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Letter to the Editor

Mass training in basic life support for high-school students

Sir,

The early performance of basic cardiopulmonary resuscitation (CPR) manoeuvres by bystanders is known to improve survival in victims of out-of-hospital cardiac arrest (CA).<sup>1</sup> We conducted an observational study of pre-post-training knowledge to assess the degree of CPR knowledge acquired and maintained by numerous high-school students trained in a day of training in CPR. Their knowledge was assessed using a 10-item questionnaire and an extra question on whether the student participant felt they would know what to do if they were to witness a possible CA event. The test was administered at school, before the training session, at 7 days and again at 6 months. Training day; the Almeria method has been previously described,<sup>2</sup> briefly, each session trained 1000 students aged 12–17 years (250 students per hour) with a maximum of 8 students per instructor. The team of instructors comprised volunteer professionals from different institutions (135 professionals). A total of 1907 students participated (two sessions) from 48 schools in the province of Almeria. Of them, 1814 completed all three questionnaires (95.12%). The results are shown in Table 1.

The level of attendance at the training sessions was high, almost 1000 students/day. The commitment to attend, teacher collaboration and parental support were essential for the success of this initiative. These qualitative aspects of the educational intervention are very important. The attitude of the general population is a major

determinant of whether bystander CPR manoeuvres are initiated or not. Any action to disseminate and highlight the importance of rapid bystander intervention contributes to enhance the chain of survival.<sup>3</sup> In this regard it was encouraging to observe the improvement in student attitude towards taking action in a possible CA: at six months, the feeling that they could actually do something to help had doubled. Changes in attitude of citizens confronted with a situation of cardiac arrest are an added benefit to any kind of training strategy.

Training time was admittedly short, but other initiatives with even shorter times, and without an instructor to answer questions or correct CPR manoeuvres, have proven effective.<sup>4</sup> The improvement in test scores is important, specially the maintenance of knowledge at six months. It is also very important that this improved in all students, regardless of whether they had prior training, although improvement was greater in those without previous knowledge of CPR. An inverse correlation was observed between improved test score and prior knowledge of CPR: students with the lowest initial scores showed the greatest improvement. (Spearman's rho = -0.587,  $P < 0.001$ .)

Given that even untrained lay people with telephone support can perform CPR and help increase the survival rate of out-of-hospital CA, training a large number of students in short periods of time can facilitate the spread of this knowledge to a greater proportion of the general population. This is fundamental, especially considering the low rate of bystander resuscitation.<sup>5</sup> Mass training in a single 4-h session significantly increased the level of theoretical knowledge about CPR in teenagers and this was maintained at six months.

**Table 1**  
Results pre-post intervention. Questionnaires of knowledge and attitude.

		Pre-intervention	At 7 days	At 6 months	
Evolution of mean scores for the test on CPR knowledge before and after the educational intervention	<i>N</i>	1814	1814	1814	
	Mean ± SD	5.23 ± 1.76	7.03 ± 1.57	6.63 ± 1.63	
	Median [IQR]	5 [4–6]	7 [6–8]	7 [6–8]	
	<i>P</i> (95% CI)		<0.001 (1.717–1.892)	<0.001 (1.309–1.493)	
	<i>N</i>	1433	1433	1433	
Test scores of students with and without prior knowledge of CPR	Without prior knowledge	Mean ± SD	5.06 ± 1.73	7 ± 1.58	6.62 ± 1.62
	Median [IQR]	5 [4–6]	7 [6–8]	7 [6–8]	
	<i>P</i> (95% CI)		<0.001 (1.824–2.023)	<0.001 (1.472–1.675)	
	<i>N</i>	374	374	374	
	With prior knowledge	Mean ± SD	5.95 ± 1.70	7.26 ± 1.50	6.66 ± 1.68
Median [IQR]	6 [5–7]	8 [6–8]	7 [6–8]		
<i>P</i> (95% CI)		<0.001 (1.143–1.499)	<0.001 (0.520–0.923)		
Question 11. If you witnessed a possible heart attack, could you do something to help?	Yes, without a doubt (%)	32.2	76.7	64.9	
	No, absolutely not (%)	18.3	3.2	3.9	
	I'm not sure (%)	49.4	20.1	31.2	
	<i>P</i>		<0.001	<0.001	

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## Conflict of interest statement

Authors have not any conflict of interests with the study.

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