

**ARTÍCULO ORIGINAL****NURSES' AND DOCTORS' PERCEPTION OF TRIAGE SYSTEM IN A SPANISH CLINICAL UNIVERSITY HOSPITAL EMERGENCY DEPARTMENT****PERCEPCIÓN EN ENFERMERAS Y MÉDICOS DEL SISTEMA DE TRIAJE EN EL SERVICIO DE URGENCIAS DE UN HOSPITAL CLÍNICO UNIVERSITARIO ESPAÑOL****Authors:**

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**ABSTRACT**

**Objective:** in most of the Emergency Services of Spain, triage is carried out by nurses. The objective of this study was to know the level of satisfaction in nursing and medical staff on the dynamics of the Emergency Department (ED), determined by the current triage system in their workplace, carried out since 2012 exclusively by nurses, as well as the opinion on the level of knowledge of triage of both nurses and medical staff and their perception of the quality of their specific training on triage.

**Methods:** cross-sectional descriptive study by *ad hoc* questionnaire to nurses and doctors of the ED of a University Clinical Hospital.

**Results:** the global participation was 71.9% (n = 82, 82.3% nurses and 60% doctors). Regarding the dynamics of the ED determined by the current triage system, 45.1% of the staff is moderately satisfied. Regarding the perception of knowledge about triage, 78% of the total thinks that both the training of the nurses and doctors is between enough and good. 75.9% of the nursing staff has received a course on triage, compared to 70.8% of the doctors who have not received it. Both groups say that the collaboration between the two would be the ideal way to carry out the work of triage.

**Conclusions:** after the implementation of the current system, both nurses and doctors are moderately satisfied with the dynamics of the ED, believe that the knowledge of both groups on triage is acceptable and claim that the best way to do it is through collaboration between both professionals.

**Keywords:** Nursing; Triage; Emergency

## RESUMEN

**Objetivo:** en la mayoría de los Servicios de Urgencias de España, el triaje es llevado a cabo por personal enfermero. El objetivo de este estudio fue conocer el nivel de satisfacción del personal enfermero y médico sobre la dinámica del Servicio de Urgencias marcada por el sistema de triaje actual en este centro, realizado desde 2012 exclusivamente por enfermería, así como la opinión sobre el nivel de conocimiento del triaje de ambos colectivos y percepción de la calidad de su formación específica en triaje.

**Métodos:** estudio descriptivo transversal mediante cuestionario *ad hoc* a personal de enfermería y médico del Servicio de Urgencias de un Hospital Clínico Universitario.

**Resultados:** la participación global fue del 71.9% (n = 82; 82.3% enfermería y 60% médicos/as). Respecto a la dinámica del Servicio de Urgencias marcada por el sistema de triaje actual, el 45.1% del personal se encuentra moderadamente satisfecho. En cuanto a la percepción del conocimiento sobre triaje, el 78% del total piensa que tanto la formación del personal enfermero como médico es entre suficiente y bueno. El 75.9% del personal de enfermería ha recibido un curso sobre triaje, frente al 70.8% de los médicos que no lo ha recibido. Ambos colectivos manifiestan que la colaboración entre ambos sería el modo ideal de llevar a cabo la labor de triaje.

**Conclusiones:** tras la implantación del actual sistema, tanto el personal de enfermería como médico están moderadamente satisfechos con la dinámica del Servicio de Urgencias, creen que el conocimiento de ambos colectivos sobre triaje es aceptable y consideran que la mejor manera de realizarlo es mediante una colaboración entre ambos profesionales.

**Palabras clave:** Enfermería; Triage; Emergencias

## INTRODUCTION

Structured triage systems are priority based and used to deliver health care to patients according to their level of priority, considering that the most serious cases are not always the most urgent ones. Thus, patients are attended in an orderly and efficient fashion, improving the organisation of a Hospital Emergency Department (HED)<sup>1,2</sup>

Currently, the majority of the HED in Spain use some kind of official or regulated triage. The most commonly used in Spain is the Spanish Triage System, followed by the Manchester Triage System (MTS)<sup>3,4</sup>. Using a structured system helps professionals carrying out this task to feel more comfortable and have access to further sources of information to answer any doubts. This makes the HED function more smoothly, in turn, helping patients.

The majority of the Spanish HED, triage is carried out by nurses. Due to being well trained and not needing a medical diagnosis to assign a level of priority, a large part of the specialised guides in the subject recommend this task to be done by the nursing staff <sup>2,5</sup>

In the case of the Emergency Department of the University Hospital Complex of Santiago de Compostela (CHUS), in June 2012, nursing staff started to perform triage, based on the MTS, using ALERT<sup>®</sup>TRIAGE<sup>7</sup> software. This service covers a population of 383,999 inhabitants and in 2015, attended 113,945 emergencies. After having observed certain discrepancies among health sector professionals in the department regarding nursing staff performing triage, and finding no previous study on the subject in the centre, a survey was developed as an approach to try to clarify the general perception.

The objective was to know the level of satisfaction of the nursing and medical staff on the dynamics of the Emergency Department (ED) determined by the current triage system in their workplace, carried out since 2012 exclusively by nurses, as well as the opinion on the level of knowledge of the triage of both groups and perception of the quality of their specific training on triage.

## METHODS

A transversal descriptive study, *ad hoc* type survey was used as a data collection method in a questionnaire designed specifically for that purpose (Annex). To the best of our knowledge, there is not a similar validated questionnaire in the literature that could be used. The questionnaire was anonymous and voluntary. It was made up of closed answer questions consistent with the Likert <sup>9</sup> scale, except those asking for information about the participant. The questionnaire included seven questions on demographical information and eight on triage for all the participants. A further five questions were only to be answered by nursing staff performing triage. Analysis of internal consistency showed a Cronbach's alpha = 0.73.

Inclusion criteria were to be part of the nurses or doctors (specialist or resident) staff of the ED of the CHUS during the period of data collection and having at least one year of experience in this department. It was made available for filling in between 1<sup>st</sup> February and 8<sup>th</sup> April 2017.

Sample number was calculated using the online tool developed by the Epidemiology and Biostatistics Unit of the University Hospital of A Coruña: <https://www.fisterra.com/mbe/investiga/9muestras/9muestras2.asp> which estimated, with a 95% confidence level, the number of valid questionnaires needed in 73.

The study was institutionally approved by the Hospital and it complies with the Organic Law 15/1999, on the Protection of Personal Data. Before making the questionnaire available to staff, they were informed of the purpose and characteristics of the study. Then, it was placed in the department common room. The statistical analysis consisted was descriptive, where mean and standard deviation (SD) were used for quantitative variables and absolute value and percentages for qualitative variables. Data were compiled creating a database using the software IBM SPSS Statistics v22<sup>®</sup> for Windows. Both this program and Microsoft Excel 2016<sup>®</sup> were chosen for statistical data analysis.

## RESULTS

### Sample description

82 valid questionnaires were received. Global participation was 71.9% (82.3% Nursing staff and 60% Doctors). A total of 75 residents were on shift in the HED during this time, but were excluded from the data analysis due to low participation (12%).

Of the 82 cases, 15 (18,3%) did not answer the question on age and 7 (8.5%) did not answer the question regarding gender. With the available data, the average age of those polled was  $39.8 \pm 8.2$  years. Of those, 75.6% were women ( $n=62$ ).

70.7% of the surveys ( $n=58$ ) belonged to people holding Nursing degrees, and the rest to degrees in Medicine. 55 participants answered the question regarding the year they completed their degrees, 33 hold a Nursing degree and 22 hold a degree in Medicine. Of the former, 12 finished between 2005 and 2010, 6 between 2000 and 2004, 8 between 1995 and 1999, and 7 between 1985 and 1993. In the case of the latter, 2 finished between 2005 and 2010, 9 between 2000 and 2004, 8 between 1995 and 1999, 1 between 1985 and 1993, and 6 between 1976 and 1983.

8.6% of those graduates in Nursing have another University degree or further Postgraduate education (nursing residency, Master's or any specialisation course). The majority of those polled (62.2%) have more than 10 years' work experience. 58.6% of them nurses, and 70.8% doctors.

50% of the total number of participants have over 5 years' work experience in the ED of this hospital. Broken down in groups, 79.1% of the doctors have over 5 years' work experience, while in the case of Nurses, 37.9% have been working in the ED of the CHUS for more than 5 years, and 27.6% between 2 and 5 years. 41% of those polled (43.1% nurses and 66.7% doctors) said they had previously worked for EDs in other Hospitals, mainly in the region of Galicia, but in other national and international centres too.

## Evaluation of the triage system, continuous training and suitable staff to perform triage

The level of satisfaction in the workers of the ED in the CHUS, related to the current triage system (implemented in 2012), is very satisfied in 3.7% of cases, quite satisfied in 37.8%, and 45.1% are moderately satisfied. In 13.4% of cases the level of satisfaction in either little or very little. 50% of the nursing staff are moderately satisfied with the ED of the CHUS, while 41.7% of doctors claim to be quite satisfied. (**table 1a**).

As regards perception on knowledge of triage, 78% of the total think that both nurses' and doctors' knowhow is between sufficient and good. 53.4% of nurses think that the level of knowledge in nurses is good, whilst 45.8% of doctors think it's sufficient. (**table 1b**). 43.1% of nurses think that doctors have a good level of knowledge on triage, and 45.8% of doctors think that of themselves (**table 1c**).

Where experience needed to perform triage efficiently is concerned, 50% of staff think more than a year of experience in the ED is necessary (of that number, 55.2% of nurses and 37.5% of doctors), whilst 31.7% think more than two years would be needed.

	Very little satisfied		Little satisfied		Moderately satisfied		Quite satisfied		Very satisfied	
	%Nur.	%Med.	%Nur.	%Med.	Nur.	%Med.	%Nur.	%Med.	%Nur.	%Med.
<b>a.</b> Level of satisfaction with the ED	3,4	0	6,9	20,8	50	33,3	36,2	41,7	3,4	4,2
	Very good		Good		Enough		Low		Very low	
	%Nur.	%Med.	%Nur.	%Med.	%Nur.	%Med.	Nur.	%Med.	%Nur.	%Med.
<b>b.</b> Triage knowledge of nurses	8,6	8,3	53,4	25	27,6	45,8	10,3	20,8	0	0
<b>c.</b> Triage knowledge of doctors	1,7	12,5	43,1	45,8	41,4	16,7	13,7	25	0	0

**Table 1.** Assessments of the satisfaction level with the ED (a), knowledge of triage of nurses (b) and doctors (c). ED: Emergency Department, Nur.: Nursing staff, Med.: medical staff.

**Table 2** shows, in groups, results obtained for the question on which section of staff is better suited to perform triage. Both groups think a doctor-nurse collaboration would be ideal to do the job. However, a quarter of those surveyed think it is indifferent, whether it is performed by doctors or nurses.

75.9% of nurses have undergone a course on triage, while 70.8% of doctors have not. Only 17.2% of nurses and 25% of doctors have knowledge of other kinds of triage systems different to that used in their ED. 83.4% of nurses and 62.5% of doctors who say they do know of other systems, do not say which would be more effective.

	Nurses %(n)	Doctors %(n)	IND %(n)	COL %(n)	DK/DA %(n)
Nursing degree (n=58)	22,4(13)	8,6(5)	24,1(14)	39,7(23)	5,2(3)
Medicine degree (n=24)	16,7(4)	20,8(5)	29,2(7)	33,3(8)	0(0)
TOTAL (n=82)	20,7(17)	12,2(10)	25,6(21)	37,8(31)	3,7(3)

**Table 2.** Opinion regarding the most suitable health professional to perform triage. IND nurse or doctor indistinctly, COL nurse-doctor collaboration, DK/DA does not know/does not answer.

### Specific assessment of nurses performing triage

Questions 16 to 20 are directed towards nursing staff currently performing triage (**see Annex**).

43.2% of nursing staff performing triage do it 1-3 times a month, 29.5% do it 4 to 6 times monthly, 22.7% did not answer and the rest state they perform triage more than 7 times on a monthly basis. 29.5% consider the MTS course moderately useful in triage, whilst 20.5% think it has been totally useless (Figure 4). As regards the question whether the MTS course is enough to perform triage, 72.7% disagree or totally disagree. 56.9% totally disagree or disagree with the statement that their University education has helped them in performing triage. Finally, the software ALERT® TRIAGE was assessed as being moderately useful by 45.5% of staff and quite useful by 22.7%.

## DISCUSSION

This study has mainly found out that:

- (i) Emergency department staff are moderately satisfied with the department's working.
- (ii) Both doctors and nurses claim to have enough knowledge to perform triage; both mutually and think that of themselves.
- (iii) Both doctors and nurses think the best way to perform triage is by doctor-nurse collaboration.

These results give us a general idea of what the ED staff think of their workplace. Apart from those mentioned, it is also relevant to mention that they are not satisfied with the continuous training on triage available to them, which would influence their level of work satisfaction. These results may be used to establish measures to improve department efficiency.

Our results show a tendency towards a high level of satisfaction among doctors in comparison to nurses. Possible reasons for this include the fact that, although the workload is similar for either professional, doctors may not be subject to the frenetic rhythm that comes with performing triage. Nevertheless, this reflexion must be valued carefully and needs to be studied specifically with an adequate sample size. Along these lines, Sánchez Bermejo *et al* obtained similar results. The survey studied questions related to triage in ED in Spanish public hospitals, revealing that 41.79% of nurses and 46.27% of doctors were satisfied in their jobs<sup>3</sup>.

It must be highlighted that both doctors and nurses in our study prefer a collaboration between both sets of personnel to perform triage. However, to perform triage when only one of the two is involved, each group considers itself favourite. Our results correspond with others obtained previously<sup>3,4,11</sup>, which show that the nursing staff prefer the aforementioned collaboration to perform the task<sup>4</sup>. The fact that this possible collaboration has been chosen by both sets of personnel is important as regards the growth of the profession of nursing as well as doctors' perception of it, taking into account its recent incorporation into triage in this hospital. The guidelines state that nurses are better suited for triage,

as is the current tendency<sup>2,5</sup>.

The staff at the ED do not assess their knowledge badly. Yet, according to their answers, there is room for improvement. This can improve the functioning of the department further, taking into consideration that triage is an essential part of an ED. The fact that specific training in triage is only a one-time one-day course that is not complemented with good training, is probably not the best way to get there. When planning specific training the staff's opinion should be taken into account, considering that 63.6% of nurses that perform triage consider the MTS course between moderately useful and totally useless.

Among the staff who underwent this training, 75.9% of those nurses surveyed have done a course on triage, either MTS or on any other system. 100% of nurses who perform triage have done the MTS course since it is a requirement for triage. However, 70.8% of the doctors has never done a course on triage. Seeing as these professionals were those in charge of performing triage until 2012, and that clinical guides and specialist articles highly recommend specific training for triage<sup>2,5</sup>, it seems that doing a course may have been convenient. The study performed by Sánchez Bermejo *et al* in 2013 reveals that 84.5% of the personnel that do triage have specific training. The same author, in a similar study in 2015, including private hospitals, states that 77.2% of those surveyed have the training.

Regarding the assessment of the ALERT® TRIAGE software, 68.2% of the nursing staff who perform triage value it as between moderately and quite useful. Despite not being a bad score, it would be of great relevance to improve this aspect, to further improve health care quality.

During the bibliographical research, none of the studies have published their participation data specifically, making it difficult to assess. This is the only work in those found, that not only asked nursing staff about triage, but also considered doctors' opinions on the matter. Despite not being, as yet, a direct function of theirs in the department, it undoubtedly directly influences their daily work.

This work has certain limitations. With respect to time worked, staff that have been working in the same post for years may suffer *Burnout syndrome*<sup>10</sup>, which

can influence some questions. Also, there are the limitations of the Likert scale. After assessing its advantages and disadvantages, it was decided that this would be the most efficient way to carry out the survey.

As for future research, the opinion of health staff on "advanced triage"<sup>4</sup> may be studied. In it, consensual protocols can be established, to ask for further tests or administer medication during triage to speed it up. It may be observed if a re-evaluation of patients that go over the recommended waiting times is performed. As well as this, it is important to re-evaluate the situation if changes to the department's organisation are made.

In conclusion, considering the mentioned limitations, health care professionals in the Emergency Department of The Clinical University Hospital of Santiago score the department acceptably well, and trust in a collaboration between doctors and nurses for triage. Opportunities for improvement have also been identified, which can be useful in increasing levels of satisfaction among workers. This might, in turn, probably positively affect the department's quality of health care.

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