

Self-perceived limitations and difficulties by Primary Health Care Physicians to assist emergencies

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Abstract

The study was aimed to identify the training received in Emergency Medicine by physicians and the limitations and difficulties self-perceived by those physicians to assist in emergencies, as well as to analyze the differences according to the work context.

Observational cross-sectional study made by a survey using a self-administered questionnaire to a representative simple random sample (with replacement) of 294 doctors (n) working at the Primary Health Care centers out of the total of 851 doctors (N) that form the staff of physicians of Primary Health Care system of Asturias (Spain).

In rural areas, the most frequently mentioned reasons were the lack of practical skills (32.65%), absence of adequate material (20.41%), lack of theoretical knowledge (8.16%), and poor equipment conditions (4.08%). In the semi-urban area, the most common reasons were the lack of practical skills (19.61%), lack of theoretical knowledge (10.78%), absence of adequate material (8.82%), and poor equipment conditions (4.90%). Finally, in the urban area, the main reason was the lack of practical skills (23.40%), absence of adequate material (20.21%), lack of theoretical knowledge (9.57%), and poor equipment conditions (4.26%). The differences were significant ($P = .003$) among the 3 work context.

The absence of practical skills is the most frequent cause referred by doctors of the 3 areas as a key to not act correctly in an emergency. The doctors of the rural area perceive that they are better prepared in general to solve emergencies and it is the professionals of 3 areas that report having carried out more basic cardiopulmonary resuscitation, advanced and attention to the polytraumatized patient courses.

Abbreviations: EM = Emergency Medicine, EMS = Emergency Medical Services, INE = Spanish National Institute of Statistics, MFC = Family and Community Medicine, PHC = Primary Health Care, SEMES = Spanish Society of Emergency Medicine, SESPA = Health Service of the Principality of Asturias.

Keywords: emergencies, physicians, primary health care

1. Introduction

In Spain, the emergency health care is provided at both hospital and prehospital levels. At hospital level, this health care is usually provided by family doctors working in the hospital emergency departments, as the Emergency Medicine (EM) specialty has not been implemented for the time being, although its doctrinal body has already been formalized by the Spanish Society of Emergency Medicine (SEMES).^[1] At prehospital level, the emergency health

care is provided by 2 types of services: the Emergency Medical Services (EMSs) assisting patients critically ill and by teams of physicians at the Primary Health Care (PHC) centers who usually attend noncritical patients.

Hence, among the tasks assigned to the physicians of the PHC system in Spain is included the assistance to the emergencies that occur in geographic area assigned to each PHC center,^[2] as well as collaboration with the mentioned prehospital EMS.^[3] This functional organization makes necessary that PHC physicians have an enough, adequate, and coherent set of theoretical knowledge and practical skills in EM.

The SEMES has established a specific doctrinal body for emergency physicians,^[3] although this is not completely applicable to family doctors as an instrument to assess their training or preparation in EM, since their main task is to meet the nonurgent demand. It is also necessary to consider the 2004 official program of the specialty of Family and Community Medicine (MFC)^[4] that establishes objectives with their corresponding priorities for each competence.

Assistance to critically ill patients requires specific knowledge and skills that must be updated and practiced relatively frequently. This is not really easy for the PHC physicians attending only occasionally these situations, may not know how to act properly when they arise, even if they have the necessary knowledge. It is evident that the vital urgency must be treated where it is produced and with an adequate medical equipment. For this, it is essential to have rapid response units attended by trained doctors.^[5]

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The objective of this study is to identify the training received in EM by PHC physicians and the limitations and difficulties self-perceived by those physicians to assist in emergencies, as well as to analyze the differences according to the work context.

2. Materials and methods

This is an observational cross-sectional study made by a survey using a self-administered questionnaire to a representative simple random sample (with replacement) of 313 doctors (n) working at the PHC centers of the 8 health areas of the Principality of Asturias out of the total of 851 doctors (N) that form the staff of physicians of PHC system of Asturias (Spain). Finally, 294 doctors answered the survey, so response rate was 93.9%.

The classification of the geographic context of work used was that of the Spanish National Institute of Statistics (INE)^[6] that establishes as categories “rural” (entities of population with 2000 or less inhabitants, “semi-urban” (from 2001 to 10,000 inhabitants), and “urban” (10,001 inhabitants or more).

No validated questionnaire was found to study the self-perception of the reasons that prevent or limit the provision of health care in emergencies in PHC centers. For this reason, an ad hoc questionnaire was developed and tested in a pilot test or cognitive pretest to 30 PHC physicians to establish the type of question and the most appropriate response scale, the extension, comprehensibility, and logical ordering of the questions, as well as the duration and acceptance of the questionnaire. A value of Cronbach alpha coefficient for internal consistency >0.7 was considered appropriate. Finally, the final questionnaire was drawn up including questions about the training received in procedures of EM and their characteristics and temporality. The final questionnaire had a Cronbach alpha value >0.9 . To assess the provision of emergency material in their health center, a Likert scale was developed from 0 (minimum) to 10 (maximum). This scale includes the doctors’ assessment of the emergency material present in their center regarding the material that should have been indicated in the protocol of the Health Service of the Principality of Asturias (SESPA).^[7]

In the data analysis, absolute and relative frequencies, central tendency, and dispersion parameters have been used. For the comparison, a Chi-squared test has been used. In the calculation of the differences between the average material endowment in the different areas of work, the Shapiro–Wilk test was applied to verify the normality of the distribution of the envelope according to the areas of work, obtaining a P -value of $<.05$ in each of the 3 areas, so the normality of the distribution was rejected and the nonparametric test of Kruskal–Wallis was applied. The estimates for the population as a whole have been made using confidence

intervals (CIs) of the 95% average. In the parameter comparisons, the differences between parameters with an error probability $<5\%$ were considered significant ($P<.05$). The statistics software used was SPSS Statistics v20 (IBM, Armonk, NY).

This study has been examined by the Ethics Committee of the Faculty of Medicine and Health Sciences of the University of Oviedo (Spain) and, due to its features and design, does not need the approval of the Committee.

3. Results

Of the 294 participating physicians, 102 (15.6%) were men and 192 (84.4%) women. According to their area of work, 98 (33.3%) worked in the rural area, 102 (34.7%) in the semi-urban area, and 94 (32.0%) in the urban area. Of the 294 physicians, 176 (60.0%) were specialists in Family and Community Medicine through the Internal Medical Resident System; 40 doctors (13.6%) were pediatricians; 3 doctors (1.0%) were specialists in Work Medicine; 3 doctors (1.0%) were specialists in Sport Medicine; 2 doctors (0.7%) were specialists in Hematology; 1 doctor (0.3%) was specialist in Pneumology; 1 doctor (0.3%) was specialist in Microbiology, and 68 doctors (23.1%) were not specialists but they worked as MFC doctors. Table 1 shows when the surveyed physicians performed their last course of basic and advanced cardiopulmonary resuscitation (CPR) and of polytraumatized patient care according to the context of work.

Figure 1 shows the reasons perceived for not knowing how to act in an emergency or emergency according to the context of work. Regarding the lack of adequate equipment, the differences were significant ($P=.003$) among the 3 work context. On the contrary, the field of work in which more doctors claim to know how to always act in an emergency is semi-urban.

For the whole of Asturias, and regarding the degree of provision of emergency and health center equipment, the average perception was 6.14 points out of 10 (95% CI: 5.89–6.37). In the rural area, it was 5.85 (95% CI: 5.44–6.27), in the semi-urban 6.60 (95% CI: 6.28–6.92), and in urban 5.87 (5.21–6.41). The differences in the perception of the provision of emergency and emergency equipment in the different areas of work were statistically significant ($P=.02$). After applying the post hoc contrasts to the Kruskal–Wallis test, it was found that the statistically significant difference corresponded to the rural area vs semi-urban ($P=.02$). The P -value between rural area and urban was 1 and the value between semi-urban area and urban was .204. Table 2 shows the frequency of need and nonavailability of emergency equipment in PHC centers according to the context of work.

Table 1

Period of completion of the last course of basic and advanced cardiopulmonary resuscitation (CPR) and attention to the polytraumatized patient by Primary Health Care physicians in Asturias according to their area of work.

Last course completed	Area								
	Rural			Semi-urban			Urban		
	Basic CPR (% responses rate)	Advanced CPR (% responses rate)	Polytraumatized patient (% responses rate)	Basic CPR (% responses rate)	Advanced CPR (% responses rate)	Polytraumatized patient (% responses rate)	Basic CPR (% responses rate)	Advanced CPR (% responses rate)	Polytraumatized patient (% responses rate)
≤5 yr	78.2	49.3	36.2	87.2	43.6	49.9	65.2	28.8	28.9
>5 and <10 yr	16	23.3	20.2	8.9	23.1	21.7	6.0	28.8	22.7
≥10 yr	0	18.7	24.8	1.3	20.5	11.7	16.7	12.1	7.5
Never	5.8	8.7	18.8	2.6	12.8	16.7	12.1	30.3	40.9

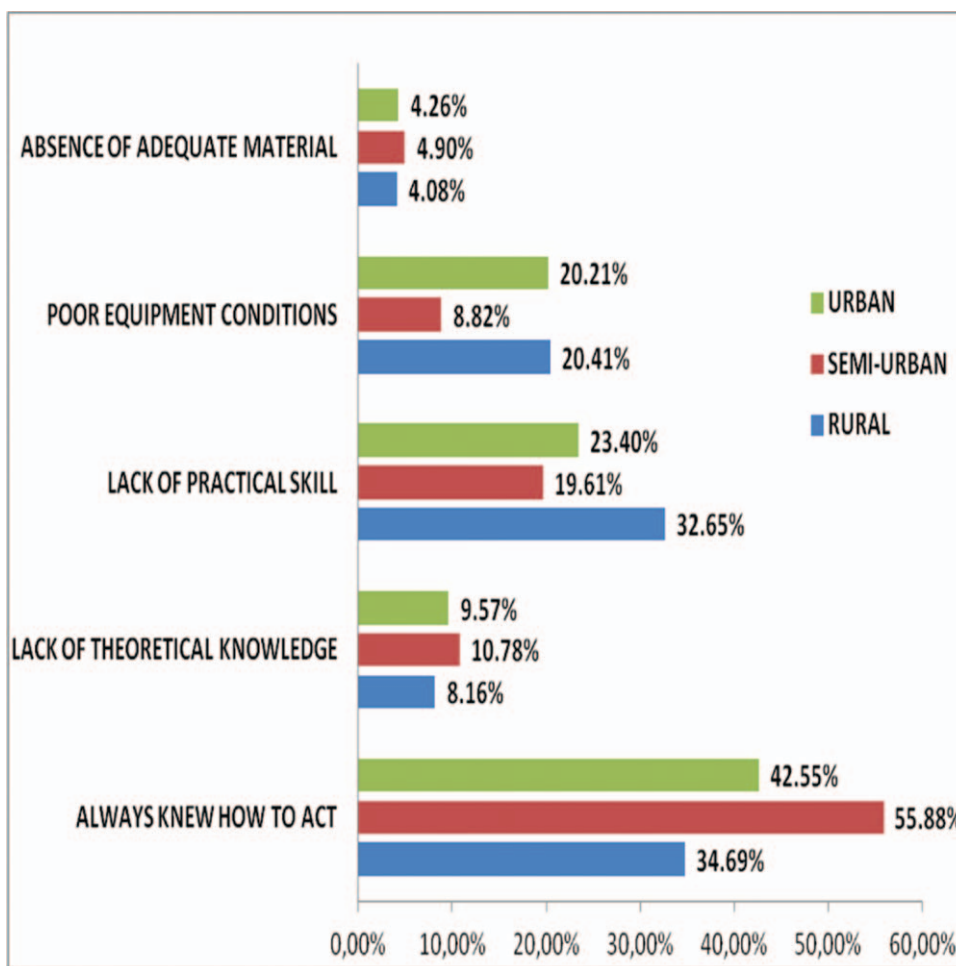


Figure 1. Causes of not acting correctly in an emergency by work environment (rural, semi-urban, and urban) by Primary Health Care physicians.

4. Discussion

In general, the PHC physicians of Asturias perceive as main limitations for their intervention in urgencies or emergencies the lack of practical ability and an insufficient endowment of equipment in health centers. However, they perceive their

theoretical training as adequate. This could be due to the fact that training programs in EM have a greater content in theoretical rather than practical aspects. It would be necessary to develop new programs that would enhance the acquisition of more practical knowledge. These findings could not be compared with other previous national studies since similar studies have not been found in the published literature.

Table 2
Frequency of need and nonavailability of emergency equipment in Primary Health Care centers, by area of work (rural, semi-urban, and urban).

Frequency of need and nonavailability	Area		
	Rural (% responses rate)	Semi-urban (% responses rate)	Urban (% responses rate)
Never	7.6	24.0	32.2
Every 10 yr	9.1	9.3	8.9
Every 5 yr	13.6	8.0	8.9
Every 3 yr	21.2	18.7	12.5
Every yr	28.8	32.0	21.4
Every 6 mo	9.1	2.7	10.7
Every 3 mo	7.6	5.3	0
Every mo	1.5	0	5.4
Every wk	1.5	0	0
Almost daily	0	0	0

The PHC physicians gain experience through the resolution of emergencies for which specific training from time to time is essential. On many occasions, PHC physicians have less opportunities to perform this specific training, which limits their ability to manage these emergency situations.^[8]

The provision of medical emergency equipment in the PHC centers of Asturias, in general, is perceived by physicians as an average, and sometimes does not present good conditions of use, which is an important limitation for proper assistance to emergencies.

The results of our study indicate the perception of a limitation in the physicians themselves due to the provision of existing equipment. In Norway, prehospital care is of paramount importance in rural areas, and is more modest in urban areas, but the provision of equipment from health centers in both areas is considered satisfactory by professionals.^[9] These data have been compared with the data obtained in the study of Yorganci and Yaman,^[10] conducted in Turkey, indicating that 8 basic

instruments to attend to emergencies (oropharyngeal cannula, resuscitative balloon, oxygen, nebulizer, tourniquet, intravenous cannula, glucometer, and sphygmomanometer) were only present in 67% of the analyzed centers, which indicates a bad planning of the supply of the centers and a bad endowment of material. In turn, Sempowski and Brison^[11] point out that the supply of material present in the Canadian primary care emergency centers was poor and these centers were inadequately prepared to provide emergency assistance.

From a medical and legal point of view, it is important to pay attention to the equipment of the health center itself. Recommendations on the minimum equipment that a PHC center should have vary widely.^[12] However, the correct equipment of the center is only useful if the doctors who must carry out urgent care know how to use the material they have. The need for periodic reeducation of theoretical knowledge and practical skills in emergencies for PHC physicians is well documented.^[13–16] PHC physicians must be well trained in diagnostic and therapeutic procedures, as well as having updated clinical guidelines and protocols and knowing them in order to be able to act effectively in the different emergencies and emergencies they face.^[17]

The geographic and organizational characteristics of the PHC system in Asturias are different in the different health areas. This could create inequities in the assistance or in the quality and homogeneity of it. Therefore, it seems necessary that the health authorities be able to ensure adequate homogeneity in the levels of theoretical knowledge and practical ability of its health personnel, as well as availability and adequate conditions of use of material resources to ensure equity in the conditions of provision of health care^[18] to the emergencies in the health areas of Asturias.

It would be necessary to periodically update the theoretical knowledge and practical skills in EM in PHC physicians, mandatory every 2 years and supervised by the health authorities, as well as to review frequently the equipment available in health centers, both their conditions and their quantity, so that assistance in emergencies of the highest possible quality. To this goal, a system could be established which doctors, at the beginning of their workday and the end of it, should review and justify that all the necessary material is available and in good condition.

4.1. Study limitations

This study has been limited to the geographic area of the Principality of Asturias, and although the results are not directly extrapolated to the rest of the Spanish regions, they can be to quite similar contexts in other countries. This study explores the self-perception of physicians about 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 act in emergencies through some type of examination or practical case. The self-perception and the opinion of the professionals are

indispensable elements to be considered in the planning of any action for improving care.

Author contributions

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References

- [1] Sociedad Española de Medicina de Urgencias y Emergencias en Baleares [website]. Palma de Mallorca: Semesbaleares. org; 2010; Project for a teaching programme for the Specialty in Emergency Medicine. Available at: <https://www.semesbaleares.org/Fotos/Adjuntos/24.PDF>. Accessed April 2, 2018.
- [2] Martín Zurro A, Ledesma Castelltort A, Sans Miret A. The Primary Health Care model: balance and perspectives [in Spanish]. *Aten Prim* 2000;25:48–58.
- [3] Law 14/1986, of April 25, 1986. General Directorate of Health (Official State Gazette of 29/4/1986).
- [4] Order SCO/1198/2005 of 3 March 3, 2005 approving and publishing the training programme for the speciality of Family and Community Medicine. *Boletín Oficial del Estado*, no. 105 (May 3, 2005).
- [5] Lisa Catón V. Role of the family doctor in hospital emergency departments. *Aten Prim* 1998;21:509–10.
- [6] National Statistics Institute. Register of inhabitants. Available at: https://www.ine.es/dyngs/INEbase/es/categoria.htm?c=Statistics_P&cid=12594734734710990 (2017). Accessed April 20, 2018.
- [7] Health Service of the Principality of Asturias. Protocol for the Review and Maintenance of Urgent Care Devices in Primary Health Care. Mieres: Health Service of the Principality of Asturias; 2009.
- [8] Aloufi MA, Bakarman MA. Barriers facing Primary Health Care physicians when dealing with emergency cases in Jeddah, Saudi Arabia. *Glob J Health Sci* 2016;8:192–9.
- [9] Vaardal B, Lossius HM, Steen PA, et al. Have the implementation of a new specialized emergency medical service influenced the pattern of general practitioners involvement in pre-hospital medical emergencies? A study of geographic variations in alerting, dispatch, and response. *Emerg Med J* 2005;22:216–9.
- [10] Yorganci M, Yaman H. Preparedness of primary health care for critical emergency situations in Southwest Turkey. *Prehosp Disaster Med* 2008;23:342–5.
- [11] Sempowski IP, Brison RJ. Dealing with office emergencies. Stepwise approach for family physicians. *Can Fam Physician* 2002;48:1464–672.
- [12] Tobac SL. Medical emergency preparedness in office practice. *Am Fam Physician* 2007;75:1679–84.
- [13] White JR, Shugerman R, Brownlee C, et al. Performance of advanced resuscitation skills by pediatric house staff. *Arco Pediátrico Adolescente Med* 1998;152:1232–5.
- [14] Stross JK. Maintaining competency in advanced cardiac life support skills. *JAMA* 1983;249:3339–41.
- [15] Kaye W, Mancini ME. Retention of cardiopulmonary resuscitation skills by physicians, registered nurses, and the general public. *Crit Care Med* 1986;14:620–2.
- [16] Seraj MA, Naguib M. Cardiopulmonary resuscitation skills of medical professionals. *Resuscitation* 1990;20:31–9.
- [17] Ramanayake RPJC, Ranasingha S, Lakmini S. Management of Emergencies in General Practice: Role of General Practitioners. *J Family Med Prim Care* 2014;3:305–8.
- [18] Hernández Aguado I, Santaolaya Cesteros M, Campos Esteban P. Social inequalities in health and primary care. *SESPAS Report 2012* [in Spanish]. *Gac Sanit* 2012;26(Suppl 1):6–13.