


# Self-perception of theoretical knowledges and practical skills by primary health care physicians in life-threatening emergencies according to their gender

## A cross-sectional study

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### Abstract

To assess the training received in Emergency Medicine (EM) by the Primary Health Care physicians of Asturias, as well as their perception of their own theoretical knowledge and practical skills in a series of procedures employed in life-threatening emergencies, and also to analyze the differences according to gender. The degree of preparation of Primary Health Care physicians for handling emergencies, according to the gender of the professionals, has never been studied before.

Cross-sectional study of a sample of 213 Primary Health Care physicians from the Primary Health Care Service of Asturias, Spain, from among the total of 851 physicians on the staff of the Primary Health Care Service of Asturias. The survey was design ad hoc using the Body of Doctrine of Emergency Medicine proposed by the Spanish Society of Emergency Medicine, which indicates the theoretical and practical procedures that must be mastered by the Primary Health Care physicians.

There are nonsignificant differences in the mean of theoretical knowledge and practical skills in many procedures or techniques studied depending on the gender.

Female and male Asturian Primary Health Care physicians are generally well prepared to handle life-threatening emergencies. The degree of self-perception and acquisition of general theoretical knowledge and general practical skills for handling life-threatening emergencies is heterogeneous, and differences according to gender are not statistically significant.

**Abbreviations:** CPR = Cardiopulmonary Resuscitation, EM = Emergency Medicine, LTE = life-threatening emergencies, PHC = Primary Health Care, SESPA = Healthcare Service of Asturias, TLS = Trauma Life Support.

**Keywords:** emergencies, gender, physicians, primary health care, Spain

## 1. Introduction

In Spain, the number of female doctors has been greater than male doctors since 2017: there being 127,979 women vs 125,817

men.<sup>[1]</sup> In 2018, women made up 63.4% of Primary Health Care (PHC) physicians in Asturias.<sup>[2]</sup>

The tasks assigned to the physicians of the PHC system in Spain include assistance in the life-threatening emergencies (LTEs) that occur within the geographic area assigned to each PHC center,<sup>[3]</sup> as well as collaboration with the prehospital Emergency Medical Systems (EMS).<sup>[4]</sup> This organization of medical duties means that PHC physicians must have a sufficient, adequate, and coherent set of theoretical knowledge and practical skills in Emergency Medicine (EM).

Some inequities have been observed between male and female physicians<sup>[5]</sup>: female physicians generally express moderate to high job satisfaction, regardless of specialty. Moreover, these satisfaction levels have been recorded despite the realities of gender-based inequities in pay, duties and career advancement occurring within specific fields, such as medicine and surgery. These inequities mean that female physicians face obstacles to promotion that male physicians do not, resulting in career and job experiences that fail to meet the particular needs or preferences that some female physicians may have.

In light of this, is there any difference between the self-perception of male and female physicians when it comes to handling emergencies? The goals of this study were:

1. to assess the training received in EM by the PHC physicians of Asturias, as well as their perception of their own theoretical

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knowledge and practical skills in a series of procedures employed in LTEs, and also

2. to analyze the differences according to gender. This is the first study of its kind.

The hypothesis was that there are no gender-based differences in self-perception of Primary Care Physicians when it comes to being able to handle LTEs emergencies.

## 2. Methods

This was a cross-sectional survey of the training received and the theoretical knowledge and practical skills, as self-perceived, in 32 procedures or techniques that are employed in treatment of LTEs, as well as the general mean, in a simple random sample with replacement consisting of 213 physicians (n) from PHC centers in the 8 health care districts of Asturias from among the total of 851 physicians (N) on the staff of the PHC Service of Asturias. The sample was calculated to obtain an estimation of parameters with a confidence interval of 95%. Individuals to be studied in the sample were selected using a random number table. The interview was conducted by mail from September through October 2019. Our prior review of bibliography did not uncover any validated survey assessing self-perception of the degree of theoretical knowledge and practical skills was found. For this reason, an ad hoc survey was drafted using the Doctrinal Body of Emergency Medicine (DBEM) proposed by the Spanish Society of Emergency Medicine,<sup>[6]</sup> which indicates the theoretical and practical procedures that must be mastered by PHC physicians. From among all the procedures included in the DBEM, 32 procedures that are used systematically in LTEs were selected, and an 11-point Likert scale rating was used to assess self-perception of the degree of theoretical knowledge and practical skills from zero ("Minimum") to ten ("Maximum"). Firstly, a pilot test and cognitive pretest of 10 physicians from the PHC System was conducted in order to determine the most suitable type of question and response scale; the extent, comprehensibility, and logical order of the questions; and also, the duration and acceptance of the survey. The value of the Cronbach's alpha coefficient considered adequate in terms of internal consistency was an alpha value greater than 0.85. Finally, the definitive survey was drafted. The survey also included questions regarding the training received in procedures of Emergency Medicine (EM) and its characteristics and timeframe.

The data-processing made use of absolute and relative frequencies, central tendency parameters, and dispersion parameters. Correlation analysis was used in the bivariate analysis. The estimates for the entire population were made using 95% confidence intervals for the mean. In comparisons of parameter difference, parameters with a probability of error less than 5 percent ( $P < .05$ ) were considered significant. For normality of variables, Kolmogorov-Smirnov test was used. All variables were not statistically significant ( $P > .05$ ), so normality was assumed. T test was utilized to compare means between the different techniques by gender, in comparisons of means between the degrees of theoretical and practical knowledge of the different procedures with the degree of general theoretical and practical knowledge, and to compare means between theoretical knowledge and practical skills of the different procedures by gender. For the correlation between the means of theoretical knowledge and general practices and between these and the number of courses taken about Basic Cardiopulmonary Resuscitation (CPR), Advanced CPR and Advanced Trauma Life Support

(TLS), the Pearson correlation coefficient ( $r$ ) was used, since these were quantitative variables. The statistics software used was IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.

This study has been examined by Ethics Committee of the Faculty of Medicine and Health Sciences of the University of Oviedo (Spain) and was determinate to be exempt from the requirement of review by the full committee.

## 3. Results

Of the 213 physicians, 88 (41.3%) were men and 125 (58.7%) were women. Of the 88 men, 63 (72.4%) had completed their training in the PHC medical specialty in the context of the Resident Medical Intern program. Of the 125 women, 98 (78.4%) had done so.

Of the male physicians, 31 (35.2%) were training in EM. Of these 31 physicians, 7 (22.6%) indicated that this training was imparted in courses held by the Healthcare Service of Asturias (SESPA); 5 of them (16.1%) had acquired this training on their own; while 19 (61.3%) had been trained both by SESPA and on their own. Of the female physicians, 52 (41.6%) were training in EM. Of these 52 physicians, 14 (26.9%) indicated that this training was imparted in courses held by the SESPA; 3 (5.8%) had acquired this training on their own; while 35 (67.3%) had been trained both by SESPA and on their own.

As for CPR training, 65 male physicians (73.9%) had completed their most recent Basic CPR training course less than 5 years ago; 18 male physicians (20.4%) had completed their most recent course more than 5 years ago and less than 10 years ago; and 5 male physicians (5.7%) had completed their most recent course more than 10 years ago. As for women, 100 physicians (80.0%) had completed their most recent course less than 5 years ago; 12 (9.6%) had completed their most recent course more than 5 years ago and less than 10 years ago; and 13 physicians (10.4%) had completed their most recent course more than 10 years ago. As for training in Advanced CPR in men, 32 physicians (36.4%) had completed their most recent course on this topic less than 5 years ago; 30 physicians (34.1%), more than 5 years ago and less than 10 years ago; and 26 physicians (29.5%), more than 10 years ago. In women, 55 physicians (44.0%) had completed their most recent course on this topic less than 5 years ago; 23 physicians (18.4%), more than 5 years ago and less than 10 years ago; and 47 physicians (37.6%), more than 10 years ago.

When it came to Advanced TLS in men, 31 physicians (35.3%) had completed their most recent course less than 5 years ago; 23 physicians (26.1%), more than 5 years ago and less than 10 years ago; and 34 physicians (38.6%), more than 10 years ago. Among female physicians, 52 (41.6%) had completed their most recent course on this topic less than 5 years ago; 23 (18.4%), more than 5 years ago and less than 10 years ago; and 50 (40.0%), more than 10 years ago. Table 1 displays the t-test comparing each procedure or technique and the general mean of theoretical knowledge in LTE by gender, as well as medians and interquartile ranges (IQR). Table 2 displays the t-test comparing each procedure or technique and the general mean of practical skill in LTE by gender, as well as medians and IQR. Tables 3 and 4 show, respectively, the correlation between the general mean of theoretical knowledge and practical skill in LTEs and the correlation between both and the number of courses completed on Basic CPR, Advanced CPR, and Advanced TLS, as well as

**Table 1**

**t-test comparing each procedure or technique and the general mean of theoretical knowledge in LTE by gender, as well as medians and interquartile ranges.**

Technique	Male (n=88)				Female (n=125)			
	Mean (CI 95%)	P value	Median	IQR	Mean (CI 95%)	P value	Median	IQR
Basic Life Support	8.11 (7.84–8.39)	<.001*	8.00	2	7.93 (7.69–8.17)	<.001*	8.00	2
Instrumentalized Life Support	5.13 (4.63–5.62)	<.001*	5.00	3.5	4.89 (4.49–5.29)	<.001*	5.00	4
Advanced Trauma Life Support	6.01 (5.63–6.39)	.69	6.00	2	5.69 (5.30–6.07)	.936	6.00	2
Pulse Oximetry	8.27 (7.93–8.60)	<.001*	9.00	1	8.30 (8.05–8.56)	<.001*	9.00	1
Taking Vital Signs	8.91 (8.63–9.19)	<.001*	9.00	1.5	8.87 (8.63–9.11)	<.001*	9.00	2
Assessment of level of consciousness	8.26 (7.93–8.60)	<.001*	9.00	1	8.31 (8.04–8.58)	<.001*	9.00	2
Limb neuromuscular examination	7.09 (6.74–7.44)	<.001*	7.50	2	7.10 (6.76–7.43)	<.001*	7.00	2
Channelling peripheral venous pathways	4.91 (4.38–5.44)	<.001*	5.00	4	4.54 (4.07–5.01)	<.001*	5.00	5
Intraosseous access	3.84 (3.18–4.50)	<.001*	4.00	5	3.38 (2.83–3.92)	<.001*	3.00	6
Manual airway clearance	6.61 (6.13–7.09)	<.001*	7.00	3	6.56 (6.18–6.92)	<.001*	7.00	3
Use of resuscitating balloon	8.03 (7.62–8.45)	<.001*	8.00	2	8.06 (7.79–8.34)	<.001*	8.00	2
Use of oropharyngeal cannula	8.17 (7.83–8.51)	<.001*	8.00	2	8.06 (7.75–8.36)	<.001*	8.00	2
Neurological examination	7.61 (7.28–7.95)	<.001*	8.00	2	7.49 (7.20–7.78)	<.001*	8.00	1
Oxygen administration	7.85 (7.52–8.19)	<.001*	8.00	2	7.75 (7.47–8.03)	<.001*	8.00	2
Semi-automatic defibrillator management	8.09 (7.75–8.43)	<.001*	8.00	2	7.70 (7.37–8.02)	<.001*	8.00	2
External cardiac massage	8.57 (8.29–8.85)	<.001*	9.00	1	8.34 (8.09–8.60)	<.001*	8.00	1
Cardiac monitoring	6.72 (6.14–7.29)	.001*	7.00	3	6.66 (6.26–7.05)	<.001*	7.00	3
Nasogastric sounding	5.14 (4.51–5.76)	.004*	5.50	5	4.74 (4.23–5.23)	<.001*	5.00	4
Bladder catheterization	6.50 (5.92–7.08)	.04*	7.00	3	5.90 (5.40–6.40)	.85	6.00	4
Helmet removal	6.63 (6.15–7.10)	<.001*	7.00	2.5	6.36 (5.91–6.81)	.03*	7.00	3
Telephone communication techniques	5.38 (4.74–6.01)	.04*	6.00	3	5.58 (5.05–6.12)	.16	6.00	4
Immobilization and reduction of bone fractures	5.26 (4.76–5.77)	.002*	6.00	3	4.78 (4.34–5.23)	<.001*	5.00	3
Use of shovel stretcher	5.94 (5.48–6.40)	.95	6.00	3	5.61 (5.15–6.08)	.13	6.00	3
Use of spinal board	5.30 (4.79–5.80)	.003*	6.00	4	4.87 (4.37–5.37)	<.001*	5.00	4
Use of spinal short rescue board	3.76 (3.21–4.47)	<.001*	4.00	5	3.76 (3.23–4.30)	<.001*	4.00	5
Use of cervical collar	7.38 (7.01–7.74)	<.001*	7.00	3	7.16 (6.81–7.51)	<.001*	8.00	3
Placement of splints and bandages	6.84 (6.41–7.27)	<.001*	7.00	2.5	6.18 (5.77–6.58)	.24	6.00	3
Thoracentesis	2.46 (1.87–3.05)	<.001*	2.00	5	2.50 (2.03–2.98)	<.001*	2.00	5
Sedation techniques	5.36 (4.79–5.94)	.03*	6.00	3.5	4.72 (4.18–5.26)	<.001*	5.00	4
Analgesia techniques	6.19 (5.65–6.74)	.37	7.00	3	5.96 (5.44–6.48)	.97	7.00	3
Capillary blood glucose determination	8.88 (8.56–9.19)	<.001*	9.00	2	8.74 (8.44–9.03)	<.001*	9.00	2
Anti-shock pants handling	1.36 (.87–1.86)	<.001*	.00	2	1.13 (.78–1.47)	<.001*	.00	2
General mean	5.95 (5.63–6.28)		6.00	2	5.95 (5.68–6.22)		6.00	2

\* Statistically significative difference ( $P < .05$ ).

CI 95% = 95% confidence interval, IQR = interquartile range.

their  $P$  value for both male and female PHC physicians in Asturias. Table 5 shows the t-test comparing theoretical knowledge mean and practical skill mean for each technique by gender.

As for the training of physicians, in general, for theoretical LTEs, by gender, there was the same mean in men (5.95 out of 10; CI 95% = 5.63–6.28) as in women (5.95 out of 10; CI 95% = 5.68–6.22). When it came to practical skills, it was women who showed a greater mean in general level of practical skills (5.51 out of 10; CI 95% = 5.25–5.77), but only 1 hundredth greater than men (5.50 out of 10; CI 95% = 5.13–5.87). These differences were not significant.

There were no significant differences by gender in the mean of theoretical knowledge of the procedures studied, and there were statistically significant differences in practical skills depending on the gender ( $P < .05$ ) only in placement of splints and bandages ( $P = .03$ ).

As for the mean theoretical knowledge of the different procedures, men scored higher in 25 of them, while women had a higher average score for 6 procedures; for 1 procedure, the average was the same. This difference is statistically significant

(Chi-Squared = 11.65;  $P = .001$ ). As for the mean practical skills in the different procedures, men rated higher in 24 of them, while women did better on average in 8 procedures; in one of them the average was the same. This difference is statistically significant (Chi-Squared = 6.82;  $P = .009$ ).

#### 4. Discussion and conclusions

The objective of this study was to conduct a gender-based comparison of PHC physicians' perception regarding their own theoretical knowledge and practical skills in a series of emergency procedures used in LTEs.

No comparison with previous studies conducted in physicians was possible, since there were none, but we compared our study with 1 other that was conducted in PHC physicians working in Asturias according to the geographical context of their work.<sup>[7]</sup> The means turned out to be similar. In addition, there is evidence of a positive, statistically significant, correlation between completion of a greater number of Basic CPR, Advanced CPR and Advanced TLS courses and a higher self-perception of theoretical and practical capability (in this case, the positive

**Table 2**

**t-test comparing each procedure or technique and the general mean of practical skill in LTE by gender, as well as medians and interquartile range.**

Technique	Male (n=88)					Female (n=125)				
	Mean (CI 95%)	P value	Median	IQR		Mean (CI 95%)	P value	Median	IQR	
Basic Life Support	7.83 (7.49–8.16)	<.001*	8.00	2		7.55 (7.25–7.85)	<.001*	8.00	2	
Instrumentalized Life Support	4.41 (3.87–4.94)	<.001*	5.00	4		4.27 (3.83–4.71)	<.001*	5.00	4	
Advanced Trauma Life Support	5.42 (4.97–5.87)	.42	5.50	3		5.43 (5.04–5.82)	.51	6.00	3	
Pulse Oximetry	8.34 (7.97–8.71)	<.001*	9.00	2		8.45 (8.19–8.70)	<.001*	9.00	1	
Taking Vital Signs	8.63 (8.28–8.99)	<.001*	9.00	2		8.82 (8.60–9.04)	<.001*	9.00	2	
Assessment of level of consciousness	8.05 (7.74–8.35)	<.001*	8.00	2		8.02 (7.70–8.33)	<.001*	8.00	2	
Limb neuromuscular examination	6.84 (6.52–7.27)	<.001*	7.00	2		6.92 (6.54–7.30)	<.001*	7.00	3	
Channelling peripheral venous pathways	4.62 (4.02–5.22)	<.001*	5.00	4		4.11 (3.66–4.56)	<.001*	4.00	4	
Intraosseous access	2.79 (2.15–3.43)	<.001*	2.00	5		2.52 (2.02–3.02)	<.001*	2.00	4	
Manual airway clearance	6.13 (5.64–6.63)	<.001*	7.00	3		6.18 (5.79–6.57)	.001*	6.00	3	
Use of resuscitating balloon	7.93 (7.56–8.30)	<.001*	8.00	2		7.77 (7.44–8.10)	<.001*	8.00	2	
Use of oropharyngeal cannula	7.97 (7.58–8.35)	<.001*	8.00	2		7.90 (7.58–8.23)	<.001*	8.00	2	
Neurological examination	7.54 (7.22–7.86)	<.001*	8.00	2		7.41 (7.09–7.72)	<.001*	8.00	3	
Oxygen administration	7.80 (7.40–8.21)	<.001*	8.00	2		7.93 (7.64–8.22)	<.001*	8.00	2	
Semi-automatic defibrillator management	7.92 (7.53–8.31)	<.001*	8.00	4		7.46 (7.09–7.83)	<.001*	8.00	3	
External cardiac massage	8.34 (8.01–8.66)	<.001*	9.00	2		8.17 (7.88–8.45)	<.001*	8.00	1	
Cardiac monitoring	6.17 (5.55–6.78)	.03*	7.00	3		6.10 (5.61–6.58)	.01*	6.00	4	
Nasogastric sounding	4.26 (3.62–4.91)	<.001*	4.00	4		4.00 (3.48–4.52)	<.001*	4.00	4	
Bladder catheterization	5.67 (5.00–6.33)	.87	7.00	4		5.01 (4.49–5.53)	.06	5.00	4	
Helmet removal	5.90 (5.39–6.41)	.06	6.00	3		5.87 (5.44–6.30)	.04*	6.00	3	
Telephone communication techniques	5.29 (4.66–5.93)	.36*	6.00	3		5.54 (4.99–6.10)	.82	6.00	3	
Immobilization and reduction of bone fractures	5.05 (4.54–5.56)	.03*	5.00	4		4.57 (4.14–5.00)	<.001*	5.00	3	
Use of shovel stretcher	5.42 (4.88–5.96)	.50	6.00	3		5.06 (4.58 to 5.55)	.02*	5.00	3	
Use of spinal board	4.63 (4.05–5.20)	<.001*	5.00	3		4.48 (3.97–5.00)	<.001*	5.00	4.5	
Use of spinal short rescue board	3.46 (2.78–4.14)	<.001*	5.00	6		3.25 (2.73–3.78)	<.001*	3.00	6	
Use of cervical collar	7.12 (6.69–7.55)	<.001*	7.00	3		6.97 (6.58–7.35)	<.001*	7.00	2	
Placement of splints and bandages	6.43 (6.00–6.87)	<.001*	7.00	3		5.89 (5.50–6.27)	.03*	6.00	2	
Thoracentesis	1.60 (1.09–2.11)	<.001*	0.00	3		1.85 (1.39–2.30)	<.001*	0.00	3	
Sedation techniques	5.24 (4.67–5.80)	.25	5.00	3		4.47 (3.92–5.06)	<.001*	5.00	5	
Analgesia techniques	5.85 (5.29–6.41)	.20	6.00	3		5.64 (5.11–6.17)	.75	7.00	4	
Capillary blood glucose determination	8.73 (8.41–9.05)	<.001*	9.00	2		8.66 (8.35–9.02)	<.001*	9.00	2	
Anti-shock pants handling	1.15 (.65–1.66)	<.001*	0.00	1		1.02 (.72–1.33)	<.001*	0.00	2	
General mean	5.50 (5.13–5.87)		6.00	2		5.51 (5.25–5.77)		6.00	2	

\* Statically significative difference ( $P < .05$ ).

CI 95% = 95% confidence interval, IQR% = interquartile range.

correlation is statistically significant for Advanced CPR and Advanced TLS courses). This data suggests that periodic refresher courses on these topics for physicians contribute to improve their self-perception of their LTEs training and, consequently, to increase their self-efficacy to handle these situations with a positive outcome.

Two of the most common negative propensities of female physicians are perfectionism and guilt.<sup>[8]</sup> Specialist trainees are increasingly aware of this. Their experience and personal growth allow them to take time for themselves with less guilty feelings regarding their responsibilities toward family and children; they

display less of a tendency to place excessive demands on themselves. They pay more attention to catering to their own needs for sleep, regular and healthy eating and exercise. They find support when spending time with friends, and their hobbies provide them with a source of relaxation. In the literature, the importance of hobbies and activities outside of medicine is often mentioned in reducing the chances of burnout.<sup>[9]</sup> They are aware of the importance of good interpersonal relationships with their colleagues, and they invest their energy in them.

According to Petek,<sup>[10]</sup> coordinating family life would be virtually impossible without a supportive partner to provide

**Table 3**

**Correlation between the general mean of theoretical knowledge and practical skill in LTEs and the correlation between both and the number of courses completed on Basic CPR, Advanced CPR and Advanced Trauma Life Support for male.**

Male	Theoretical Knowledge		Practical Skill		Basic CPR		Advanced CPR		Advanced Trauma Life Support	
	r	P value	r	P value	r	P value	r	P value	r	P value
THEORETICAL KNOWLEDGE			.77	<.001*	.09	.43	.32	<.001*	.414	<.001*
PRACTICAL SKILL	.77	<.001*			.12	.29	.28	.01*	.483	<.001*

\* Statically significative difference ( $P < .05$ ).



**Table 4**

**Correlation between the general mean of theoretical knowledge and practical skill in LTEs and the correlation between both and the number of courses completed on Basic CPR, Advanced CPR, and Advanced Trauma Life Support for female.**

Female	Theoretical Knowledge		Practical Skill		Basic CPR		Advanced CPR		Advanced Trauma Life Support	
	<i>r</i>	<i>P</i> value	<i>r</i>	<i>P</i> value	<i>r</i>	<i>P</i> value	<i>r</i>	<i>P</i> value	<i>r</i>	<i>P</i> value
THEORETICAL KNOWLEDGE			.71	<.001*	.15	.11	.24	<.001*	.26	.001*
PRACTICAL SKILL	.71	<.001*			.03	.78	.19	.03*	.23	.01*

\* Statically significant difference ( $P < .05$ ).

moral support and help with housework, and also with support from their parents. A study conducted in Norway on physicians of both genders has shown that couples where women are physicians share housework more equally than other couples.<sup>[11]</sup> One of the possibilities for coordination is an extension of specialization training, which was not, with 1 exception, met with approval from the trainees. The new generations of specialist trainees, especially women trainees in other countries, often choose to work part-time as a way to make it easier to combine their various responsibilities.<sup>[10]</sup>

In Asturias, both female and male physicians are generally well prepared to handle LTEs with a few exceptions, such as use of anti-shock trousers, thoracentesis, intraosseous access or use of spinal short rescue board. When it comes to these procedures, physicians

perceive limitations both in theoretical knowledge and in the practical skills required to implement them. The degree of self-perception of and acquisition of general theoretical knowledge and general practical skill in life-threatening emergencies is heterogeneous, and differences by gender are statistically insignificant.

A higher percentage of female physicians have completed courses on Basic CPR, Advanced CPR and Advanced TLS in last 5 years than male physicians. An important proportion of both female and male physicians, however, completed their last course more than 10 years ago, and hence it is necessary for them to take part frequently in refresher courses to increase their self-perception.

This study has focused on the self-perception of physicians. However, it would be interesting to study theoretical knowledge and practical skills in handling LTEs as demonstrated through a practical test in order to verify whether self-perception matches the real capability.

**Table 5**

**t-test comparing theoretical knowledge mean and practical skill mean for each technique by gender.**

Technique	<i>P</i> value Male	<i>P</i> value Female
Basic Life Support	.009*	<.001*
Instrumentalized Life Support	<.001*	<.001*
Advanced Trauma Life Support	<.001*	.05
Pulse Oximetry	.42	.07
Taking Vital Signs	.12	.46
Assessment of level of consciousness	.19	.003*
Limb neuromuscular examination	.30	.08
Channelling peripheral venous pathways	.11	.03*
Intraosseous access	<.001*	<.001*
Manual airway clearance	.04*	.12
Use of resuscitating balloon	.75	.02*
Use of oropharyngeal cannula	.12	.15
Neurological examination	.78	.42
Oxygen administration	.85	.09
Semi-automatic defibrillator management	.17	.03*
External cardiac massage	.03*	.01*
Cardiac monitoring	<.001*	<.001*
Nasogastric sounding	<.001*	<.001*
Bladder catheterization	<.001*	<.001*
Helmet removal	<.001*	<.001*
Telephone communication techniques	.85	.77
Immobilization and reduction of bone fractures	.25	.14
Use of shovel stretcher	<.001*	<.001*
Use of spinal board	<.001*	.001*
Use of spinal short rescue board	.005*	.002*
Use of cervical collar	.05	.04*
Placement of splints and bandages	.005*	.004*
Thoracentesis	<.001*	<.001*
Sedation techniques	.13	.07
Analgesia techniques	.004*	.02*
Capillary blood glucose determination	.29	.55
Anti-shock pants handling	.063	.26
General mean	.005*	<.001*

\* Statically significant difference ( $P < .05$ ).

#### 4.1. Limitations of the study

This study has been limited to the geographic area of the Principality of Asturias, and the results are not directly extrapolated to the rest of the Spanish regions. This article explores physicians' self-perception of their limitations and difficulties in providing a certain type of medical assistance to urgencies and emergencies but does not quantify (since it is not their explicit or implicit objective) the "real" capacity of professionals to handle emergencies through some type of examination or practical case.

Another limitation was the scarcity of literature on the topic that would enable us to conduct a more thorough discussion

#### Author contributions

**Data curation:** Rafael Castro Delgado and José Antonio Cernuda Martínez.

**Formal analysis:** Rafael Castro Delgado.

**Methodology:** Jose Antonio Cernuda Martínez and Pedro Arcos González.

**Project administration:** Pedro Arcos González.

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