there were characteristics connected to population knowledge, limited hours, and ED overutilization without necessity, the findings of our study could be valuable in understanding the reasons for ED overutilization without necessity. In Riyadh's primary health care centers (PHCCs), there are limited medical resources. Thus, we recommend that the primary health care (PHC) admission process should be improved putting in place a triage mechanism that determines the best location for patient care that is suited.

Keywords: Emergency department, knowledge, population health, primary health care, utilization

Introduction

Primary care considers the core of the health system also the first place to visit when you have nonurgent symptoms and for a regular health check-up, so when the patient's visit the emergency department (ED) for any complaints that lead to overutilization for non-urgent complain and in our researchers, we investigated the common issues with that problem.

EDs are a vital service for health care institutions all over the world, providing rapid care for life-threatening illnesses and injuries.[1]

Taking into account the busiest branch in most of the hospitals, as well as the majority of the hospitalized/admitted patients’
accessibility. Working 24 h a day, 7 days a week, and 365 days a year. In comparison to the fixed hours of primary health care centers (PHCC).

Through surveillance systems, the ED also gives vital statistics and reports to the Ministry of Health to spot developing trends, epidemics, and diseases so that they may be dealt with swiftly. Emergency medicine (EM) is a new profession that is being investigated. It is concerned with identifying and treating all types of conditions that may create cross-over across other disciplines.[5]

ED visits climbed dramatically from 9 million in 2000 to nearly 18 million in 2009, according to evaluations undertaken by the Saudi Ministry of Health in 2009.[2]

We feel that a high proportion of ED visitors have minor concerns that might be handled in PHCCs rather than the ED. This type of waste can burden a branch and a group of employees, as well as lengthen the patient's wait times. Inappropriate attendances (IA): Patients who self-refer to the ED for minor treatments that may be handled at a primary health care (PHC) or pharmacy are referred to as self-referrers in an editorial published in England.

Furthermore, they stated that between 24% and 40% of all ED attendance difficulties are unrelated.[3]

The triage decision-making technique is motivated by three linked factors: (1) The patient's features, (2) the triage decision-maker, and (3) the fitness care setting.[10] Despite the increased demand for emergency services, organized triage strategies are popular in Saudi Arabia's general public EDs. They also discovered the three-stage triage approach used by the Ministry of Health. Public EDs no longer adhere to this policy.[4] According to the 2016 study, ED utilization is multi-factorial, and co-locating primary care units and emergency rooms (ER), as well as implementing telephone triage systems, appear to be the most effective ways for minimizing unnecessary ED visits.[5] Since the construction of multi-primary care units in each district and the launch of telephone consultations by the Ministry of Health, ED visits for non-urgent cases should be reduced.

A systematic review published in 2009 indicated that the prevalence of inappropriate ED use ranged from 20% to 40%, and that there was a link between age and income, according to 31 publications published 12 years prior to this study.[4] Another cross-sectional study conducted in England in 2013 discovered that 11.7% of ED visits between April 2011 and March 2012 were inappropriate, with the age group highest in early childhood (adjusted odds ratio (AOR) = 1.53 for both 1- and 2-year-olds) and declining throughout late adolescence and young adulthood, with the odds ratio continuously falling from the age of 27.[11] Another early study, published in Brazil in 2007, used a cross-sectional strategy to look at the factors connected to improper use of emergency health care. The researchers interviewed 1,647 patients over the course of 13 days and discovered that the prevalence of inappropriate ER use was 24.2% (95% CI 22.1–26.3), that inappropriate usage was inversely statistically significant with age ($P = 0.001$), that a longer stay in the waiting room, greater duration of symptoms, and morning shift, and that improper usage was inversely statistically significant with age ($P = 0.001$).[7] Females were more likely to use the ER improperly in the age of 15–49; some patients said they went to the ER because they had nowhere else to go; others reported their usual doctor refused to see them without an appointment.[7] Patients who were >50 years, had the greatest level of education, had no self-reported chronic diseases, and had no social support, were the most likely to use the ER improperly.[7]

According to a recent scoping study published in 2017 on The Transition of Care Between ED and Primary Care, which performed a MEDLINE search of English articles published between 1990 and March 2015, 85 studies were included, and said that the two most frequently identified significant predictors for increasing the frequency of follow-up care were the provision of a follow-up appointment.[8] Researchers in Australia discovered in 2015 that cost was not a significant factor in non-urgent cases coming to the ED, and that musculoskeletal complaints were the most common complaint among patients under 25 years of age.[8] Researchers discovered that incorrect use of the ED decreased with age and increased with universal health coverage and symptoms lasting several days in a cross-sectional study done in France in 2013.[8]

A study was undertaken in Saudi Arabia in 2019 to assess public awareness of ER, and they employed an online questioner that had been pre-designed.[8] They discovered that, while the majority of people (87.5%) understood the difference between an ER and an outpatient clinic, the majority of people feel that an ER is a place where they can get medical care quickly and unexpectedly.[8] Age and educational level had a substantial impact on ER knowledge in this study. The $P$ value for age and educational level were 0.03 and 0.003, respectively, showing a significant connection.[8]

A key finding in this study is the availability of a physician in the ER at any time for any reason.[9] Another study was undertaken in 2015 by researchers from King Abdul-Aziz Hospital, King Fahd Hospital, and Thaghor Hospital.[13] The purpose of the study was to estimate emergency services utilization for non-urgent situations and to assess patients’ knowledge of PHCCs.[13] In this study, patients were interviewed using a questionnaire, and it was
observed that a higher proportion of non-urgent patients visited the ER three to four times per year \( (P = 0.001) \). Furthermore, patients who did not have an emergency had not seen their primary care physician prior to visiting the ER \( (P = 0.003) \). Patients choose ER services. According to this survey, patients prefer ER treatments over primary care because of PHCC’s inadequate service and resources (60.8%) and limited working hours (50.4%). 

### Methodology

In Riyadh, we conducted a randomized cross-sectional study. The participants in our study ranged 20–64 years and were Saudi Arabians living in Riyadh. Data were collected utilizing a self-administered electronic questionnaire with closed-ended multiple choice questions to examine the Saudi population’s knowledge and attitude on ER use. Although the sample size was 385 adults, we received 440 responses. Data were entered and statistically analysed using the Statistical Package for Social Sciences (SPSS) program for descriptive analysis once it was collected. This study’s sample size was calculated with a level of significance at \( P < 0.05 \).

Criteria for inclusion and exclusion of subject:

Inclusion/adult living in Riyadh, aged 20–64

Exclusion/any age <20 or >64

### Data analysis

Data were collected using Google forms service and entered SPSS version 23.0 for data analyses. The frequencies, percentage, mean, and standard deviation were computed for the study items. The independent \( t \) test and one way analysis of variance (ANOVA) were conducted to test the differences in the knowledge mean scores in term of demographic factors. A \( P \) value < 0.05 was considered statistically significant.

### Demographic information

Table 1 shows that 440 participants participated in the current survey, with 268 (60.9%) females and 172 (37.1%) males, 405 (92%) living in Riyadh, 425 (96.6%) Saudis, 307 (69.8%) singles, and 120 (27.3%) married. The participants were divided into five categories, with a preference for young people aged 19–23 years (46.8%), followed by those aged 24–29 years (20.2%). Of these, 321 (73%) did not work, 258 (58.6%) earned <4,000 SR, 113 (25.7%) got >8,000 SR, and 69 (15.7%) earned between 4,001 and 8,000 SR. Of the total 254 (57.7%) attended university, 116 (26.4%) completed high school, and 34 (7.7%) had a master’s degree or higher. About 195 people (44.3%) lived in north Riyadh, whereas 151 people (34.3%) lived in east Riyadh.

### Medical insurance: (Medical coverage)

Figure 1 shows that 310 people (70.5%) had medical insurance. In which 112 did not have medical insurance, and 87 (27.3%) were given medical insurance by a private hospital, followed by 55 (17.3%) by the Military medical service, and 41 (12.9%) by the National Guard medical service.

### Symptoms cause visiting ER

As shown in Table 2, a total of 3,958 patients selected 22 symptoms as reasons for visiting the ER, implying that each patient selected 9 symptoms. The percentages varied from 9.6% for broken bones and dislocated joints, to 0.5% for minor cuts that would need stitches. It was discovered that emergent symptoms were the most common reason for patients visiting the ER, with percentages ranging from 9.6% to 3.8%, urgent symptoms were second, with percentages ranging from 7.8% to 0.05%; and cold symptoms were third, with percentages ranging from 1.5% to (0.05%).

### Knowledge of emergency

As shown in Table 2, 23 items were used to assess emergency knowledge; the items were answered with “Yes” or “No,” and the statements were dichotomized/classified as “True” or “False,” which is represented by “an asterisk (*)” in Table 2; thus, the possible score ranged from 0 (the least relevant to knowledge) to 23 (the most relevant to knowledge), and the mean score of

| Table 1: Demographic information (n=440) |
|------------------------------------------|
| Factor          | Group | N/M | %/SD |
|-----------------|-------|-----|------|
| From Riyadh     | Yes   | 405 | 92%  |
|                 | No    | 35  | 8%   |
| Gender          | Male  | 172 | 39.1%|
|                 | Female| 268 | 60.9%|
| Nationality     | Saudi | 425 | 96.6%|
|                 | Non-Saudi | 15  | 3.4% |
| Age (years)     | <18   | 48  | 10.9 |
|                 | 19-23 | 206 | 46.8 |
|                 | 24-29 | 89  | 20.2 |
|                 | 30-39 | 49  | 11.1 |
|                 | >40   | 48  | 10.9 |
| Martial statue  | Single| 307 | 69.8%|
|                 | Married| 120 | 27.3%|
|                 | Divorced| 9   | 2%   |
|                 | Widower| 4   | 0.9% |
| Employment statue | Yes  | 119 | 27%  |
|                 | No     | 321 | 73%  |
| Monthly income  | <4000 SR| 258 | 58.6%|
|                 | 4001-8000 SR| 69  | 15.7%|
|                 | >8000 SR| 113 | 25.7%|
| Education       | Intermediate| 12  | 2.7% |
|                 | High school| 116 | 26.4%|
|                 | Diploma | 24  | 5.5% |
|                 | University| 254 | 57.7%|
|                 | Master’s degree or higher | 34 | 7.7% |
| District in Riyadh | North | 195 | 44.3%|
|                 | South  | 30  | 6.8% |
|                 | West   | 36  | 8.2% |
|                 | East   | 151 | 34.3%|
|                 | Middle | 28  | 6.4% |
each item was 0–1. With a mean score of 16.16 ± 3.02/high, the results revealed that the participants possessed a high level of knowledge. The outcome of each statement's level was also provided.

**Chronic illness**

As shown in Table 3, only 63 (14.32%) of them reported that they had chronic illness, 26 (41.3%) had Asthma, and then 15 (23.8%) had diabetes and other, respectively, and only 7 (11.1%) had hypertension.

**ER evaluation**

As shown in Table 4, the evaluation of ER statues was presented. About 201 (45.7%) reported to go to ED if they get sick to handle an emergency situation, 124 (28.2%) go to PHCCs, and 77 (17.5%) reported to go to online or telephone consultation, and only 38 (8.6%) reported to go to pharmacy.

Of them 221 (50.2%) reported that in case of an emergency, they will go to the ED in 1–2 days, and 147 (33.4%) reported to go to the ED suddenly. Fifteen hospitals were mentioned to go to if in case of emergency with advantage to National guard hospital (71/16.1%).

It took 210 people (29.3%) 15–30 min to see a doctor, while 100 people (22.7%) took >45 min. Of them 292 (66.4%) said they came to the emergency once in every 3–6 months, and 129 (46.7%) said they came once a month. Limited working hours were reported as a barrier/reason by 145 (33%), unqualified medical services were reported by 110 (25%), limited medical resources were reported by 105 (23.9%), and no center available in my neighbourhood was reported by just 80 (18.2%). The mean ER evaluation score was (3.23 ± 1.13/moderate level).

The differences of knowledge mean score in term of life demographic factors:

As shown in Table 5 the differences of knowledge mean score in term of demographic factors was conducted using independent *t* test and one way ANOVA tests. The significant differences were presented as follows:

From Riyadh: There was a significant difference of knowledge in terms of living in Riyadh (*t* = 2.51, *P* < 0.05 = 0.013), people who lived in Riyadh was higher with knowledge mean score (16.27 ± 3.00) than people who lived outside Riyadh with a mean score (14.94 ± 2.88).

Age: There was a significant difference of knowledge in term of age (*F* = 3.26, *P* < 0.05 = 0.012), the post-hoc (toukey test) revealed that group 24–29 years old got the highest knowledge mean (16.89 ± 3.05), and statistically differed from group <18 years.
Marital status: There were significant variations in knowledge in terms of marital status ($F = 4.83, P = 0.003$), and the post-hoc (Tukey test) revealed that married people had the highest knowledge mean ($16.73 \pm 2.86$), and divorced people had the lowest knowledge mean ($16.73 \pm 2.86$).

**Discussion**

Treating and referring emergent cases is a key component of the ED's mission. Our analysis of data shows that EDs in Riyadh hospitals are overused for non-urgent cases; we report that 45.7% go to ED while 28.2% go to primary care unit, and 50.2% go to ED 1–2 days after symptoms appear, with the National Guard Hospital being the most common to visit by 16.1%, and 9.6–3.8% of patients presenting with emergent symptoms, while in Dawoud SO study in Jeddah 53.0% of patients were non-urgent cases in ED.

In terms of the ED's definition, in comparison to Alhussain Z study, where 68.1% agreed for that criteria, evaluation of ED results indicated that 32.5% stated it was good, followed by 25.7% very good, 15.5% excellent, and 7% reported terrible treatment. In addition, 32.5% claimed it was very good, followed by 28.5% good, 19.8% superb, 10.2% acceptable, and 10% said it was an awful service, according to their study report.

The main reason for visiting the ED, according to the Nawaf Alhabdan study in Riyadh, was excellence in care (43%), contrary to previous studies and our data indicating they visit the ED instead of PHC due to limited working hours.

According to a report published in 2019 in Saudi Arabia, Annual ED visits for diabetes treatment climbed from 617,683 instances in 2011, to 748,605 cases in 2015. Diabetes was the second most frequent chronic disease among patients in our study by 23.8%, suggesting that continuous follow-up in primary care clinics could reduce these visits.

In a cross-sectional study of 15,530,178 ER attendees, conducted in England between 2011 and 2012, 11.7% of these participants were considered inappropriate attendees, whereas in our study, we used the ER triage of cold, urgent, and emergent symptoms, and it showed that cold symptoms, which were considered inappropriate visits, the percentages ranged from 1.5% from

| Table 4: ER evaluation (n=440) |
|-----------------------------|-----------------|----------------|-----------------|
| **Factor**                  | **Group**       | **N/M**        | **Percentage/SD** |
| If you get sick how to handle an emergency situation? | Go to emergency | 201 | 45.7 |
|                             | Go to pharmacy  | 38  | 8.6  |
|                             | Go to PCCHs     | 124 | 28.2 |
|                             | Online or telephone consultation | 77  | 17.5 |
| In case of an emergency, when will you go to the emergency? | Suddenly | 147 | 33.4 |
|                             | 1-2 days        | 221 | 50.2 |
|                             | 1-2 weeks       | 47  | 10.7 |
|                             | Almost a month  | 8   | 1.8  |
|                             | More than a month | 17 | 3.9  |
| How long does it take you to get the physician? | Immediately | 64  | 14.5 |
|                             | 15–30 min       | 210 | 47.7 |
|                             | 30–45 min       | 66  | 15   |
|                             | >45 min         | 100 | 22.7 |
| How many times have you come to the emergency during the year? | Once a month | 129 | 29.3 |
|                             | Twice a month   | 9   | 2.0  |
|                             | Thrice a month  | 6   | 1.4  |
|                             | Four times a month | 4 | 0.9  |
|                             | Once in 3–6 months | 292 | 66.4 |
| Barriers/reasons prevents patients going to PHCCs | Limited medical resources | 105 | 23.9 |
|                             | Limited working hours | 145 | 33.0 |
|                             | Unqualified medical services | 110 | 25.0 |
|                             | No centre available in my neighbours | 80  | 18.2 |
| ER assessment               | Bad             | 31  | 7    |
|                             | Accepted        | 85  | 19.3 |
|                             | Good            | 143 | 32.5 |
|                             | Very good       | 113 | 25.7 |
| Excellent                   |                 | 68  | 15.5 |
| Mean/SD/level: 3.23±1.13/mild |
Table 5: The differences of knowledge mean score in term of life demographic factors (n=440)

| Demographic factor       | M/SD        | Statistics / P |
|--------------------------|-------------|----------------|
| From Riyadh              |             |                |
| Yes                      | 16.27±3.00  | t=2.51*/0.013  |
| No                       | 14.94±2.88  |               |
| Gender                   |             |                |
| Male                     | 16.41±2.81  | t=1.43/0.15    |
| Female                   | 15.99±3.14  |               |
| Nationality              |             |                |
| Saudi                    | 16.19±3.01  | t=1.34/0.18    |
| Non-Saudi                | 15.13±3.02  |               |
| Age (years)              |             |                |
| <18                      | 15.18±2.98  | F=3.26*/0.012  |
| 19-23                    | 15.91±2.97  |               |
| 24-29                    | 16.89±3.05  |               |
| 30-39                    | 16.59±3.11  |               |
| >40                      | 16.40±2.76  |               |
| Marital status           |             |                |
| Single                   | 16.03±3.00  | F=4.83*/0.003  |
| Married                  | 16.73±2.86  |               |
| Divorced                 | 13.11±3.37  |               |
| Widower                  | 16.25±3.50  |               |
| Employment status        |             |                |
| Yes                      | 16.25±2.78  | t=0.38/0.70    |
| No                       | 16.13±3.10  |               |
| Monthly income           |             |                |
| 4000 SR or less          | 16.05±2.92  | F=0.48/0.60    |
| 4001-8000 SR             | 16.39±3.34  |               |
| >8000 SR                 | 16.28±3.04  |               |
| Education                |             |                |
| Intermediate             | 15.42±3.26  | F=1.20/0.31    |
| High school              | 15.94±2.97  |               |
| Diploma                  | 15.42±2.12  |               |
| University               | 16.28±3.14  |               |
| Master's degree or higher| 16.82±2.65  |               |
| District in Riyadh       |             |                |
| North                    | 16.27±3.04  | F=2.56*/0.04   |
| South                    | 15.77±3.02  |               |
| West                     | 15.58±2.99  |               |
| East                     | 16.49±2.74  |               |
| Middle                   | 14.75±3.88  |               |

0.6 - 1.5. In the same study, 37.5% of visits occurred between 16:00 and 23:59 p.m., while in our survey, 33% cited the limited hours of PHC units as a reason for not visiting PHC rather than ER departments.

In the same study, participants aged 0–15 years and 25–39 years had the highest percentage of inappropriate ED utilization, whereas participants aged 24–29 years had the highest knowledge (mean 16.89 ± 3.05), in our study. Another study conducted in Brazil in 2004[28] found that 14.8% went to the ER within 1 day of the onset of symptoms, but in our study, 50.2% went to the ER within 1–2 days of onset of symptoms. In the same study, 33.7% said it took them more than 30 min to see a doctor, while 47.7% of participants in our study said it took them <30 min.

According to a study conducted in France in 2013 with 29,407 participants, 13.5–27.4% of ED visits were deemed inappropriate.[18] In the same poll, 4.89% said it is possible to see a doctor outside of business hours, as a reason to visit the ER.[18] Compared to our study, emergent symptoms are the most common reason for traveling to the ER (9.6–3.8%), followed by urgent symptoms, and the main reason for going to the ER instead of PHC is the limited hours, which 33% chose.

Recent research, in 2021, investigates the preference for visiting ED over primary care in Saudi Arabia, they found 49.9% of the participant’s preferred to visit the ED which was much similar to our result, while those who preferred to visit primary care 50% of which as higher than our results. Furthermore, the main reason for visiting ED because they provide quick medical care compare it to our results was the mean reason to visit ED due to limited working hours in PHC.[19]

According to one of the research done, in 2020, to measure the utilization of the ED in Makkah, Saudi Arabia. They found that the most common reason to prefer ED is the quality of service while in our study was the second reason for visiting ED over primary care.[19]

Conclusion

Our research adds to the measurement of population awareness about the inappropriate use of EDs, as well as the assessment of factors that influence knowledge, such as age and geographic location. Our findings are more likely to be extrapolated to other cities in the Saudi Arabian Kingdom, and they could be valuable in determining the causes of ED overcrowding.

The apparent reasons for traveling to the ER instead of the PHC units include the limited hours, limited medical services, and geographic dispersal of PHCCs in Riyadh. As a result, efforts should be undertaken to divert ER traffic to PHC facilities by increasing access to them. The admission process at PHCs should be enhanced by developing a triage system that determines the best location to provide adequate patient care. Additionally, efforts should be made to provide well-informed education on how to use health services correctly, as well as the dangers and drawbacks of using the ER as a primary source of care.

Limitations

The study’s limitations were exacerbated by an online survey and the inability to reach elderly individuals due to technological challenges or the city of Riyadh’s lockdown due to the Corona virus.

Recommendation

On the basis of the data analysis, the specific recommendations that this study would like to make are for educated people to visit PHCCs and for the centers to work for longer hours. People flock to private hospitals for their health needs since the government
does not provide them the required facilities to address their daily health care demands.

People with a high-socioeconomic position or those who have medical insurance may visit hospital ERs for conditions that may be managed in PHCCs, putting these facilities under additional strain.

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Conflicts of interest
There are no conflicts of interest.

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