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Article

Patients' perceptions resulting from the contact with emergency departments using the Manchester Triage System protocol

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Abstract: Emergency is a health condition that poses an imminent risk to life. In this context, operations and triage protocols play an important role in the correct functioning of the Emergency Department, a key component of national health systems. The aim of the study was to explore and describe the experiences of a group of patients regarding emergency departments that use the Manchester Triage System, a triage protocol widely adopted in Europe. The research approach used was phenomenography, which allows us to explore in depth the diversity of experiences lived by a group of patients. The data was collected through semi-structured interviews and analysed to identify the categories that allows a qualitative description of patient's experiences. The results are structured in the following categories: "Healthcare professional roles", "Waiting time to be cared", "Triage protocol" and "Emergency department utilization". These results can be used to improve the way patients experience emergency situations and to contribute to increasing knowledge about the impact of emergency departments and triage protocols on patients.

Keywords: triage protocol; emergency departments; patient perceptions; patient satisfaction; phenomenography; qualitative research

1. Introduction

Triage protocols are a central theme in the management of emergency departments (ED) [1]. A correct assessment of the severity of each patient's health situation is vital for effective patient care in hospitals. This issue takes on relevance when it is verified that hospitals provide care to millions of individuals each year [2].

Triage in the ED is the starting point of the health care delivery process and should be a meticulous and demanding process carried out by professionals properly prepared to implement it. The triage system is a process to be used with all patients who present themselves at the ED to determine the severity of the clinical picture [3]. The primary objective of triage is, therefore, to prioritize and efficiently allocate medical resources based on the severity of patients' conditions, ensuring timely and appropriate care for those in greatest need.

There are several triage protocols in literature, however the following protocols are particularly relevant: ESI (Emergency Severity Index), CTAS (Canadian Triage and Acuity Scale), ATS (Australasian Triage Scale) and MTS (Manchester Triage System) [4]. One of the most used, and the one used in Portuguese hospitals, is the MTS [5].

This protocol consists of identifying the real situation of the patient, following a flowchart of decisions as various questions are asked. The use of this system classifies the patient on a scale of five categories identified through a number, name, colour, and predictable time to give the initial medical observation [6, 7]. Triage management systems are widely adopted in hospitals around the world, therefore creating a need for continuous understanding and assessment of their use and management [8]. In this context, this study is based on a phenomenographic approach to contribute to the

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understanding of situations experienced by patients in various Portuguese ED's, who use the MTS. In addition, it intends to contribute to the increase of knowledge and to the continuous improvement of MTS protocol use in general and specifically in EDs in Portugal.

1.1. Literature Review

In hospitals and healthcare settings, triage systems are essential for efficiently prioritizing and managing patient care, especially in EDs. Hospital triage systems aim to categorize patients based on the severity of their conditions, ensuring that those with the most critical needs receive prompt care.

The ESI (Emergency Severity Index) is a protocol widely used in American hospitals, which classifies the condition of patients into five levels, based on severity and the need for resources and does not define the maximum time for patient care [9, 10].

In Canadian hospitals, the system adopted is the CTAS (Canadian Triage and Acuity Scale), which also uses a scale of five levels of severity, based on their presenting complaints, vital signs, and clinical indicators and defines maximum times for treating the patient [11].

In turn, Australian and New Zealand hospitals adopted the ATS (Australasian Triage Scale) protocol, which also consists of a five-level scale and incorporates resource management depending on patients' severity levels [11].

The MTS (Manchester Triage System) is widely used in European hospitals. It employs a color-coded system with five categories, ranging from "immediate" (red) to "non-urgent" (blue)[7], to prioritize patients based on the severity of their conditions and highly values the assessment of pain, especially its intensity [12]. As pain assessment is complex and subjective, many hospitals use a simple numerical scale from zero to ten, in which zero corresponds to a state of no pain and ten corresponds to very intense pain, but it is still an assessment with a high degree of subjectivity.

This system uses a structured set of questions and clinical observations to assign patients to the appropriate category [13]. Each hospital must develop its own means to deal with the composition of medical teams, the existence of many severe patients and overcrowding, as these events can increase waiting times and patient dissatisfaction [14-16].

The use of a triage protocol is a principle widely adopted in hospital EDs. It has not yet been possible to define an international standard, although the literature points to similar performance trends for the various protocols, as well as the identification of a set of common weaknesses [4, 17]. One of the weaknesses is related to patients' perception regarding the functioning of EDs [16]. Often the needs, desires and expectations of patients are not taken into account, with priority being given to assessing the clinical status [18].

There are several studies that point to the need of studying people's opinions and expectations in detail during triage, to reinforce the strengths and overcome the weaknesses of the system [14, 18-21].

Long waiting times for patients to be examined - or their perception of the waiting time - is one of the most critical points of triage, causing frustration and anxiety in patients, leading to a negative experience, and may even result in abandonment of the ED without being observed [18].

The quality and type of information provided also has a significant impact on patients during their stay in EDs [16]. The information that patients want to receive is related to expected waiting times, the identification of professionals who carry out the triage, the progress of their health status or general information about the operation of EDs [22, 23]. In this context, it is essential to identify the information needs to be provided to patients, so that the information transmitted is appropriate [24].

The transversal skills of professionals who provide emergency services, such as courtesy, respect, interest, or tolerance, are also a factor that influences the experience lived by patients [25].

Various research methodologies were used to assess the perception of the quality of services provided to patients, from the patients' point of view. Although it is a complex assessment, a set of quantitative scales was developed, like the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) Survey [26] or the Brief Emergency Department Patient Satisfaction Scale (BEPSS) [27].

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Although surveys are an interesting way of obtaining information about patients' experience in EDs, they should be complemented with instruments of a qualitative nature, as these allow for more in-depth studies [26]. The main purpose of a qualitative analysis of the experiences lived by patients in EDs is to understand how they feel when being attended to and cared for [14].

Therefore, this study's central goal is to categorize the fundamental components of the perceptions of patients resulting from their contact with EDs that use MTS protocol. Highlighting good practices and identifying unmet patients' needs and expectations was the rationale behind this study.

2. Materials and Methods

This study, of a qualitative nature, uses the phenomenographic approach, which in essence consists of exploring the different ways in which people experience the phenomena or situations in which they are involved [28]. Although phenomenography was initially developed and applied to the area of education, it has been widely used in the field of medicine [18, 29-31].

This approach allows us to identify differences and similarities in the description that different people give of the same experience [32]. The method thus uses a second-order perspective, very oriented towards content and reflection on experience [33]. The evaluation of the various dimensions of the same experience (conceptions, perspectives, perceptions, etc.) allows a comprehensive description of the phenomenon under study [33].

The focus of interest in this study is the experience lived by patients when they feel the need to go to an ED. The phenomenon here analysed is, therefore, the perception of patients in relation to the services provided by EDs. In this regard, the chosen approach is appropriate and allows to design description categories, as well as to establish relationships between different categories. The collection of information was carried out through interviews, in which the questions asked were set as open as possible. This method of interviewing encourages patients to freely express their opinions and to describe situations they have experienced.

To guide the interviews, the following questions were asked: “What is your opinion about the operation of the ED?“, “What is your opinion about the care provided by nurses in the ED?“, “How do you feel in the ED?“.

2.1. Sample

The sample consists of eleven patients who were interviewed, in hospitals such as: Hospital de São João in Porto, Hospital Santa Maria in Lisbon, Hospital de Faro, Hospital de Coimbra and Hospital de Aveiro, between March and August 2022. Relatively small samples are common in studies carried out with a phenomenographic approach [28, 31, 32, 34]. The socio-demographic characterization of the sample is presented in table 2, in percentages. All participants involved in the study have Portuguese nationality.

To allow miscellaneous information collection on the experience lived by patients, a sample with variability in socio-demographic characteristics was created. The distribution of the sample by gender shows an almost uniform distribution of the percentage of female and male interviewees. As to the age distribution, the sample comprises individuals between 19 and over 60 years old. Regarding monthly income, the sample again shows a high socioeconomic variation, with values ranging from 500 euros to more than 2000 euros. Regarding residence area, the sample contains interviewees from all regions of the country, including the islands. In terms of professions, the sample also covers a diverse range: teacher, accountant, hairdresser, kitchen assistant, salesman, translator, computer scientist, receptionist, marketeer, architect, and manicurist. In short, the sample reveals suitable variability for the study objectives.

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Table 2. sample characterization (N=11), in percentage.

Gender	Female	54.5
	Male	45.5
Education	Higher education degree	58.7
	No higher education degree	41.3
Age	19-29	9.1
	30-39	27.3
	40-49	18.2
	50-59	9.1
	60 or more	39.7
Monthly income (€)	< 500	9.1
	500-1000	18.2
	1000-1500	27.2
	1500-2000	36.4
	more than 2000	9.1
Area of residence	North	27.2
	Centre	36.4
	South	27.2
	Islands	9.1

The interviewers informed the participants about the purposes of the study, they granted the voluntary participation and confidentiality of the information collected.

2.2. Data and analysis

Data collection was carried out through semi-structured interviews, with an average duration of 1 hour per interview. Similar to other qualitative approaches, the interviews were concluded when data saturation was reached. The interviews were recorded, and the results were transcribed in full and coded to guarantee the confidentiality of study participants. The data were read and re-read by the researchers to select the interviewees' statements that effectively were related to the topic under study. Furthermore, the systematic review of texts is essential to ensure a correct synthesis of the information collected [35].

At a later stage, the selected statements were compared to determine differences and similarities. This procedure allowed the data to be synthesized into qualitatively different categories that represent the result of the phenomenographic approach [36]. These categories represent different ways of experiencing emergency services and highlight the qualitative variations in the interviewees' perceptions [33].

Finally, we carried out a critical reflection on the output results, to ensure the consistency and validity of the interpretations [31], considering the complexity of participants' experiences.

In the following section, the categories that were identified are discussed and transcribing, whenever applicable, representative statements from the interviews carried out.

3. Results and Discussion

Data analysis revealed four categories that describe the qualitatively different ways how the experience of contact with EDs was experienced by the patients interviewed (table 3).

Table 3. Categories and sub-categories identified.

Category	Sub-categories
Healthcare professional roles	Triage competence
	Participant perceptions
	Nurses vs. Doctors

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Waiting time to be cared	Lack of information Increased anxiety Insufficient resources
Triage protocol	Operation Relevance Acceptance
Emergency department utilization	Decision Suitability Alternatives

3.1. Healthcare professional roles

In this category of descriptive analysis, interviewees describe a set of perceptions of the operation of the EDs related to health professionals.

In the MTS protocol, triage is typically performed by nurses, often referred to as emergency nurses [2, 37]. These nurses evaluate the patient through observations, a set of questions and record some physiological parameters [38]. They must be experienced enough to ensure that they are able to apply the protocol criteria and in particular that they have the necessary skills to identify patients in critical condition [8, 18, 39]. The patients in this study were all observed by nurses during triage, as it is common in Portuguese hospitals [40]. After triage, patients waited for doctors' examination.

Patients expressed that they were satisfied with the care provided by nurses: "I strongly support that nurses play an essential role in the triage process" (participant 8) and "I believe that nurses have solid training that qualifies them to actively participate in the triage process" (participant 10).

Only one participant testified a different perception: "*doctors undergo specialized training that extends beyond the fundamental requirements for triage*" (participant 7), but he agrees that nurses are also competent health professionals, capable of carrying out triage.

This high level of trust in emergency nurses "*nurses bring a unique and valuable approach to triage, given their specific training*" (participant 4), has been previously reported in other studies [20, 41].

Indeed, nurses play a crucial role in EDs and their training, skills and knowledge make them suitable for various responsibilities, including the important task of triage.

However, some patients interviewed do not have a solid opinion about which professionals should carry out triage: "*I am convinced that nurses have the appropriate training to carry out triage effectively, however, doctors can also do so* (participant 5)." In general, in Portuguese hospitals, doctors are only involved in the post-triage stage, providing the necessary medical care according to the patient's condition. The use of doctors in hospital triage functions can even be understood as a poor allocation of resources. No patient reported that there could be advantages in triage carried out by a team of professionals, comprising nurses and doctors, a strategy that has been successfully reported in the literature [42].

In short, the patients interviewed demonstrated a high level of trust in the triage service provided by emergency nurses and did not have a concrete perception about whether a nurse or a doctor should carry out the triage.

3.2. Waiting time to be cared

In this category of descriptive analysis, interviewees provide a set of perceptions of the functioning of the ED related to the waiting time to be observed by health professional: lack of information, increased anxiety, insufficient number of doctors and poorly committed professionals. Previous studies have already demonstrated that waiting time is one of the main metrics in evaluating patient satisfaction with emergency services [42-46].

A significant number of patients point out that waiting time in the emergency room is extremely long. We must highlight there is a difference between the actual waiting time and the patient's perception of this waiting time and that the level of satisfaction is related to the difference between

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enter these two periods of time [45]. The results naturally refer to the perceived waiting time. Patients were concerned about this issue: "*long waiting times affect the overall perception of the healthcare establishment. It is discouraging and raises concerns about the quality of healthcare*" (participant 3).

Previous studies have shown that long waiting times are associated with higher patient mortality and worse recovery outcomes [47].

In addition to evaluating the waiting time as very long, patients do not understand why they have to wait for so long, especially because they are not given any justification or information. "*One problem I noticed is the lack of communication during the wait. It would be better if someone informed us about the expected waiting time"* (participant 10). Providing expected waiting time can not only increase patient satisfaction but also decrease perception of waiting time [16, 24].

The waiting time problem is not attributed to the triage process, which is considered fast, but rather to the waiting time for medical care. By medical care they mean doctors and other health professionals involved in the care they need. "*There was a time when the wait was so long that I thought about leaving before seeing the doctor. It's discouraging*" (participant 8). However, only one patient reported leaving the ED without being seen: "*once I waited so much time, I gave up the consultation with the doctor and left*…" (participant 10). This patient explained that, due to a critical situation, he initially chose the public hospital. However, after two waiting hours without any attendance, he turned to private healthcare. On the other hand, all other participants reported that, despite the long waiting time, they chose to endure the wait.

Waiting time has an important impact on the psychological state of patients [43]. Long waiting time can increase patients' anxiety levels: "*waiting can be unnerving, especially when you don't know for sure when you will be seen by a healthcare professional*" (participant 7) and "*I feel frustrated when the wait seems endless, which increases my anxiety before seeing the doctor*" (participant 5).

The long waiting combined with the lack of information increases even more anxiety levels. With an effective communication system, patients feel more involved and more confident about the care they will receive [48, 49]. Additionally, the physical discomfort of waiting rooms contributes to increase patients' psychological discomfort: "*the conditions of the waiting room contribute to general discomfort. It would be useful if there were more comfortable places and a better environment.*" (participant 2).

In recent years, the issue of overcrowding has been studied by the scientific community. The increase of people using EDs has grown steadily, often resulting in overcrowding situation [46]. However, the use of a triage protocol reduces waiting time in situations that constitute emergencies and increases the quality of the response from healthcare professionals [20]. The patients in the sample recognize this recognize this improvement in the use of EDs but emphasize their perception of the shortage of healthcare professionals as one of the main problems: "*the lack of staff has a significant impact on waiting time. It is a point of concern of the emergency care system*" (participant 1).

Furthermore, patients are aware of the lack of commitment from some professionals: "the big problem is that professionals frequently vacated the attendance room for prolonged periods, often spending more than 30 minutes retrieving coffee or having a chat with colleagues" (participant 11).

In short, in this category patients emphasize the lack of information provided by EDs, the lack of human resources and their low level of commitment to attendance, as causes of the high waiting time. They also highlight that these factors, combined with the lack of physical conditions in waiting rooms, lead to high levels of anxiety while waiting to be cared.

3.3. Triage protocol

In this category of descriptive analysis, interviewees describe a set of perceptions related to the MTS protocol used by EDs in Portuguese hospitals: functioning, importance, and acceptance.

The main purpose of this protocol is to provide a fast assessment of the patient and based on this assessment, assign priorities according to the clinical needs identified. It involves assigning priorities gathered into five triage categories, in decreasing order of urgency: red (immediate), orange (very urgent), yellow (urgent), green (normal) and blue (non-urgent) [3, 8, 12, 50].

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The participants in the study showed that they understood the results of applying the triage protocol and its meaning for the management of EDs. In general, they relate the use of a colour code to the prompt identification of patients in a serious clinical situation, with the more efficient use of available resources, as well as relating expected waiting times to the colour assigned to them.

They also underlined that they understand that good patient flow management helps with referral to exams and consultations for the different specialties available in a hospital.

Patients stated that they understood how the colour code works and its meaning. After completing the triage, they received a bracelet with the colour associated with the assessment of their clinical status. In the patients' statements, it is clear that they understand that the colour of the bracelet assigned to them reflects the severity of their situation and is related to the time they will have to wait to be seen by doctors. This is evident in the following statements: "*understanding how triage works has never been a difficulty for me*" (participant 11); "*I am completely familiar with the details of the color-coded triage scheme"* (participant 3); "*understanding the triage system is something that has always seemed clear and accessible to me*" (participant 9) and "*I am fully aware of how the color-coded triage scheme works"* (participant 8).

The proper application of a triage protocol rewards the transparency of attendance in an ED. Understanding how it works allows patients to reduce the anxiety and expectations that are most often associated with the experience of EDs [43].

In addition to declaring that they understood how the colour code worked, they stated that they also understood its importance: "*I have a solid understanding of the colour code triage scheme, which makes it easier to navigate through the hospital process*" (participant 6) and "I *fully comprehend the color-coded triage scheme, and I understand that this protocol helps hospitals to maximize time"* (participant 3).

A lack of understanding about how the colour code works and its importance for managing an ED can lead to discontent and frustration among patients, especially those who wait longer to be seen, because their health condition is not very urgent [38].

Finally, it should be noted that the patients interviewed, in addition to understanding the functioning and importance of a triage protocol, also accept its existence: "*I find no difficulties in understanding the logic behind a color-coded triage scheme*" (participant 4).

To sum up, the use of a triage protocol, and in particular the use of MTS, proved to be essential in optimizing EDs, potentially mitigating the risk of serious losses in high-risk situations. The organization of the triage service with well-defined standards of care supported by criteria that are as objective as possible, allows healthcare professionals to perform their duties more effectively, maximizing their time [3, 22]. Therefore, the use of a triage protocol allows us to have a global view of all patients attending an ED, leads to a better resources' allocation, to a better knowledge and acceptance by patients who need to use EDs and provides a better experience for everyone involved in the process [19].

3.4. Emergency department utilization

In this category of descriptive analysis, interviewees describe a set of perceptions about the use of EDs: decision to go to an emergency service, suitability of the emergency service to solve the health problem and alternatives to emergency services.

This topic is particularly relevant due to the growing overcrowding of EDs. This trend occurs worldwide, and its effects have repercussions not only on the EDs, but also on the functioning of the entire hospital, with very negative consequences for the efficient use of available resources and the quality of services provided [51-53].

Emergency departments were designed and organized to essentially receive patients that need urgent treatment. The decision that patients need to make when they have problems with their health status is related to the choice of an emergency-department or a primary care unit. However, due to function difficulties in primary health units, emergency departments are often used by those who believe that these units do not respond in due time.

The majority of patients involved in this study express a clear preference to avoid visits to the ED, choosing to go only when they feel that their health situation is serious "*only in situations extremely*

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urgent would I consider resorting to an emergency" (participant 7); "*it is not my first choice to go to the emergency. My preference is to seek assistance in other health services whenever possible*" (participant 5) and "*I reserve visits to the emergency only for situations of extreme pain"* (participant 4)."

The participants in the study showed that they were aware that EDs are not always suitable for solving a health problem: "*in some situations, I feel that it is a waste of time to go to the emergency. "The service is not as quick as it should be*" (participant 1); "*under certain circumstances, the emergency experience can be frustrating and time-consuming. I avoid it when there are alternatives* (participant 6) and "*I feel that in many situations, going to the emergency is not effective for less urgent cases. I choose to avoid it when there are other options*" (participant 8).

The lack of capacity of primary healthcare units to respond to the population is one of the multiple causes that lead to overcrowding in EDs [51-53]. In addition to realizing that not all health problems should be resolved in EDs, waiting time seems to be the main reason why patients consider not going to the emergency room.

However, patients highlighted that, sometimes, seeking emergency care in hospital becomes advantageous, particularly when it is difficult to obtain a service in primary care. They point out that it is common for non-urgent cases to end up in the emergency as a matter of convenience and to guarantee care, even though it is not the most appropriate place.

Patients demonstrated that they were aware of the alternatives to EDs: "less urgent cases should be treated in primary health care services" (participant 4); "less serious cases should be treated in primary health care units (participant 7) and "I avoid going to the ED whenever possible, preferring to seek help in primary health care services, especially for less urgent cases" (participant 2).

In conclusion, patients are aware that EDs should only be used in serious situations, that they are not suitable for simple health problems, mainly because they lead to long waiting time, and they identify primary health care units as effective alternatives to EDs.

This study highlights that from the patients' point of view, nurses have the training, skills, and knowledge necessary for the proper administration of the triage protocol, and do not have an opinion on whether nurses or doctors should carry out the triage.

The majority of those interviewed have the perception that waiting times in EDs are extremely long, with lack of justification and continuous information. This delay is not attributed to the triage process, but rather to the wait for medical care to be provided. Finally, participants in this study highlight the shortage of health professionals as a significant problem for the proper functioning of services, aggravated by the lack of commitment of some professionals in fulfilling their responsibilities.

The interviewees clearly understand how the triage protocol works, specifically the bracelets and the importance of its different colours. They also underlined that the process is, usually, efficient in establishing priorities. They assess that rapid triage execution is essential in patient's management, giving healthcare professionals an overview of the ED. Additionally, they accept that establishing priorities allows for better use of available resources and that less urgent cases should wait to be attended to.

The results indicate that there is a clear preference among participants to avoid visits to EDs, favouring instead other health facilities that provide primary health care as their main option. However, they recognize that in more serious health situations, such as unbearable pain, they have no alternative but to seek assistance in EDs. Sometimes they also go to EDs because, from their perspective, the health units that provide primary health care are unable to respond in time according to their needs. This situation results in ED´s overloading with cases that are not urgent, contributing to increasing overcrowding of services and patient waiting times.

4. Conclusions

The current study approaches the experience of patients in EDs. The establishment of categories and its subcategories sheds light on the intricate dynamics surrounding patients contact with EDs. The analysis of the category "Healthcare professional roles and Emergency department utilization " provides insights into the strategic deployment of EDs and to the methodologies employed for

effective patient prioritization. On the other hand, the of "Triage protocol" category reveals the crucial elements contributing to an efficient and patient-centric triage procedure. Lastly, the analysis of "Waiting time to be cared" category sheds light on the factors influencing waiting time and strategies aimed at enhancing the overall patient experience.

Together, these categories allow a better understanding of the multifaceted aspects that influence the experience of patients in EDs, from the performance of nurses in the screening process, to the timely provision of health care. This holistic perspective is valuable for healthcare professionals, administrators and policymakers seeking to optimize the operation of EDs, to improve outcomes and to increase patient satisfaction with the service provided.

The results indicate that patients have a high level of trust in the performance of healthcare professionals, but that improvements must be implemented to increase the quality of the patients' experience. Managers and professionals in EDs must, in addition to ensuring the quality of technical service, adopt a more people-centred approach, improve ED's facilities, improve the information provided to patients and adopt actions that reduce waiting time for medical care. Improving the functioning of primary health care units would contribute to increasing patient satisfaction with EDs.

5. Limitations and future research

This empirical study has some limitations. The first limitation is related to the use of a convenience sample, although an effort was made to create a sample with variability in socio-demographic characteristics, to avoid bias. Furthermore, all interviews were carried out in Portuguese hospitals, which use the MTS protocol, so the results may not be generalizable to other countries and other protocols. The second limitation is related to the relatively small number of interviews carried out. However, this study uses a phenomenographic approach to deeply study the way patients experience the use of EDs and not to generalize the characteristics of a phenomenon.

Other studies, with larger sample sizes, should seek to continue to identify and clarify the factors that have an impact on patient's satisfaction. This study should be extended to different contexts and different actors, such as health care professionals involved in the triage process, so that a holistic approach to this topic can be obtained. Another line of future research would be to compare the assessment of patient satisfaction during and after their stay in EDs.

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