

# Community Knowledge and Attitudes Regarding the Emergency Department Triage System at the Sultan Qaboos University Hospital, Muscat, Oman

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## Abstract

**Objective:** Limited research exists regarding community awareness of the triage system for emergency care settings in Gulf Cooperation Council countries, especially Oman. This study therefore aimed to investigate public knowledge of and attitudes toward the triage system used in the emergency department (ED) at Sultan Qaboos University Hospital (SQUH), a tertiary hospital in Muscat, Oman.

**Methods:** This cross-sectional study was conducted from September to November 2019. Adult Omanis visiting SQUH outpatient clinics or the ED during this period were selected using a consecutive convenience sampling strategy. A self-administered questionnaire was designed and used to assess the participants' knowledge of and attitudes regarding the triage process used in the SQUH ED.

**Results:** A total of 572 Omani adults participated in the survey (response rate: 77.3%). The majority were female (56.8%) and educated to the high school or bachelor's degree level (74.4%). Overall, less than half of the sample (41.8%) demonstrated adequate knowledge of proper ED utilization, with male participants ( $p = 0.005$ ) and those with a history of previous ED visits ( $p = 0.001$ ) demonstrating significantly better knowledge than their respective counterparts. Knowledge of various factors used in the triaging process ranged from 28.5% (medical history) to 67.3% (vital signs). Most participants agreed that the triage system helped to ensure timely treatment for emergency cases (84.8%), improved the quality of ED care provision (80.9%), and reduced ED overcrowding (76.2%). Although 59.1% still preferred to visit the ED for non-emergent indications to receive same-day care, 48.4% stated they would accept redirection to a primary health center if requested.

**Conclusions:** The findings of this study revealed the necessity of increasing awareness of appropriate indications for ED visits in Oman, as well as specific factors used in the ED triage process. This would help to ensure appropriate health resource utilization, avoid ED overcrowding and lengthy wait times, and increase overall levels of patient satisfaction and confidence in the healthcare system.

**Keywords:** Emergency Medical Services; Triage; Health Knowledge, Attitudes, Practice; Health Resources; Resource Allocation; Quality Improvement; Oman.

## Introduction

French in origin, the term "triage" (meaning 'to pick or sort') is utilized nowadays in medical settings to refer to the preliminary assessment and stratification of the wounds or illnesses of multiple patients in order to determine the order in which each patient should be treated based on treatment exigency.<sup>1</sup> Historically, the successful war

efforts of the first French Emperor, Napoleon Bonaparte, was due in part to the medical developments of Dominique Jean Larrey (1766–1842) which form the basis for the triage system used in emergency care settings today, allowing for overburdened battlefield surgeons to treat casualties according to urgency, regardless of nationality or military rank.<sup>2</sup> Today, emergency departments (EDs) all over the world implement various types of triage systems, although there is no consensus as to how such systems should prioritize patients.<sup>3</sup> Instead, individual triage systems must be optimized for various unique factors which may differ by country, region, or even between specific health institutions.

Ideally, an emergency triage system should be designed with specific patient population characteristics and requirements in mind so as to ensure the optimal utilization of available healthcare resources; for example, EDs in countries like Iran are encouraged to outline their triage paradigm for disasters and emergencies according to procurable resources, relief forces, and native conditions.<sup>3</sup> However, in practice, triage systems still show performance issues over a range of metrics.<sup>4</sup> For instance, in an active or overcrowded ED, patients may have to wait many hours before evaluation by an emergency physician. Such long wait times, in combination with the fact that members of the public may hold differing understandings and opinions of the system used to process patients, can have a serious impact on patient satisfaction with regards to the perceived quality of care received in ED settings.

A systematic review found that triage category robustly interrelated with patient satisfaction; however, this may be alternatively viewed as an index of waiting time, given that more urgent cases are treated sooner than non-urgent ones.<sup>5</sup> Indeed, a comparative study indicated that prolonged waiting time was the most frequent reason for leaving the ED without being seen (79%).<sup>6</sup> A qualitative study found that although most ED visitors understood the theoretical need for patient prioritization by triage—a factor which would necessarily result in some delay in being seen—they were only accepting of prioritization for pediatric patients and those with "obvious clinical need", and were unclear as to the definition of the latter category.<sup>7</sup> Other researchers have noted that perceived lack of care directed to patients' psychosocial and emotional needs is one of the most frequent issues affecting patients' experiences within the ED.<sup>8</sup> Such concerns are also compounded by high rates of ED misutilization for non-emergent cases which result in overcrowding and strains already limited ED resources. Studies indicate that a large proportion of patients prefer to visit the ED rather than primary care settings due to the availability of advanced therapeutic and diagnostic services, rapid access to care, and perceptions of ED doctors as having increased empathy and competence compared to other types of healthcare practitioners.<sup>9,10</sup>

In summary, research conducted in various settings worldwide has shown that members of the public lack fundamental knowledge regarding appropriate indications for visiting the ED and how the triage system works, thereby contributing to health system resource misutilization and overcrowding in the ED.<sup>7-10</sup> However, there is limited research originating from Gulf Cooperation Council countries, especially Oman.<sup>11</sup> To this end, the current study aimed to investigate community knowledge of and attitudes pertaining to ED utilization and the triage process among a sample of Omani adults visiting a large tertiary hospital in Muscat, Oman. The results of such research are important for health system resource management and planning purposes, especially in light of the growing population which puts additional pressure on emergency settings.

## **Methods**

A cross-sectional study was conducted from September to November 2019 among Omani adults attending the Sultan Qaboos University Hospital (SQUH), a tertiary care hospital in Muscat Governorate. Adult Omanis (>18 years of age) visiting the SQUH ED or outpatient departments (OPDs) during the study period were recruited sequentially by the investigators during standard working hours using a convenience sampling strategy. Healthcare personnel (i.e., doctors, nurses, medical orderlies, paramedics, etc.) were excluded from the study, as were those who had been enrolled previously. The necessary sample size needed for the study was calculated to be 520 participants at a 95% confidence interval with a 5% margin of error, based on an estimated 15,000 total ED visits per year.

The participants' knowledge of and attitudes relating to appropriate ED utilization and the triaging process used in the SQUH ED were assessed using a self-administered questionnaire. The questionnaire was designed for the purposes of the present study by the investigators. Initially, an informal study was conducted asking members of the public to divulge their opinions regarding the existence of the ED triage system and its specific processes, after which obtained responses were categorized into themes and questions. Subsequently, five experts reviewed the themes and proposed questions and created the first version of the questionnaire. This version was piloted on 20 participants sourced from the ED and surrounding community, and the questionnaire modified based on their

responses. The final version of the questionnaire comprised four sections to assess the participants' demographic characteristics, ED visit details, and their knowledge and attitudes pertaining to appropriate ED utilization and the importance of and specific elements of the triage system.

In terms of demographic data, participants were asked to divulge their age, gender, and level of education, while ED visit information consisted of number of prior ED visits and whether the participants were themselves patients or were visiting or accompanying other patients to the hospital. Knowledge of appropriate ED utilization was assessed by determining responses to the question: *Should all non-urgent cases who come to the ED be treated in the ED, even if the services needed are available at health centers/polyclinics?* In addition, general understanding of the SQUH ED system and knowledge of the triage system itself, its importance, and factors affecting prioritization of treatment was assessed. Finally, the attitude section of the questionnaire incorporated a range of questions to determine the participants' preferences and reasons for seeking non-emergent ED care, how they would react to lack of prioritization of their case or prioritization of other cases over their own as a result of triage system processes, and their opinions regarding prolonged waiting periods as a result of the triage system.

All responses to knowledge and attitude questionnaire items were distributed into three categories according to the participants' level of agreement with the respective statement (e.g., yes/no/I don't know or agree/disagree/neutral, respectively). One of the investigators physically distributed hard copies of the questionnaire to potential participants in the ED waiting area and in various OPDs. If the participants agreed to take part in the survey, one of the investigators remained available to clarify any queries during completion. Subsequently, data from the completed questionnaires were compiled using a data collection sheet.

Results from the data collection sheet were transferred to the Statistical Package for the Social Sciences (SPSS), version 25.0 (IBM Corp., Armonk, NY), for analytic purposes. Frequency counts and proportions were utilized to describe the findings. Responses to various questions were presented as proportions of total responses. A Chi-squared test was used to examine demographic variables which might predict the participants' knowledge and attitude responses. A *p* value of <0.05 was considered statistically significant.

Ethical approval for this study was obtained from the Medical Research & Ethics Committee (MREC) of the College of Medicine & Sciences, Sultan Qaboos University (MREC #1934). All participants gave informed consent to participate in the study.

## Results

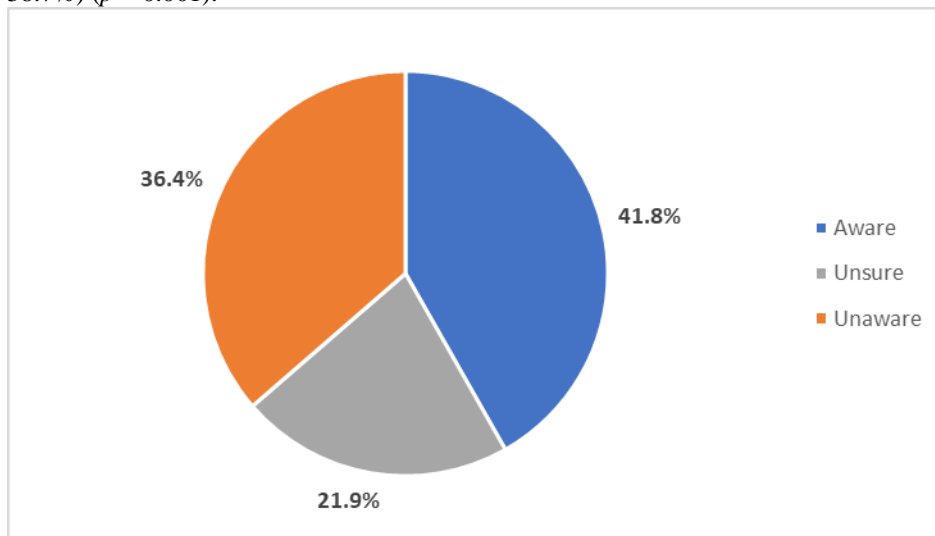
Of the 740 Omani adults approached during the study recruitment phase, 168 were excluded due to incomplete data or refusal to participate, resulting in a total of 572 participants (response rate: 77.3%). In terms of demographic characteristics, the majority of the participants were female (56.8%) and had either a high school diploma (39.9%) or bachelor's degree (34.8%). Overall, 71.9% of participants were recruited from OPDs, while the remaining 28.1% were recruited from the ED [Table 1]. The majority of participants had a history of one or more previous ED visits (80.4%).

**Table 1:** Demographic characteristics of the participants (N = 572).

	<b>Characteristic</b>	<b>n (%)*</b>
Gender	Male	247 (43.2)
	Female	325 (56.8)
Education level	Secondary school or below	83 (14.5)
	High school diploma	228 (39.9)
	Bachelor's degree	199 (34.8)
	Master's degree	30 (5.2)
	Doctoral degree	12 (2.1)
Recruitment setting	Professional degree or higher	15 (2.6)
	Morning OPDs	411 (71.9)
	Morning ED	51 (8.9)
Number of prior ED visits	Afternoon ED	110 (19.2)
	0	111 (19.6)
	1-2	226 (39.9)
	>2	229 (40.5)

OPDs = outpatient departments; ED = emergency department. \*Some missing responses. Total percentages may not add up to 100%.

In terms of knowledge, only 42% of participants had knowledge of appropriate ED utilization, namely that non-urgent cases should not be treated in the ED if the necessary services are available in other types of health institutions [Figure 1]. Further analysis revealed that male participants were proportionately more knowledgeable of appropriate ED utilization (45.7%) compared to female participants (38.8%) ( $p = 0.005$ ). Other demographic factors, such as education level and recruitment setting, were not associated with knowledge of ED utilization ( $p = 0.114$  and  $0.593$ , respectively) [Table 2]. Similar proportions of those who never visited the ED and those who had previously visited the ED either 1–2 or >2 times (range: 35.4–37.8%) were of the opinion that all non-urgent cases who come to ED ‘must’ be treated in the ED (i.e., lacked knowledge of appropriate utilization of ED services); however a significantly larger proportion (51.1%) of those who had visited the ED >2 times were of the opinion that non-urgent cases ‘must not’ be treated in the ED compared to the other two groups (range: 34.5–38.7%) ( $p = 0.001$ ).



**Figure 1:** Frequency of knowledge regarding appropriate utilization of emergency department services among the participants (N = 572).

**Table 2:** Associations between knowledge of appropriate utilization of emergency department services and the sociodemographic characteristics of the participants (N = 572).

Characteristic		Knowledge of appropriate ED utilization, n (%)*			p value
		No	Unsure	Yes	
Gender	Male	96 (38.9)	38 (15.4)	113 (45.7)	0.005†
	Female	112 (34.5)	87 (26.8)	126 (38.8)	
Education level	High school diploma or below	120 (38.6)	72 (23.2)	119 (38.3)	0.114
	Bachelor’s degree or higher	87 (34)	49 (19.1)	120 (46.9)	
Recruitment setting	OPDs	152 (37.0)	94 (22.9)	165 (40.1)	0.410
	ED	56 (34.8)	31 (19.3)	74 (46.0)	
Number of prior ED visits	0	42 (37.8)	26 (23.4)	43 (38.7)	0.001†
	1–2	84 (37.2)	64 (28.3)	78 (34.5)	
	>2	81 (35.4)	31 (13.5)	117 (51.1)	

ED = emergency department; OPDs = outpatient departments. \*Some missing responses. Total percentages may not add up to 100%. †Statistically significant using a Chi-squared test.

Overall, 55.2% of the respondents were aware of the existence of a standardized ED system for prioritizing patient care; moreover, 40% recognized that prioritization of care in the ED did not depend on who arrives first. In terms of their knowledge of specific factors affecting the triage process, 67.3% correctly identified vital signs as an essential metric; however, only 28.5% and 37.1% were aware that triage processes also considered the patient’s medical history and chief complaint, respectively. Regarding the importance of the triage system, the

majority of the participants acknowledged that the system helped to ensure timely management of urgent cases (84.8%), reduce overcrowding in the ED (76.2%), improve the quality of care provided in the ED (80.9%), and reduce resource misutilization (68.5%) [Table 3].

**Table 3:** Frequency of responses to specific knowledge items concerning triage system processes and importance among the participants (N = 572).

Questionnaire item	Response, n (%)*		
	Yes	Don't know	No
In the ED, there is a system of prioritizing patient care according to standardized methods.	316 (55.2)	177 (30.9)	61 (10.7)
In the ED, the triage system depends on the main complaint of patients.	212 (37.1)	241 (42.1)	72 (12.6)
In the ED, the triage system depends on the patient's medical history.	163 (28.5)	238 (41.6)	112 (19.6)
In the ED, the triage system depends on the patient's vital signs (e.g., heart rate, blood pressure, respiratory rate, etc.).	385 (67.3)	134 (23.4)	26 (4.5)
In the ED, priority of treatment is always given to those who arrive first.	177 (30.9)	119 (20.8)	229 (40)
Use of the triage system helps to ensure treatment of emergency cases in time.	485 (84.8)	41 (7.2)	23 (4)
Use of the triage system helps to reduce overcrowding in the ED.	436 (76.2)	68 (11.9)	35 (6.1)
Use of the triage system helps to ensure the quality of care provided.	463 (80.9)	68 (11.9)	12 (2.1)
Use of the triage system helps to avoid wasting medical resources.	392 (68.5)	99 (17.3)	54 (9.4)

ED = emergency department. \*Some missing responses. Total percentages may not add up to 100%.

In terms of attitude, the majority of participants reported that they preferred to visit the ED for non-emergent problems instead of other health institutions for various reasons, including convenience and easy access to medical care (52.4%), the quality of care received in the ED (53.1%), and the ability to receive care on the same day (59.1%). Moreover, 79.7% stated that they would accept waiting for an extended period if their situation was deemed less urgent during triage, while 48.4% would accept redirection to primary care services. When faced with prolonged waiting times, 60.3% stated that they would accept the wait and remain calm, although 26% stated that they would leave the hospital. Only a minority (5.2%) reported that they would consider resorting to physical or verbal abuse toward staff members if the waiting period was prolonged. When faced with a situation in which another case was prioritized over their own, 67.3% of the respondents perceived this to be justified due to medical urgency; however, 26.6% believed prioritization of the other patient to be unfair, while 17% attributed the situation to carelessness or error on the part of the medical staff [Table 4].

**Table 4:** Frequency of responses to specific attitude items concerning emergency department visit preferences and the triage system among the participants (N = 572).

Questionnaire item	Response, n (%)*		
	Agree	Neutral	Disagree
I prefer to visit the ED (instead of HCs/PCs) for non-urgent problems because of the convenience and ease of access to medical care.	300 (52.4)	104 (18.2)	96 (16.8)
I prefer to visit the ED (instead of HCs/PCs) for non-urgent problems because of the quality of care received.	304 (53.1)	99 (17.3)	55 (9.6)
I prefer to visit the ED (instead of HCs/PCs) for non-urgent problems because of my lack of trust in the care received at HCs/PCs.	169 (29.5)	125 (21.9)	203 (35.5)
I prefer to visit the ED (instead of HCs/PCs) for non-urgent problems because of the ability to receive care on the same day.	338 (59.1)	100 (17.5)	66 (11.5)
If my condition is not deemed urgent as a result of the triage system, I would accept waiting because there are more urgent cases.	456 (79.7)	41 (7.2)	35 (6.1)

If my condition is not deemed urgent as a result of the triage system, I would accept redirection to a primary HC.	277 (48.4)	108 (18.9)	140 (24.5)
If the waiting period were prolonged because of the triage system, my response would be to remain silent and accepting.	345 (60.3)	103 (18)	81 (14.2)
If the waiting period were prolonged because of the triage system, my response would be to feel angry.	126 (22)	123 (21.5)	261 (45.6)
If the waiting period were prolonged because of the triage system, my response would be to get violent and shout at the medical staff.	30 (5.2)	40 (7)	436 (76.2)
If the waiting period were prolonged because of the triage system, my response would be to leave the hospital.	149 (26)	149 (26)	210 (36.7)
While you are waiting to be seen, another patient is called; you think the cause of this is because their condition is more urgent than yours.	385 (67.3)	111 (19.4)	37 (6.5)
While you are waiting to be seen, another patient is called; you think the cause of this is because the other patient has been unfairly prioritized.	152 (26.6)	163 (28.5)	192 (33.6)
While you are waiting to be seen, another patient is called; you think the cause of this is because the medical staff are careless and have forgotten to call your name.	97 (17)	139 (24.3)	268 (46.9)

*ED = emergency department; HC = health center; PC = polyclinic. \*Some missing responses. Total percentages may not add up to 100%.*

## Discussion

This study sought to evaluate knowledge of and attitudes related to triage processes and ED utilization among a sample of Omani adults visiting a tertiary hospital in Muscat. Overall, the majority of the participants demonstrated poor knowledge of appropriate ED utilization, few were aware of several important patient metrics used during the triage process, and most reported that they would prefer to visit the ED to address non-urgent complaints. On the other hand, the majority were aware of the importance of the triage system in ensuring the delivery of quality emergency care and reducing ED overcrowding and medical resource misutilization and almost half reported that they would accept redirection to a primary care facility if their medical concern did not warrant ED care.

Among our participants, only 41.8% had a clear concept of appropriate ED utilization in that they were aware that non-emergency cases should not be treated at EDs if the required medical services can be obtained elsewhere, for instance local primary health centers and polyclinics. Visiting the ED for non-urgent health issues leads to overcrowding and strains the already limited resources and capacity of EDs, thereby contributing to healthcare system shortcomings and adversely affecting patient outcomes and the quality of care provided.<sup>12,13</sup> A retrospective cross-sectional study from the USA found that 10.1% of ED visits over a three-year period were classified as non-emergent based on triage categorization.<sup>14</sup> Nonetheless, 87.8% of such visits still received some form of treatment or diagnostic testing, representing a considerable degree of resource misutilization or exploitation. Similarly, a one-year retrospective study from Saudi Arabia reported that 61.4% of ED visits at a tertiary hospital could have been treated at the primary care level.<sup>15</sup> It should be noted that determination of an ED visit as "unnecessary" may be more complex than initially expected, especially in cases of restricted access to appropriate primary health services for acute injury or ailment.<sup>14</sup> There is a need for healthcare planners to carefully evaluate factors that may influence non-emergent ED visits in order to reduce the overall burden on the ED.

Various factors have been found to affect patients' decision-making processes when it comes to visiting the ED for non-urgent concerns. In one study, researchers found that such decisions hinged on whether patients were aware of alternative sources of care or whether they were unaware of other options and considered the ED to be the default.<sup>16</sup> For the latter group, such findings indicate that greater efforts should be made to increase public awareness of the availability and scope of primary care services. In turn, among the former, a range of considerations influenced their decision to pursue ED services over other alternatives, including being instructed by another medical professional, logistical or emotional barriers to accessing other types of care, concern regarding potential care costs, and overestimation of the severity of their health concern.<sup>16</sup> Indeed, with regards to the last factor, research shows that most ED patients tend to have an inflated perception of the urgency of their

medical condition and expect to be given higher priority than their actual triage categorization permits, particularly in the case of repeat visitors ( $\geq 3$  ED visits in 6 months).<sup>17,18</sup>

In the present study, 52.4% and 59.1% of participants reported that they preferred to visit the ED for non-emergent problems because of the convenience and easy access to medical care and the ability to receive care on the same day, respectively. A Saudi Arabian study reported similar proportions of non-urgent ED visitors with the same reasons (62% each), with 63% also indicating that their decision to visit the ED was influenced by their lack of a regular healthcare provider.<sup>19</sup> Although this factor was not assessed in the current study, it may also play a role given that the structure of the healthcare system in Oman does not currently emphasize a continuity of care approach to primary care services.<sup>20</sup> Moreover, 53.1% of our participants claimed that they chose to visit the ED because of their perceptions of the increased quality of care received in tertiary hospitals; however, only 29.5% reported that they favored the ED due to a lack of trust in other centers.

Several previous studies have indicated that patients prefer to visit the ED rather than primary care settings due to the availability of therapeutic and diagnostic services, rapid access to care, and perceptions of ED doctors' increased empathy and competence compared to other types of healthcare practitioners.<sup>9,10</sup> It is possible that misutilization of ED facilities for non-emergent concerns might be reduced by changes in the timing, access, and content of services provided by general practitioners, which could motivate patients to reconsider defaulting to the ED for concerns that could be adequately treated at the primary care level.<sup>21</sup> A review of the literature of triage systems with particular reference to Saudi Arabia recommends capacity-building and educational efforts to build up public confidence in the triage system by increasing community awareness of how patients are prioritized according to the severity of their condition, rather than as a result of other factors.<sup>11</sup>

Overall, 67.3% of participants in the present study understood that the triage system in ED depends on the patient's vital signs. Their understanding of vital signs as one of the essential factors used in prioritizing patients may stem from previous experiences receiving ED care. However, very few were aware that a patient's primary complaint and their medical history are also important components in the triage process. A prospective cohort study found that unusual vital signs during triage significantly correlated with unfavorable patient outcomes, including intensive care admission and in-hospital mortality.<sup>22</sup> At the same time, the researchers suggested that assessment of the patient's primary complaint in the triage process could result in over-triage, given that more than half of the patients reported complaints that were more urgent than their vital signs indicated. Such findings again suggest that ED patients routinely overestimate the severity of their own health concerns.<sup>17,18,22</sup>

In the present study, 30.9% of participants mistakenly believed that priority of treatment in ED was managed on a 'first come, first served' basis. Such findings support existing research indicating a fundamental lack of knowledge concerning ED triage systems in the community. Unfortunately, this lack of understanding can adversely affect acceptance of waiting times and perceptions of ED performance. A group of Canadian researchers sought to evaluate patient expectations of ED care in two phases.<sup>23,24</sup> In the first phase, focus group discussions were conducted among patients with and without a history of visiting the ED over the preceding year, as well as with ED staff members themselves.<sup>23</sup> Patient and staff perceptions varied as to the need for frequent communication and awareness of the triage process. Both patient groups had similar expectations of ED care, particularly with regards to the need for frequent updates and communication by ED staff; however, expectations of appropriate wait times varied, with inexperienced visitors expecting more rapid care.<sup>23</sup> Prolonged waiting periods ( $\geq 3$  hours) were a common concern among both patient groups, particularly in the absence of staff updates. Pertaining to the triage system, both patient groups anticipated the sickest patients to be treated first; however, inexperienced visitors desired a 'take-a-number' system for minor complaints, so that patients might leave and come back at their leisure.<sup>23</sup>

In the second phase of the research, which involved a cross-sectional telephone survey of former ED visitors, 64.4% of respondents considered that treatment priority should be given to the most critical patients, with 59.3% perceiving that medical severity should be established by a triage nurse.<sup>24</sup> However, patients also had unrealistic expectations regarding wait times, with actual length of stay being significantly longer than expected length of stay for all groups. A study of potential mediators and moderators of ED patient complaints indicated that waiting times during triage were a significant antecedent of patient satisfaction ( $p < 0.01$ ).<sup>25</sup> Other researchers have similarly shown that a considerable proportion of the public is unfamiliar with the triage process and the ED system, a situation which contributes to negative perceptions of patient ED experiences.<sup>23,26</sup> In such cases, additional information regarding how the system works can help to mitigate such perceptions.<sup>26-28</sup> Emergency physicians and ED staff members have themselves also suggested that much of the public do not understand the triage process prior to demonstration.<sup>23</sup> One study found that 41% of patients in an ED waiting room wanted

additional information as to how the ED functions, although this information was deemed significantly less important and desirable than information related to common medical emergencies ( $p < 0.05$ ).<sup>28</sup>

Overall, just under half of the present sample (48.4%) indicated that they would accept redirection to a primary health center if their condition were not deemed urgent based on the triage system. In a previous qualitative study, interviewees have similarly suggested that the triage processes might be expanded to allow for the redirection of non-urgent patients to alternative sources of healthcare services.<sup>7</sup> A prior survey of patients waiting for ED care at a public hospital in the USA reported that 38% were willing to exchange their ED visit for an OPD appointment within three days.<sup>29</sup> In terms of attitudes regarding prolonged waiting periods as a result of the triage system, most of the participants in the current study (60.3%) reported that they would remain silent and accepting of the situation. Moreover, 45.6% disagreed that they would get angry and 76.2% opposed being violent or shouting at medical staff. Lastly, 36.7% objected to leaving the hospital, even if the waiting period was considerable. In contrast, previous research has indicated that prolonged waiting time is the most common reason for leaving the ED without being seen (79%).<sup>6</sup>

Fortunately, the majority of our participants reported generally positive attitudes to prolonged waiting periods arising from the prioritization of other medical emergencies. Most (79.7%) reported that they would accept waiting to be seen because of more urgent cases, as determined by the triage system. In addition, when faced with a hypothetical situation in which another patient was called prior to themselves, 67.3% agreed that this was likely because the condition of the prioritized patient was more urgent than their own. A cross-sectional study reported that a comparable proportion of ED patients (64.4%) believed that the most critical patients should be treated first.<sup>24</sup> Overall, the majority of the sample in the current study were aware of the importance of the triage system, including agreeing that the triage system helps to ensure timely treatment of emergency cases (84.8%), improves the quality of ED care (80.9%), reduces overcrowding in the ED (76.2%), and avoids wasting medical resources (68.5%). This consistent understanding of how the triage system positively impacts different aspects of healthcare services is an important basis for further efforts to encourage public awareness and acceptance of appropriate ED utilization in Oman.

To the best of our knowledge, this is the first study investigating community knowledge and attitudes relating to ED visits and the triage system in Oman. In addition, the study was strengthened by the high response rate (77.3%), perhaps due to the self-administered data collection method employed and the availability of investigators during survey completion to clarify any misunderstandings or questions. Moreover, most of the respondents had themselves previously experienced the triage system while seeking emergency medical care, which bolsters the credibility of our findings. However, the fact that the study was conducted in a single hospital and was subject to missing data were significant limitations which could have impacted our results. In particular, some of the participants did not complete the entire questionnaire, which led to our having to exclude certain factors during the analysis, such as age, number of prior visits to the ED, and self-reported reason for visiting the ED. Another limitation was the unequal proportion of participants recruited from OPDs compared to the ED. This difference could have affected the accuracy of responses as well as the data analysis.

We hope that the findings of this study can provide a basis for future work. We recommend that further research on this topic be conducted in which a larger sample size is collected, and a similar research tool used to provide appropriate cut-off points specific to our demographic sample. In addition, research should be conducted at multiple ED settings in various other hospitals and institutions in Oman to increase the generalizability of the findings. Furthermore, additional demographic information like age, marital status, and place of residence need to be studied to determine additional underlying factors affecting knowledge and attitudes pertaining to the triage system and utilization of ED services among members of the public in Oman.

## **Conclusion**

In most EDs worldwide, some form of triage system is applied to prioritize patients according to case severity and treatment urgency in order to maximize ED resources and optimize patient outcomes. However, the findings of our study indicate that knowledge regarding appropriate utilization of the ED and understanding of the triage process remains inadequate among Omani community members, although attitudes were generally positive. It is therefore necessary to increase public awareness of these issues in order to improve patient satisfaction and confidence in the healthcare system.



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## Conflict of Interest

The authors report no potential conflicts of interest.

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