ORIGINAL ARTICLE

OBJN
Online Brazilian Journal of Nursing
ISSN: 1676 - 4285 | www.objnursing.uff.br

Submission: 13-Jan-2025
Approved: 21-Jul-2025

FIRST AID TRAINING WITH SCHOOLCHILDREN IN MIXED-LEVEL GROUPS: A QUASI-EXPERIMENTAL STUDY

FORMACIÓN EN PRIMEROS AUXILIOS CON ALUMNADO EN GRUPOS INTERNIVELARES: ESTUDIO CUASI-EXPERIMENTAL

Sheila Vázquez-Álvarez[1] ORCID: 0009-0001-9038-8891
Luis Castro-Alonso[2] ORCID: 0009-0008-0173-1178
María García-Martínez[3] ORCID: 0009-0004-5422-1842
Myriam Santos-Folgar[1] ORCID: 0000-0002-1083-5496
María Fernández-Méndez[1] ORCID: 0000-0002-0260-820X
Martín Otero-Agra[1] ORCID: 0000-0003-1543-9780

[1] REMOSS Research Group, Faculty of Education and Sports Sciences, University of Vigo, 36005 Pontevedra, Spain
[2] Complexo Hospitalario of Pontevedra, Sergas, 36071 Pontevedra, Spain
[3] Simulation and Intensive Care Unit of Santiago (SICRUS) Research Group, Health Research Institute of Santiago, University Hospital of Santiago de Compostela-CHUS, 15706 Santiago de Compostela, Spain

How to cite: Vázquez-Álvarez S, Castro-Alonso L, García-Martínez M, Santos-Folgar M, Fernández-Méndez M, Otero-Agra M. First aid training with schoolchildren in mixed-level groups: a quasi-experimental study. Online Braz J Nurs. 2025;24(Suppl 2):e20256860. https://doi.org/10.17665/1676-4285.20256860

RESUMEN

Objetivo: comparar la adquisición de habilidades para reconocer una parada cardíaca a través de la formación con grupos internivelares frente a una formación tradicional. **Métodos**: se realizó un estudio cuasiexperimental sin pre-test con 312 escolares de entre 3 y 12 años. Se dividió la muestra en dos grupos, el grupo internivelar (n=149) que recibió formación teórico práctica en sesiones con alumnado de todos los cursos; y el grupo control (n=163) que recibió la formación en sesiones con estudiantes del mismo curso académico. Tras la sesión, todos los escolares fueron evaluados con un maniquí Laerdal Little Junior y un checklist por personal cualificado. **Resultados:** no se observaron diferencias significativas entre los dos grupos en los pasos de mantener la calma cuando sucede la parada cardíaca y en la llamada al 112. Se observaron mejores resultados en los participantes del grupo control en los pasos de valorar la respuesta de la víctima; de abrir la vía aérea de la víctima y de valorar la respiración de la víctima. **Conclusión:** desde el punto de vista de la asimilación de habilidades en el reconocimiento y tratamiento de la parada cardíaca, el enfoque basado en grupos internivelares mostró una eficacia inferior a un enfoque tradicional.

Descritores: Estudiantes; Ejercicio de Simulación; Paro Cardíaco; Primeros Auxilios.

ABSTRACT

Objective: to compare the acquisition of skills to recognize cardiac arrest through training with mixed-level groups versus traditional training. **Methods:** A quasi-experimental study without pre-testing was conducted with 312 schoolchildren aged between 3 and 12 years. The sample was divided into two groups: the mixed-level group (n=149), which received theoretical and practical training in sessions with students from all grades; and the control group (n=163), which received training in sessions with students from the same grade. After the session, all schoolchildren were assessed with a Laerdal Little Junior manikin and a checklist by qualified personnel. **Results:** No significant differences were observed between the two groups in the steps of remaining calm when cardiac arrest occurs and calling 112 (European emergency number). Better results were observed in the control group participants in the steps of assessing the victim's response, opening the victim's airway, and assessing the victim's breathing. **Conclusion:** From the point of view of assimilating skills in the recognition and treatment of cardiac arrest, the interlevel group approach was less effective than a traditional approach.

Descriptors: Students; Simulation Exercise; Heart Arrest; First Aid.

Editors:
Rosimere Ferreira Santana (ORCID: 0000-0002-4593-3715)
Geilsa Soraia Cavalcanti Valente (ORCID: 0000-0003-4488-4912)

Publisher:
Escola de Enfermagem Aurora de Afonso Costa – UFF
Rua Dr. Celestino, 74 – Centro, CEP: 24020-091 – Niterói, RJ, Brazil
Journal email: objn.cme@id.uff.br

Corresponding author:
Luis Castro-Alonso
Email: lcastroalon@gmail.com

INTRODUCTION

Teaching with mixed-level groups is a pedagogical method in which students of different ages and levels of development share the same learning space. This teaching approach is based on learning theories such as Vygotsky's zone of proximal development, which emphasizes the importance of social interaction in students' cognitive development[1].

In general, various studies have pointed out the benefits of this pedagogical model for promoting children's cognitive and social learning. Specifically, it has been observed that classes with mixed-age groups promote the development of skills such as conflict resolution, peer relationship management, and greater attention to individual differences by both teachers and students[2-4].

In this way, older students often take on the role of mentors, while younger students benefit from the guidance of their older peers. This exchange promotes not only the acquisition of knowledge, but also the development of interpersonal skills such as empathy and cooperation[5]. However, despite the observed benefits, the practical implementation of this approach in specific areas, such as skills teaching, requires further research and systematization[2].

One of the main objectives of the KIDS SAVE LIVES program, promoted by the European Resuscitation Council (ERC), in addition to training children and adolescents in Basic Life Support (BLS) skills, is to generate evidence on the effectiveness of new teaching methods in this field, highlighting the importance of implementing innovative educational strategies that enhance learning and knowledge retention from an early age[6-13].

In this context, given the existing evidence pointing to the benefits associated with the mixed-age teaching method, it was appropriate to assess its suitability for first aid training for schoolchildren.

The objective of this study was to compare the acquisition of skills to recognize and treat cardiac arrest through training with mixed-age groups (with students from all stages of early childhood and primary education) versus traditional training, carried out in each educational year.

METHOD

Design

A quasi-experimental simulation study without a pretest was conducted. The study was approved by the Ethics Committee of the Faculty of Education and Sports Sciences of the University of Vigo (Spain) (Code: 09-170123). The legal guardians of the schoolchildren signed the informed consent form.

Sample

The final total sample consisted of 312 schoolchildren aged between 3 and 12 years old, enrolled in 4th, 5th, and 6th grades of Early Childhood Education and 1st, 2nd, 3rd, 4th, 5th, and 6th grades of Primary Education, from three public schools in the province of Pontevedra, in Galicia (Spain).

The inclusion criteria for the study were enrollment in the school where the research was conducted and the provision of informed consent signed by a legal guardian. The exclusion criteria were withdrawal from the study once it had begun and failure to attend any of the training or assessment sessions after being included in the study.

The sample was divided into two groups. The inter-level group (IG: n = 149 students) received training in groups composed of students from all academic years (4th, 5th, and 6th grades of early childhood education and 1st, 2nd, 3rd, 4th, 5th, and 6th grades of primary education). The control group (CG: n = 163 students) received training in groups made up of students from a single grade. In turn, analyses were carried out to compare the two types of training in each of the educational cycles that make up the Spanish education law: early childhood education cycle (3–6 years); 1st cycle of primary education (6–8 years); 2nd cycle of primary education (8–10 years); and 3rd cycle of primary education (10–12 years)[14].

Intervention

In both groups, participants received training in accordance with the guidelines stipulated by the ERC 2021. The training sessions were given by a nurse who is an expert in BLS training, with the active collaboration of a primary school teacher throughout the process. Each session lasted approximately 50 minutes (Figure 1). The sessions began with a theoretical explanation of how to recognize cardiac arrest, the steps to take to alert the emergency services by telephone, and CPR maneuvers (10 minutes). This was followed by a practical demonstration of the above concepts, including recognizing cardiac arrest, the emergency call process, and CPR maneuvers (10 minutes). After that, the participants did a practical simulation with a mannequin, getting feedback from the instructors (30 minutes). The maximum student-to-nurse ratio was 25:1. In both groups, the material used for these trainings was a Little Junior QCPR mannequin from Laerdal (Stavanger, Norway).

Variables

The demographic variables used in the study were: the gender of the participants, previous first aid training, height in cm, and weight in kilogram (kg).

The dependent variables assessed the participants' practical skills during the simulation of different actions, including: remaining calm at the start of the simulation, assessing the victim's response (consciousness), opening the victim's airway with the head-tilt chin-lift maneuver, assessing the victim's breathing (seeing, hearing, and feeling their breath), calling 112 with the victim's phone, placing hands in the center of the chest to start CPR, and performing valid CPR (activating the manikin sensor in the QCPR app from Laerdal (Stavanger, Norway).

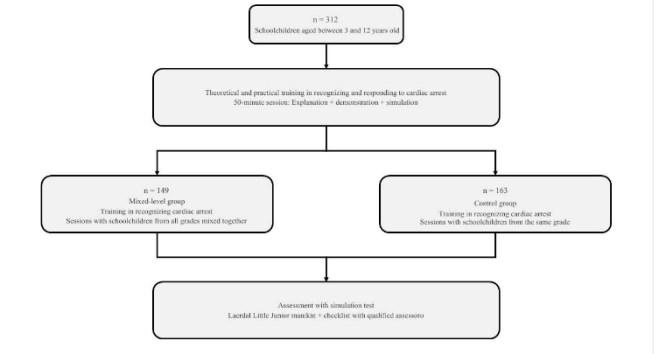

Figure 1 - Flow chart of the study design

Data sources and measurements

After the training sessions, the skills acquired were assessed on the same day. To do this, a qualified examiner assessed how the participants responded in a simulated environment to a cardiac arrest situation and what actions they took. The material used for the assessment was a Little Junior QCPR manikin from Laerdal (Stavanger, Norway) and a standardized checklist that allowed for the systematic and structured assessment of the students' skills in a simulated cardiopulmonary arrest episode. Prior to the practical assessment, the first item on the checklist, which concerned prior training in first aid, had to be completed. The situation presented was a simulated emergency in the classroom, in which a supposed classmate suffered a cardiac arrest. The items included were maintaining calm, assessing consciousness, opening the airway, and assessing breathing, activating the emergency call and communicating with the 112-emergency operator, as well as knowing their home address, a family member's phone number, and what to do while waiting for the ambulance. Each action was recorded in real time by an evaluator experienced in first aid training for schoolchildren and familiar with the evaluation sheet, using response options that allowed students to be classified according to whether they performed the action correctly, incorrectly, did not perform it, or performed it after receiving instructions through the call. This evaluation sheet has been used in several studies with similar evaluations.

Sample size

A non-probabilistic incidental sampling was carried out in which three schools with similar characteristics (public and located in rural areas) were invited to participate. The sample size was based on an assumed minimum effect size of 0.3, a probability error of $\alpha = 0.05$, and a statistical power of 0.95 with 1 degree of freedom. The objective was to achieve a minimum sample size of 145 participants. The final sample consisted of 312 schoolchildren (divided into two groups: 149 GI and 163 GC), which resulted in a statistical power of 0.9996 when calculated using the parameters described above. These sample size calculations were performed using G*Power 3.1.9.2 software (Heinrich-Heine-Universität, Düsseldorf, Germany) and were based on previous studies[19].

Statistical analysis

Statistical analysis was performed using IBM SPSS Statistics version 21 for Windows. Qualitative variables were described using absolute and relative frequencies. The Chi-square test was used to compare groups, with a significance value of p=0.05. In the case of statistically significant comparisons, the effect size (ES) was calculated using Cramer's V test, using the following classification according to the magnitude of the effect: (0.1–0.3) small; (0.3–0.5) medium; (>0.5) large. On the other hand, quantitative variables were described using measures of central tendency (median) and dispersion (interquartile range). For the comparison between groups, after checking the normality of the distributions of the variables with the Kolmogorov-Smirnov or Shapiro-Wilk test, as appropriate, the Student's t-test for independent samples with a value of p = 0.05, or the Mann-Whitney U test for independent samples with a value of p = 0.05, was used. As no significant comparisons were found in the quantitative variables, the TE was not calculated for these comparisons.

RESULTS

Total sample

The results for the total sample are shown in Figure 2. After analyzing the demographic variables, no significant differences were observed in terms of sex, height, and weight between the two groups studied ($p > 0.05$). On the other hand, a significantly higher percentage of participants in the IG (23%) had previous first aid training compared to the CG (13%; $p = 0.021$; TE = 0.13). When examining the variables corresponding to skills in recognizing cardiac arrest, it was found that the GI had significantly lower percentages of participants in the three victim assessment actions: 54% of the GI assessed the victim's response, compared to 84% of the CG ($p < 0.001$; TE = 0.32); 56% of the IG opened the victim's airway, compared to 79% of the CG ($p < 0.001$; TE = 0.24); and, finally, 69% of the IG assessed the victim's breathing, compared to 90% of the CG ($p < 0.001$; TE = 0.25). The remaining variables not related to the assessment of the victim (remaining calm, calling 112, placing hands in the center of the chest when starting CPR, and performing valid CPR) showed no significant differences between the groups, with similar values.

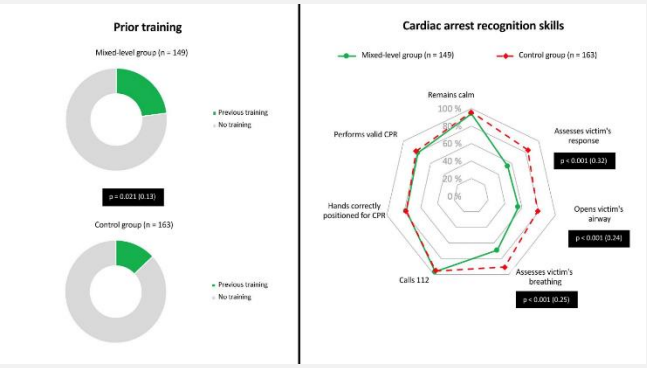

Figure 2 - Variables of the two study groups in the total sample

Analysis by educational cycle

The results of the variables for each educational cycle (early childhood education and 1st, 2nd, and 3rd cycles of primary education) are shown in Figure 3. After analysis, it was observed that all cycles show a similarity in better results when assessing the victim in the CG, compared to the IG (assessing the response, opening the airway, and assessing the victim's breathing). Only in the 3rd cycle of primary education, when opening the airway, does the IG achieve sufficient percentages to not show significant inferiority.

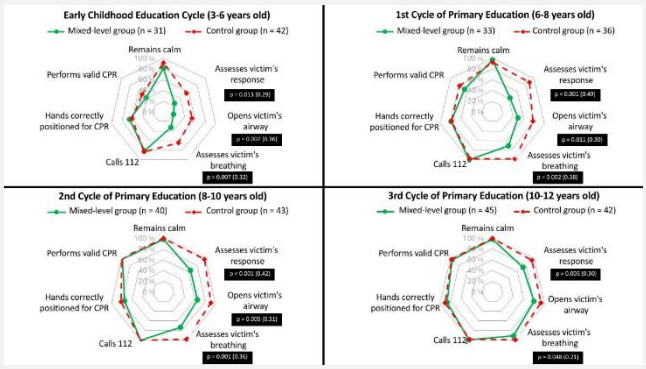

Figure 3 - Variables of the two study groups according to educational cycle

DISCUSSION

The objective of this study was to compare two training programs for the recognition and treatment of cardiac arrest in school-aged children. To this end, two approaches were implemented: on the one hand, the traditional approach, in which the control group received training following the usual distribution of courses, i.e., with students belonging exclusively to the same academic year. On the other hand, an approach based on inter-level groups was adopted, characterized by integrating students from all academic years in the same session (in this case, each session had at least one student from each academic year). The main finding of this study was that, from the point of view of the assimilation of skills in the recognition and treatment of cardiac arrest, and regardless of the educational cycle to which the participants belong, an approach based on inter-level groups is less effective compared to training carried out in traditional groups made up exclusively of students from the same academic year. This is mainly because the skills related to assessing the victim show, in this study, less successful results in the IG compared to the CG. On the other hand, the skills considered "simpler and more basic" (calling 112, placing hands on the chest, performing valid CPR) did not show inferior results compared to the CG. In the case of these simpler skills, no detriment associated with the implementation of this training approach was reflected.

These results are consistent with previous research suggesting that the learning of complex skills (in this case, those related to victim assessment) may be affected by the dynamics inherent in mixed-level groups, especially if the content is technically complex[5].

However, school-based training with mixed-ability groups has shown significant benefits in specific areas of learning, especially in the development of social and interpersonal skills[2-4]. These educational environments promote positive interaction among peers and a greater focus on individual characteristics by teachers and students[2-4]. It also facilitates the development of skills such as language acquisition, problem solving, and greater involvement in the learning process, as younger students tend to observe and follow the example of their older peers, who, in turn, take on an active role in offering guidance and individualized support[3].

In this context, although technical skills related to victim assessment were lower in the GI, the experience likely contributed to the development of soft skills, such as communication and teamwork. This can be particularly useful in scenarios where collaboration and teamwork are essential, such as real-life emergency situations[20].

On the other hand, it is important to note that training with mixed-age groups requires greater planning, preparation, and effort on the part of the teacher. This approach demands a more elaborate pedagogical design to cover the differences in skills and developmental levels among students. It can also be challenging for teachers to adequately address the individual needs of all students due to limitations in time and available resources[21-22]. As other studies indicate, the effectiveness of mixed-level groups depends largely on the planning and supervision of activities by teachers[4]. Thus, in contexts where the skills to be taught are complex, the lack of adequate adaptation of content and methodology can lead to an uneven learning experience[5].

In our case, one of the main limitations observed in inter-level training was the complexity of managing diversity in age and cognitive development levels in the training sessions. Difficulties were noted during the sessions in terms of the pace of the sessions and the maturity of the discourse used during the session. This may have had a negative impact on the ability of participants of different ages to acquire skills. Therefore, overcoming this limitation is presented as a challenge for the future.

Furthermore, it is important to note the superiority of the results regarding the victim assessment variables in the older students in the CG compared to the GI, even though, at their age, it should be relatively easy for them to assimilate and acquire these skills. This finding could indicate that the older students spent a significant amount of time helping the younger ones, which may have limited their own learning of complex skills. These results are very noteworthy, as it has been described that these types of skills, despite being more advanced, are perfectly achievable for the later stages of primary education. Numerous studies have pointed out that primary school students can learn these types of skills[18-19,23-27].

Regarding the skills considered simpler, such as calling 112 or performing basic CPR maneuvers, the collaborative approach seems to have brought benefits in the interlevel groups, showing results comparable to those of the CG regardless of age. These results may suggest that the use of this approach could be appropriate for teaching fundamental skills or reinforcing basic concepts in a social learning environment.

It is important to note that this study has several limitations that should be considered. First, the duration of the training was short and the evaluation was conducted immediately after the training, which prevents the assessment of knowledge retention in the medium and long term. The absence of a pretest makes it difficult to interpret the results obtained, and conducting a pilot test before the study could have reduced some of the limitations encountered. The disparity in prior first aid training between the experimental group and the control group should also be considered, even though, in this study, the group with higher levels of prior training (experimental group) obtained lower results overall than the control group, which had less prior first aid training.

CONCLUSION

The results of this study indicate that, from the point of view of the assimilation of skills in the recognition and treatment of cardiac arrest, the interlevel group approach was less effective than a traditional approach.

Although the strategy with mixed-level groups may

have had positive connotations related to soft skills, showing results comparable to the control group in simpler activities, such as calling 112, positioning the hands properly on the chest, and performing basic CPR maneuvers, it has not proven effective for the acquisition of more complex technical skills in recognizing cardiac arrest. This limitation could be associated with the heterogeneous dynamics of the groups, where differences in age and developmental level among the students could hinder the learning of skills that require a deeper understanding.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

FUNDING

Research funded by Instituto de Salud Carlos III (ISCIII)—PI23/00687—co-funded by the European Union (EU).

REFERENCES

1. Vygotsky LS. Mind in Society: Development of Higher Psychological Processes. Cole M, Jolm-Steiner V, Scribner S, Souberman E, editors. Cambridge (MA): Harvard University Press; 1978. https://doi.org/10.2307/j.ctvjf9vz4
2. Katz L, Evangelou D, Hartman J. The case for mixed-age grouping in early education. Washington (DC): National Association for the Education of Young Children; 1990.
3. Chapman ML. Designing Literacy Learning Experiences in a Multiage Classroom. Language Arts [Internet]. 1995 [cited 2024 Dec 27];72(6):416-428. Available from: https://www.jstor.org/stable/41482219
4. Aina OE. Maximizing Learning in Early Childhood Multiage Classrooms: Child, Teacher, and Parent Perceptions. Early Child Educ J. 2001;28:219-224. https://doi.org/10.1023/A:1009590724987
5. Edwards S, Blaise M, Hammer M. Beyond Developmentalism? Early Childhood Teachers' Understandings of Multiage Grouping in Early Childhood Education and Care. Australasian Journal of Early Childhood. 2009;34(4):55-63. https://doi.org/10.1177/183693910903400408
6. Schroeder DC, Semeraro F, Greif R, Bray J, Morley P, Parr M, et al. KIDS SAVE LIVES: Basic Life Support Education for Schoolchildren: A Narrative Review and Scientific Statement From the International Liaison Committee on Resuscitation. Circulation. 2023;147 (24):1854-1868. https://doi.org/10.1161/cir.0000000000001128
7. Greif R, Lockey A, Breckwoldt J, Carmona F, Conaghan P, Kuzovlev A, et al. European Resuscitation Council Guidelines 2021: Education for resuscitation. Resuscitation. 2021;161:388-407. https://doi.org/10.1016/j.resuscitation.2021.02.016
8. Semeraro F, Thilakasiri K, Schnaubelt S, Böttiger BW. Progress and challenges in implementing "Kids Save Lives" across Europe in 2025. Resuscitation. 2025;208:110541. https://doi.org/10.1016/j.resuscitation.2025.110541
9. Wetsch WA, Link N, Rahe-Meyer N, Dumcke R, Stock JM, Böttiger BW, et al. Comparison of blended e-learning and face-to-face-only education for resuscitation training in German schools – A cluster randomized-controlled prospective study. Resusc Plus. 2024;20:100767. https://doi.org/10.1016/j.resplu.2024.100767
10. Sadjadi M, Brülle R, Onbasilar U, Booke H, Strauß C, Von Groote T, et al. Implementation of school-based CPR training – A systematic review and mixed-methods meta-analysis. Resusc Plus. 2025;23:100955. https://doi.org/10.1016/j.resplu.2025.100955
11. Andreotti C, Kolbe M, Capon-Sieber V, Spahn DR, Breckwoldt J. Kids Save Lives – The kids' and teachers' view: How school children and schoolteachers would alter a BLS course designed by specialists. Resusc Plus. 2024;19:100731. https://doi.org/10.1016/j.resplu.2024.100731
12. Peixoto-Pino L, Isasi SM, Agra MO, Van Duijn T, Rico-Díaz J, Núñez AR, et al. Assessing the quality of chest compressions with a DIY low-cost manikin (LoCoMan) versus a standard manikin: a quasi-experimental study in primary education. Eur J Pediatr. 2024;183(8):3337-3346. https://doi.org/10.1007/s00431-024-05601-8
13. Castro-Alonso L, Vázquez-Álvarez S, Martínez-Isasi S, Fernández-Méndez M, Rey-Fernández L, García-Martínez M, et al. ICalled-DIY Device for Hands-On and Low-Cost Adapted Emergency Call Learning: A Simulation Study. Children (Basel). 2025;12(3):282. https://doi.org/10.3390/children12030282
14. Barcala-Furelos R, Peixoto-Pino L, Zanfaño-Ongil J, Martínez-Isasi S. Desafíos en la enseñanza escolar de los primeros auxilios: análisis de la legislación educativa (LOMLOE) y orientación curricular. Rev Esp Salud Publica [Internet]. 2024 [cited 2024 Dec 27];98:e202402013. Available from: https://ojs.sanidad.gob.es/index.php/resp/article/view/259
15. Aranda-García S, Otero-Agra M, Fernández-Méndez F, Herrera-Pedroviejo E, Darné M, Barcala-Furelos R, et al. Augmented reality training in basic life support with the help of smart glasses. A pilot study. Resusc Plus. 2023;14:100391. https://doi.org/10.1016/j.resplu.2023.100391
16. Aranda-García S, Barrio-Cortes J, Fernández-Méndez F, Otero-Agra M, Darné M, Herrera-Pedroviejo E, et al. Dispatcher-assisted BLS for lay bystanders: A pilot study comparing video streaming via smart glasses and telephone instructions. Am J Emerg Med. 2023;71:163-168. https://doi.org/10.1016/j.ajem.2023.06.035
17. Aranda-García S, Otero-Agra M, Berlanga-Macías C, Rodríguez-Núñez A, Barcala-Furelos R, Domingo J, et al. Nueva herramienta de comunicación para el entrenamiento de soporte vital básico: smart glasses. Un diseño cuasiexperimental. Med Intensiva. 2024; 48(2):77-84. https://doi.org/10.1016/j.medin.2023.09.002
18. Otero-Agra M, Rey-Fernández L, Pacheco-Rodríguez D, Fernández-Méndez F, Barcala-Furelos

R, Greif R. Paediatric manikins and school nurses as Basic Life Support coordinators: A useful strategy for schools? Health Educ J. 2023;82(1):3-16. https://doi.org/10.1177/00178969221133238

19. Varela-Casal C, Abelairas-Gómez C, Otero-Agra M, Barcala-Furelos R, Rodríguez-Núñez A, Greif R. Teaching Basic Life Support to 5- to 8-Year-Old Children: A Cluster Randomized Trial. Pediatrics. 2021;148(4):e2021051408. https://doi.org/10.1542/peds.2021-051408
20. Greif R, Bhanji F, Bigham BL, Bray J, Breckwoldt J, Cheng A, et al. Education, Implementation, and Teams: 2020 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation. 2020;156:A188-A239. https://doi.org/10.1016/j.resuscitation.2020.09.014
21. Veenman S. Cognitive and Noncognitive Effects of Multigrade and Multi-Age Classes: A Best-Evidence Synthesis. Rev Educ Res. 1995;65(4):319-381. https://doi.org/10.3102/00346543065004319
22. Pascual-Arias C, García-Sanz E. Aprendizaje colaborativo y Autorregulación: resultados de su desarrollo en aulas internivelares de Educación Infantil y Educación Primaria. Tordesilhas Rev. investig. multidisciplinar. 2022;(22-23):29-45. https://doi.org/10.24197/trim.22-23.2022.29-45
23. De Buck E, Van Remoortel H, Dieltjens T, Verstraeten H, Clarysse M, Moens O, et al. Evidence-based educational pathway for the integration of first aid training in school curricula. Resuscitation. 2015; 94:8-22. https://doi.org/10.1016/j.resuscitation.2015.06.008
24. Banfai B, Pek E, Pandur A, Csonka H, Betlehem J. 'The year of first aid': effectiveness of a 3-day first aid programme for 7-14-year-old primary school children. Emerg Med J. 2017;34(8):526-532. https://doi.org/10.1136/emermed-2016-206284
25. Bánfai B, Pandur A, Schiszler B, Pék E, Radnai B, Bánfai-Csonka H, et al. Little lifesavers: Can we start first aid education in kindergarten? – A longitudinal cohort study. Health Educ J. 2018;77(8):1007-1017. https://doi.org/10.1177/0017896918786017
26. Otero-Agra M, Varela-Casal C, Castillo-Pereiro N, Casillas-Cabana M, San Román-Mata S, Barcala-Furelos R, et al. ¿Podemos enseñar la «cadena de supervivencia» jugando? Validación de la herramienta «Rescube». An Pediatr (Barc). 2021;94(4):213-222. https://doi.org/10.1016/j.anpedi.2020.07.009
27. Bollig G, Myklebust A, Østringen K. Effects of first aid training in the kindergarten: a pilot study. Scand J Trauma Resusc Emerg Med. 2011;19:13. https://doi.org/10.1186/1757-7241-19-13

AUTHORSHIP CONTRIBUTIONS

Project design: Álvarez SV, Martínez MG, Folgar MS, Méndez MF, Agra MO.
Data collection: Álvarez SV, Alonso LC, Martínez MG, Folgar MS, Méndez MF.
Data analysis and interpretation: Agra MO.
Writing and/or critical review of the intellectual content: Álvarez SV, Alonso LC, Martínez MG, Folgar MS, Méndez MF.
Final approval of the version to be published: Agra MO.
Responsibility for the text in ensuring the accuracy and completeness of any part of the paper: Álvarez SV, Alonso LC.