Evaluation of basic life support training need perceived by parents

Evaluación de la necesidad formativa en soporte vital básico percibida por los cuidadores

Dear Editor:

In the paediatric population, out-of-hospital cardiac arrest (CA) is infrequent and, regrettably, survival is very low.[1] Children with severe medical conditions are at increased risk of experiencing these events compared to their healthy peers.[2] Adequate preparation can facilitate the adjustment of caregivers and increase safety after hospital discharge.[2]

The aim of our study was to assess parental perceptions regarding their need of training in basic life support (BLS), with the working hypothesis that they considered such training necessary, and for the purposes of developing a training programme.

We conducted a single centre cross-sectional and analytical study in the Department of Paediatrics of a tertiary care hospital. The statistical analysis was conducted with the R software package and the R commander graphical user interface (John Fox, McMaster University, Hamilton, Canada). The study was approved by the competent ethics committee (file code 2023/053).

We handed out a questionnaire to the carers of paediatric patients who visited the hospital for assessments or to receive medical care, recruiting a total of 57 participants. Of this total, 27 (47.4%) were in charge of healthy children, of who 5 (8.8%) had undergone training in the past. The number of respondents who cared for ill minors (including children who made follow-up up visits to outpatient clinics at least twice a year or receiving chronic treatment) was 30 (52.6%), of who 8 (14.0%) had been previously trained. Of all respondents, 77.2% had never been trained on BLS, even though 50% of them had a diseased child.

In the out-of-hospital setting, few medical emergencies involve children. However, an adequate response by the parents is crucial to reduce mortality and potential sequelae.[3]

The data collected in our study evinced substantial ignorance of concepts related to paediatric BLS. Table 1 presents the items in the questionnaire that asked about BLS, the responses to those items and the corresponding *P* values, while Table 2 presents the results regarding the perceived need of training.

Half the parents were not able to determine the correct order of the steps of the chain of survival. In addition, 23.3% would not know what to do in the event of airway obstruction, nearly half could not determine the adequate ventilation/compression ratio and 32.6% would not know how to recognise CA. Previous studies have led to the same conclusions, evincing the need to establish BLS training strategies.

Of all respondents, 98.2% ($n = 56$) expressed concern that they would not know how to respond to an emergency and considered they needed training on paediatric BLS. In addition, they stated that if they had basic notions of BLS they would feel less worried. A study by Tomatis et al.[4] produced similar findings and demonstrated that training of parents significantly increased their knowledge and confidence.

Of those who had received previous training, 61.5% ($n = 8$) rated their level of knowledge as fair, 30.8% ($n = 4$) as good and 7.7% ($n = 1$) as poor. In addition, 84.6% ($n = 11$) considered that intervention in this area was necessary.

We did not find statistically significant differences in the frequency of previous training on paediatric BLS between the caregivers of ill children and those of healthy children ($P = .46$), nor in the mean scores obtained by caregivers who had received training versus those who had not ($P = .88$).

Of all the parents, 96.4% ($n = 54$) stated they would attend training sessions on paediatric BLS, without statistically significant differences between parents of ill children and parents of healthy children (29/30 vs 25/25 would attend trainings; $P = .36$).

Respondents considered that the best possible setting to be trained on BLS would be health care facilities (57.1%; $n = 32$) followed by schools, contrary to other studies in which schools were considered the best possible option.[5]

The limitations of the study derive from its design, the recruitment in a hospital setting and the self-reported information on previous training, but, given its objectives, this methodology facilitated the performance of the study and allowed us to assess the willingness of families to receive training.

The caregivers of paediatric patients managed in a tertiary care hospital expressed a need to be trained in paediatric BLS. We found a substantial lack of knowledge regarding the identification of CA, the chain of survival, the management of airway obstruction and the CPR compression/ventilation ratio. Therefore, we consider it necessary to develop a training programme covering these aspects.

Funding

This research did not receive any external funding.

Conflicts of interest

The authors have no conflicts of interest to declare.

Table 1 Differences in training of parents of ill and healthy children.

Item, correct answer and rest of answer choices	Previously trained ($n = 13$)	Never trained ($n = 44$)	P
The chain of survival includes			
Early recognition and calling for help (activation of emergency response system) → early CPR → early defibrillation → advanced CPR → post-arrest care (correct answer)	46.2% (6)	50% (22)	.81
Early CPR → calling for help (activation of emergency response system) → post-arrest care	0% (0)	6.8% (3)	
Calling for help (activation of emergency response system) → early defibrillation → early advanced CPR → post-arrest care	23.1% (3)	2.3% (1)	
I do not know the order of the steps	30.8% (4)	40.9% (18)	
If an infant is choking and breathing inefficiently, what manoeuvre would you perform?			
Blows on the back between the shoulder blades and chest compressions (correct answer)	15.4% (2)	20.9% (9)	.64
Blows on the back between the shoulder blades	46.2% (6)	32.3% (10)	
Heimlich manoeuvre	30.8% (4)	30.2% (13)	
I would not perform any manoeuvres	7.7% (1)	2.3% (1)	
I would not know which manoeuvre to perform	0% (0)	23.3% (10)	
If you had to perform CPR on a child, which compression/ventilation ratio would you use?			
15 compressions and 2 ventilations (correct answer)	53.8% (7)	41.9% (18)	.64
30 compressions and 2 ventilations	23.1% (3)	7% (3)	
30 ventilations and 2 compressions	7.7% (1)	0% (0)	
15 ventilations and 2 compressions	0% (0)	4.7% (2)	
I would not know the ratio	15.4% (2)	46.5% (20)	
In the event of CA, it is very important to recognise CA early. When would one consider that a child is in CA?			
If the child is unconscious, not breathing and has poor perfusion, even if I do not know how to check the pulse (correct answer)	30.8% (4)	32.6% (14)	.90
If the child is not breathing it's indicative of CA	38.5% (5)	20.9% (9)	
The most important thing is to check the pulse	23.1% (3)	14% (6)	
I would not be able to recognise it	7.7% (1)	32.6% (14)	

CA, cardiac arrest; CPR, cardiopulmonary resuscitation.

Table 2 Perceived need of training in parents.

Item	Yes	No	NK/NA
Are you worried about not knowing how to respond in the event that the child in your care requires paediatric CPR?	98.2% (55)	1.8% (1)	0%
Would you feel less worried if you had basic notions about how to respond in the event of an emergency in the child who is in your care?	94.6% (53)	3.6% (2)	1.8% (1)
Would you be willing to perform CPR on a family member or someone you are caring for?	94.6% (53)	1.8% (1)	3.6% (2)
Do you consider training in paediatric CPR necessary?	98.2% (55)	1.8% (1)	0%
Would you attend paediatric CPR training sessions if available to you?	96.4% (54)	1.8% (1)	1.8% (1)
Do you think you would respond differently to CA if you received training on the subject?	91.1% (51)	3.6% (2)	5.4% (3)

CA, cardiac arrest; CPR, cardiopulmonary resuscitation; NK/NA, does not know/does not answer.

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https://doi.org/10.1016/j.anpede.2023.12.014

Newborn resuscitation out of the delivery room: Pediatric or neonatal algorithm? Results from a national survey

Reanimación del recién nacido fuera de sala de partos: ¿algoritmo neonatal o del lactante? Resultados de una encuesta nacional

Dear editor:

The transition to extrauterine life after birth has particular characteristics that call for a specific protocol for the neonatal stabilization and resuscitation in the delivery room. After the immediate postnatal period, although the precise temporal boundary has yet to be clearly established, there is controversy in regard to certain cardiopulmonary resuscitation manoeuvres in neonates, in which either neonatal resuscitation (NR) or advanced paediatric life support (APLS) recommendations may be applied. There are significant differences between them. For instance, the recommended ratio of chest compressions to rescue breaths (compression/ventilation ratio), of 3:1 versus 15:2, or whether chest compressions need to be synchronised with ventilation after endotracheal intubation, which results in decisions being made without sufficient evidence in support, ambiguous and arbitrary, which could pose risks to the safety of the patient. A review of the scientific literature, guidelines and manuals evinces a lack of consensus and as well as imprecision in the recommendations given by different scientific societies and working groups regarding the time at which the APLS guidelines should start to be applied instead of the NR guidelines, or whether the switch should happen at all.[1–4] In the 3:1 compression/ventilation ratio, the cycle lasts 2 s, so that 90 compressions and 30 breaths are delivered each minute. With the 15:2 ratio, which takes approximately 10 s, 90 compressions and only 12 breaths are delivered in one minute. This difference is relevant due to the lower number of breaths delivered with the 15:2 ratio and its potential importance in relation to the probable cause of the need for resuscitation.

In Spain, there is no register of intrahospital cardiac arrest in neonatal patients, so there is no data on the current compression/ventilation ratios applied in newborns after the immediate postnatal period in real-world practice. For this reason, the Neonatal Resuscitation Group of the Sociedad Española de Neonatología (Spanish Society of Neonatology) designed a study to assess the management of cardiac arrest in neonates after the immediate postnatal period in relation to the application of NR or APLS guidelines.

The study was conducted through a survey of neonatal units. Questionnaires were sent twice by electronic mail to the neonatologists members of the Sociedad Española de Neonatología who work in the public health system of Spain. It was submitted to 735 specialists, of who 307 (41.8%), employed in 114 centres, responded. Of these respondents, 82.4% (253) worked in a level III hospital, 13.4% (41) in a level II hospital and 4.2% (13) in a level I hospital. In addition, 67.7% (208) had more than 10 years of experience. Only 12 hospitals (10.5%) had a neonatal cardiac arrest management protocol for neonates outside the delivery room. When it came to the 3:1 compression/ventilation ratio, 60.5% of respondents reported using it always and 16.9% never using it. The remaining 22.6% reported that it depended on the setting (delivery room/maternity ward) and/or the gestational age (preterm or term newborn), as can be seen in Fig. 1. As for the 15:2 ratio, 13.9% of respondents used it in every case and 29.4% never used it. The remaining 56.7% reported that it depended on the probable aetiology (cardiac) and the setting (emergency care department) (Fig. 1b). In regard to chest compression and ventilation synchronization after intubation, 46.3% of respondents continued to synchronize them while 52.6% switched to unsynchronized chest compressions.

When it came to the care level, in level I and II hospitals the frequency of respondents who reported ''always'' applying the 3:1 ratio was lower (37.5%), with 20% reporting ''never'' applying it, with the percentage increasing to 40.5% among those who reported using it based on the setting (delivery room, maternity ward) or the gestational age. In level III hospitals, a higher proportion of providers reported ''always'' using the 3:1 ratio compared to level I and II hospitals (63.7%), while 16.5% reported never applying this ratio and 19.7% using it only based on whether the neonate was in the delivery room or maternity ward or the gestational age. That is, the 3:1 ratio was used more frequently in level III hospitals, while in level I and level II hospitals it was applied more frequently if cardiac arrest took place in the delivery room, in the maternity ward or in a preterm newborn.[5]

While we await further data, there continues to be a grey area in the management of neonatal patients, starting