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Competency and training characteristics of triage personnel in Pediatric Emergency Departments in Spain

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Abstract

Introduction: Triage is a process with crucial implications for patient care. Our aim is to describe the care and training characteristics of the triage personnel in Spanish pediatric emergency departments (PED).

Material and methods: A cross-sectional, descriptive study was conducted between July 1 and October 31, 2020, including centers affiliated with the Spanish Society of Pediatric Emergency Medicine (SEUP). Data were collected using an ad-hoc electronic questionnaire. Centers that refused to participate or did not provide the necessary data were excluded.

Results: Invitation links were sent to 86 centers yielding responses from 25 (29%). At 19 (76%) centers, the triage personnel received on-site education, while at 10 (40%) they also attended off-site courses. In 15 centers (79%), the training included specific aspects of pediatric triage and the use of triage software. The training was mainly endorsed by the hospital providing the training (15; 60%). In five centers (20%) training was not endorsed.

Fifteen centers (60%) indicated that prior emergency-nursing experience was mandatory for a median of 6 months (IQR, 6-12). In five (20%), prior experience was not required.

The median duration of on-site training was 8 hours (IQR, 7-12) and that of off-site training 11 hours (IQR 10-14).

Advanced nursing triage is performed at 84% of the centers (21), of which the second most frequent activity is medication prescription (17; 80%).

Conclusions:

- Triage training is mainly obtained within the PED itself.
- There is great variability in the length of emergency-nursing experience required to conduct triage in the PED.
- Advanced triage including medication prescription is frequently performed.
- There is a need for the establishment of minimum requirements to perform triage in the PED.

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Palabras clave:

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Servicio de urgencia en hospital
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Enfermería de Urgencias

CARACTERÍSTICAS ASISTENCIALES Y FORMATIVAS DEL PERSONAL QUE REALIZA TRIAGE EN URGENCIAS DE PEDIATRÍA EN ESPAÑA

Resumen

Introducción: *El triage es un procedimiento con repercusión crítica en la atención al paciente. Nuestro objetivo es describir las características asistenciales y formativas del personal de triage en los servicios de Urgencias Pediátricas (SUP) españoles.*

Material y métodos: *Estudio descriptivo transversal del 1 de julio al 31 de octubre de 2020 en centros con representación en la Sociedad Española de Urgencias de Pediatría (SEUP) mediante cuestionario electrónico ad-hoc. Excluimos aquellos que rechazaron participar o no obtuvieron los datos necesarios.*

Resultados: *Se enviaron 86 links de invitación y respondieron 25 centros (29%). De ellos, 19 (76%) recibían formación en el centro de trabajo y 10 (40%) también fuera. En 15 centros (79%) la formación incluía aspectos específicos de triage pediátrico y del programa informático de triage.*

La formación estaba avalada principalmente por el hospital que la impartía (15; 60%). En 5 (20%) no estaba avalada.

Quince centros (60%) indicaron obligatoriedad de experiencia previa para realizar triage, con una mediana de 6 meses (IC 6-12). En 5 (20%) no era necesaria.

La duración de la formación en el propio centro tenía una mediana de 8 horas (RIC: 7-12) y la externa, de 11 (RIC 10-14).

El 84% realizan actividades de triage avanzado (21), siendo la segunda más frecuente la prescripción enfermera (17; 80%).

Conclusiones:

- *La formación en triage se adquiere principalmente en el propio SUP.*
- *Existe gran variabilidad en el tiempo de experiencia requerida para realizar triage en los SUP.*
- *El triage avanzado se realiza frecuentemente, destacando la prescripción enfermera.*
- *Es necesario establecer unos requisitos mínimos para realizar triage en los SUP.*

INTRODUCTION

Triage is a process that enables clinical risk management and ensures equity of care based on the resources available in the emergency department (ED). It is a time-sensitive process that needs to be performed in less than five minutes, often based on limited information, but which has a critical impact on patient care and the overall functioning of the department. It therefore requires personnel with certain qualities that is specifically trained in the classification system and the operation of the department, as well as the availability of the validated classification tool (5-level scales) and a specific physical and organizational structure[1,2].

In 2016, the Spanish Society of Emergency Medicine (SEMES) established the following requirements for triage nurses[1]:

1. Specific training in emergency and critical patient care.
2. Theoretical and practical training in the specific triage model to be used at the hospital ED.
3. A minimum of one year of nursing experience in an ED.
4. Six months of nursing experience in the ED where the triage is to be performed, to be familiar with the specific care circuits of the department.

Similar guidelines for triage in Pediatric Emergency Departments (PED) are currently not available.

The quality indicators regarding the "Presence of a patient triage system" established by the Spanish Society of Pediatric Emergency Medicine (SEUP)[3] emphasize the need for a validated triage system and for healthcare personnel who have worked for a minimum period of time in the PED and have received formal theoretical and practical training on pediatric triage.

It also underscores the need for tutoring during the first triage shifts. There is no international standard defining the duration of previous nursing experience in the PED, the exact format of the training, and the number of supervised shifts.

The SEUP triage protocol[2] establishes a series of individual requirements to perform this task, stating that the personnel in charge of the triage "should regularly update their knowledge of the triage system", without specifying the necessary training, its duration, or the frequency of refresher courses. Furthermore, it does not mention the length of emergency-nursing experience in the PED required prior to starting triage activities.

A 2018 review[4] evaluating 20 studies on the training in different pediatric triage systems found positive outcomes in improving triage accuracy subsequent to triage training interventions.

Our aim was to describe the characteristics of the training of triage nurses in Spanish PEDs, including the training duration, and the minimum length of work experience required to perform triage. In addition, we sought to identify care-related features associated with the triage process that could impact its quality.

FIGURE 1. QR code link to the survey questions.

MATERIAL AND METHODS

We conducted a descriptive cross-sectional study between July 1 and October 31, 2020, including centers affiliated with the SEUP. Data were collected using an ad-hoc electronic questionnaire based on a previous unpublished survey that was presented at the 2016 SEUP congress. No relevant validated survey was found in the literature. The questionnaire consisted of 6 sections and 70 questions related to the triage process from which we selected 30 for this publication (Figure 1).

The centers whose managers were members of SEUP were included and those that refused to participate or were unable to provide the necessary data were excluded. The study was approved by the Basque Research Ethics Committee with the internal code PI 2020007.

Qualitative variables are shown as frequencies for each of their categories and quantitative variables as mean and standard deviation for variables with a normal distribution or as median and interquartile range (IQR) for variables with a non-normal distribution.

RESULTS

Invitation links were sent to 86 centers yielding responses from 25 (29%). The centers that did not respond did not provide a reason for not responding. The map of participating centers is shown in Figure 2.

The triage characteristics of the departments that responded to the survey are described in Table 1.

Among the centers, 16 (64%) did not have personnel dedicated exclusively to triage: in nine centers (36%) the nurse responsible for the triage simultaneously performed care tasks and in 13 (52%) this occurred in situations of increased care demand. Three centers (12%) stated that the triage nurse never performed care tasks.

The duration of triage duty by the same individual was between 1 and 3 hours at two centers (8%), between 4 and 7 hours in 13 (52%), between 8 and 12 hours in five (20%), and in four centers (16%) it depended on the availability of personnel and the care workload. One center did not answer this question.

Table 2 summarizes the characteristics and duration of the triage training of the triage nurses.

Requirement of emergency-nursing experience before starting triage activities was mandatory in 15 (60%) centers, not required in five (20%), and five other centers (20%) did

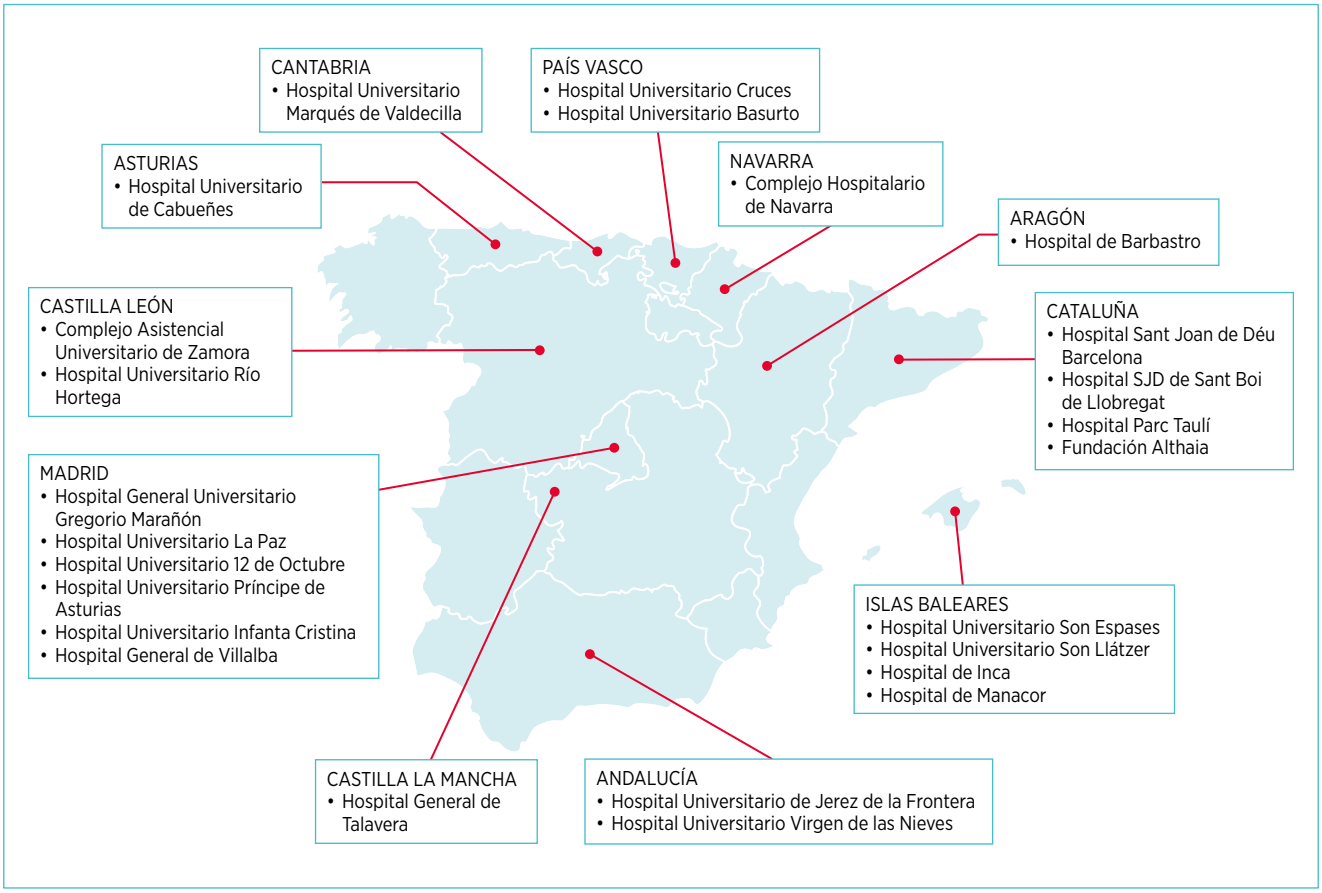


FIGURE 2. Map of the participating centers.

TABLE 1. Sample characteristics. N=25 centers.

		n	%
Care level	Level 1	5	20%
	Level 2	10	40%
	Level 3	10	40%
Structured triage system: YES		25	100%
Triage classification levels: 5		25	100%
Triage system	SET[1]/MAT[2]	13	52%
	MTS[3]	3	12%
	CPTAS[4]	2	8%
	N/A	1	4%
	Other	6	24%
Supporting computer triage program	Web ePAT	10	40%
	Inhouse developed	9	36%
	Manchester	3	12%
	N/A	3	12%
Responsible for the triage: Nurse		25	100%
Pediatric triage manager	YES	15	60%
	NO	9	36%
	N/A	1	4%
Triage operating hours	16-23	1	4%
	24	24	96%
Specific triage area: YES		24	96%
Specific pediatric triage area: YES		19	76%
Multidisciplinary triage team: YES		13	52%

[1]SET: Spanish Triage System; [2]MAT: Andorra Triage Model; [3]MTS: Manchester Triage System; [4]CPTAS:Canadian Pediatric Emergency Department Triage and Acuity Scale.

TABLE 2. Specific triage training of the responsible personnel.

Training characteristics		n	%
Off-site training	YES	10	40%
	NO	10	40%
	N/A	5	20%
On-site training	YES	19	76%
	NO	4	16%
	N/A	2	8%
Training content	Pediatric-specific triage	2	11%
	Computer triage program	2	11%
	Both	15	79%
Endorsement of the training	Hospital where the PED is located	15	60%
	Scientific societies	5	20%
	Not endorsed	5	20%
	N/A	5	20%
	Healthcare services CCAA	4	16%
	COE	1	4%
	Universities or independent organisms	0	0%
	Trade union organizations	0	0%
Training duration		**Median**	**IQR**
Off-site training hours (24 responses)		11.00	10.00-14.00
On-site training hours (13 responses)		8.00	7.00-12.00

PED: Pediatric Emergency Department; CCAA: Autonomous Communities; COE: Official College of Nurses.

not respond to the question. The median time of experience required was 6 months (IQR, 6-12); 11 (44%) centers did not indicate the minimum time required.

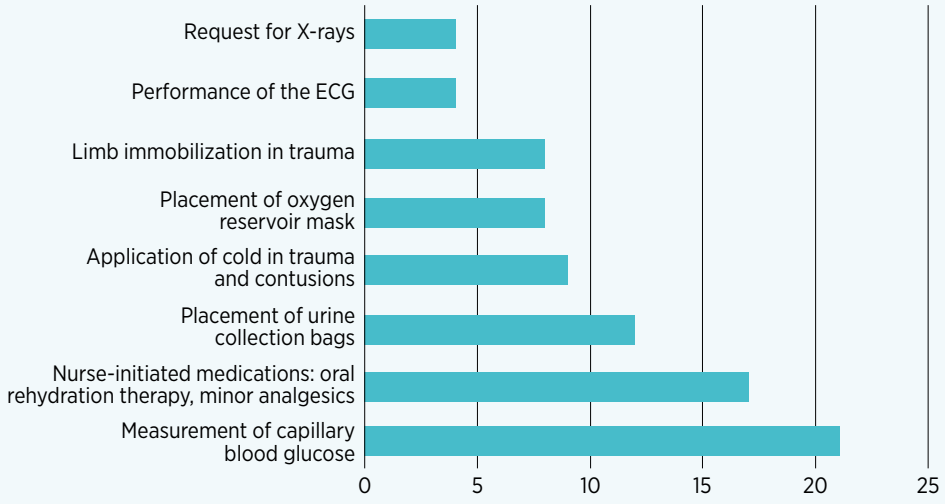
Advanced triage tasks, described in Figure 3, are performed in 21 centers (84%). These tasks are recorded and guided by the supporting computer triage program in 11 centers (44%), but not in 12 (48%); two centers did not respond to this question. At six centers (24%), an auxiliary nursing care technician was present to aid in the advanced triage processes.

The second most frequent advanced triage activity is drug prescription by nurses, reported by more than 80% of the centers (17). In relation to the current legislation regarding this activity, seven centers (28%) stated that the training for this task was regulated by the competent body of the Autonomous Community, seven (28%) did not know whether it was covered by the current legislation, in six centers (24%) it was regulated by an internal protocol of the center itself, and five centers (20%) stated that this task was not supported by the current legislation but efforts were underway for its development. Advanced triage tasks were recorded and guided by the supporting computer triage program in 44% (11) of the centers.

DISCUSSION

The position statement of the Emergency Nurse Association (ENA) recommends for emergency nurses to complete a comprehensive, evidence-based, clinically oriented triage education course given by experienced preceptors[5]. In our study, training was found to predominantly take place on-site, coinciding with the data provided in the review by Tam *et al.*[4], with approximately one third of the nurses also receiving training outside the workplace. Closely related to this is the ENA recommendation that ED leadership ensures that nurses receive appropriate education and demonstrate the knowledge application required to successfully perform triage according to professional and accreditation standards[5]. However, in our study, in one out of five centers the training was not accredited.

Although our study did not evaluate if continuous education took place in the surveyed PEDs, maintenance of the acquired knowledge and skills in triage is important. In the study by Recznick *et al.*[6] it was observed that the educational method had an impact on the sustainability of the knowledge over time, emphasizing the role of ongoing



PED: Pediatric Emergency Department; Rx: X-rays; ECG: Electrocardiogram.

FIGURE 3. Advanced triage activities in the PED.

education. The ENA also stresses the need for an ongoing triage competency validation process that includes observation and chart review, with remediation and additional education as appropriate[5].

Another cross-sectional descriptive study conducted at Spanish hospitals and published in 2017[7] concluded that training and experience in the ED enhance the competency and perceived safety of the triage nurse. The study confirmed that competency in triage is related to the nursing education, both in triage and in the care of critical patients. In addition, it found that a minimum time of experience in the department is necessary to independently and safely perform the triage, as there is a significant relationship between the level of competency, the safety perceived, and nursing experience in the ED. The authors believe it is necessary to review and assess the type of training provided and the minimum competency required of healthcare providers who perform triage in EDs in order to define a professional profile that is adapted to the current reality with the aim to provide safer emergency care.

Another 2018 review[6] included nine studies evaluating triage accuracy and found it to be around 60% in different EDs. In all cases, triage training was provided in the ED itself. In agreement with the previous study, this review points out that periodic refresher courses on triage are necessary to improve triage performance. Furthermore, the study underscores the need for collaboration among EDs, the ongoing assessment of the triage process, and frequent refresher training to ensure its efficacy. It also emphasizes the importance to reduce individual differences among trainers, which may lead to misconceptions among trainees.

The 2018 review by Recznick *et al.*[6] showed that pediatric triage performance is influenced by additional variables, such as previous training, experience with pediatric patients, and the location of the training course. ED and intensive care unit experience was also observed to have a positive impact on triage performance. Therefore, it may be of value for PED triage personnel to be specialized in pediatrics and trained in pediatric critical care.

Regarding the duration of triage training, no requirements regarding a specific minimum duration of training to obtain triage competency have been established, as currently there are considerable differences among the triage systems, the education modality (either face-to-face or online), and whether the training is addressed to general ED or PED personnel[5].

The ENA considers triage a critical assessment process that should be performed by a nurse with a minimum of one year of emergency-nursing experience, as well as appropriate additional credentials and education that may include certification in emergency nursing and continuing education in trauma, pediatrics, and cardiac care, with verification or certification in those subspecialties as appropriate[5]. However, in our study, one out of five centers did not require a minimum time of emergency-nursing experience to perform the triage. In centers where such experience was required, we found that the median time of experience required was half of what is recommended by the ENA.

More than half of the centers do not have personnel exclusively dedicated to triage. This is contrary to the recommendations of the SEUP, which state that "as it is a high-pressure, multi-functional position, the triage staff should ideally be dedicated exclusively to this task"[2]. In one out of three centers, the nurse responsible for patient classification also has other tasks, thereby exposing the patient to potential safety risks and affecting the quality of care due to the possible interruptions while carrying out these tasks.

Our study shows that not all the centers have a triage manager or a multidisciplinary triage group, although the SEUP protocol emphasizes the usefulness of both as part of the triage process[2].

One of the major issues highlighted in the review conducted by Recznick *et al.*[6] is that children are often seen in general and non-pediatric EDs; therefore, additional pediatric-specific education for non-pediatric ED triage personnel is needed, as pediatric triage is unique and may be inadequately addressed with standard triage education. Studies suggest that general ED nurses are less accurate in triaging the pediatric patient than PED staff, as signs and symptoms of severe conditions in children may be subtle or develop rapidly. In our study, almost 30% of the centers stated not

to have a specific pediatric triage area, suggesting that the professionals conducting triage evaluate both pediatric and adult patients. This emphasizes the need for general EDs to implement additional training in pediatric triage and the importance of the presence of pediatric specialists in the PEDs.

Regarding the prescription of medication by nurses within the framework of advanced triage, Royal Decree 1302/2018 dated October 22, amending Royal Decree 954/2015 dated October 23, regulates the prescription, administration, and authorization of medicines and medical devices for human use by nurses[8]. The findings of our study suggest there is variability in the implementation of this law. Given the frequency and importance of this practice, its effective execution requires measures that assure legal protection for the healthcare professionals and warrant patient safety.

CONCLUSIONS

According to our findings, training in triage is mainly provided within the workplace. Contrary to the guidelines established by scientific societies, the nurse in charge of triage is not assured exclusive dedication to this task and not all the PEDs have a designated triage manager.

Although triage is considered crucial to ensure the safety and quality of care of patients attending a PED, in our study we found great variability in the minimum time of experience required to perform triage across the participating centers.

Advanced triage is commonly performed in our PEDs, which means that nurses often prescribe medications.

The findings of our study point to the need to define minimum prerequisites for conducting triage in PEDs, including determining the duration of previous emergency-nursing experience, establishing specific structured training for the position, and developing advanced triage protocols in agreement with current legislation.

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