SIAIP

Italian Journal of Pediatric Allergy and Immunology number 01 | 2025 | 11-17

Review

The characteristics and effectiveness of school-based educational interventions in the management of children with food allergies: a systematic review

Marianna Riccio[1], Aurora Decembrini[2], Marzia Duse[2], Anna Maria Zicari[2]

[1] Department of Public Health and Infectious Diseases, Sapienza University of Rome, Rome, Italy; [2] Department of Pediatrics, Sapienza University of Rome, Rome, Italy

SUMMARY

Food allergy (FA) is a potentially life-threatening condition caused by exposure to a specific food allergen. Healthcare professionals play a critical role in providing educational programs for children affected by FA and their caregivers. Equally important is training for all school staff so that they have the knowledge and skills to manage an allergic emergency and minimize the risk of complications. This review was performed to summarize the evidence of school-based educational intervention for management of FA. Relevant studies were identified in the MEDLINE and CINAHL databases, up to June 2024. Thirteen articles resulted eligible for inclusion and data analysis as they investigated the effectiveness of school-based intervention with pre-post evaluation for several outcomes, such as knowledge, attitudes, experiences, and self-efficacy. Although the interventions were very heterogeneous (mostly mixed or based on digital methods), all studies showed that the different educational programs resulted in a significant improvement in the various parameters taken into consideration. The current evidence therefore supports the effectiveness of expert educational interventions in school and the importance of strong collaboration between school and health systems. Studies that carefully evaluate the efficacy of each intervention and the quality of methodology are needed to identify the best educational strategy.

KEY WORDS: Food allergy, Health Education, School, Children

Received: December 2, 2024
Published: March 27, 2025

CORRESPONDENCE

Marianna Riccio
marianna.riccio@uniroma1.it

How to cite this article: Riccio M, Decembrini A,, Duse M, et al. The characteristics and effectiveness of school-based educational interventions in the management of children with food allergies: a systematic review. Italian Journal of Pediatric Allergy and Immunology 2025;39(01):11-17. https://doi.org/10.53151/2531-3916/2025-868

INTRODUCTION

Food allergy (FA) is a potentially life-threatening condition caused by an immediate IgE-correlated reaction to a specific food allergen [1]. Any food can be a potential trigger of an allergic reaction, but some cause the majority of reactions, such as milk, eggs, peanuts, soy, wheat, nuts, shellfish, fish and sesame [2]. The allergy to foods is frequent in children and allergies to some specific foods may persist throughout life, although the majority are outgrown by adulthood. In recent years, the prevalence of food allergies has increased worldwide and at any age, with a marked increase in industrialized countries [3,4]. Food allergy affects about 8% of children worldwide, although the prevalence varies depending on the food [5,6]. The global prevalence of anaphylaxis appears to vary from 0.3 to 3.1% [6-8]. Children with severe allergies, in particular those at risk of anaphylaxis, can experience isolation and increased anxiety, especially in social and school settings where accidental exposure to allergens is

possible [8,9]. The emotional burden on families is further exacerbated by the need for constant vigilance in order to avoid allergens and by the challenges associated with preparing meals, especially away from home [10]. Teenagers may face even greater psychological challenges as their growing independence and increased social interactions expose them to more risks, further affecting their quality of life [8,11].

Comprehensive allergy management typically involves three components: allergen avoidance, pharmacological treatments and/or immunotherapy [1]. In addition to preventing the onset of clinical symptoms, certain interventions are aimed at reducing the stress of managing the condition. In this regard, healthcare professionals play a critical role in providing educational programs for patients and their families or caregivers. These programs should include training in recognizing the symptoms of allergic reactions, safe food handling, food label interpretation, and emergency procedures [12]. Children spend a significant proportion of their time at school, and thus effective allergy management in this setting is particularly important. Similar training for all school personnel, including teachers, is therefore equally important, so that they can increase the basic knowledge and skills to manage an anaphylactic emergency and minimize the risk of delaying intervention and the subsequent risk of life-threatening complication [13]. The safety and quality of life of children with food allergies depends on parents, educators, and healthcare professionals working together [14].

In this systematic review we aimed to investigate the evidence on educational interventions implemented in schools to improve skills for the management of FA, exploring the various modalities, characteristics, and effectivenes.

MATERIALS AND METHODS

This study was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. [16] Two investigators searched the bibliographic databases MEDLINE and CINAHL using the following main key words: "education" AND "food allergy" AND "school". The research string was adapted for each database, incorporating relevant synonyms. The search covered reports published from the inception of the databases to June 1, 2024. Only studies in English and Italian were included, while no date restriction was applied. Duplicate articles were removed, and the title and abstract of all retrieved records were screened. Studies not meeting the inclusion criteria were excluded. Full texts of relevant articles were examined by two researchers. Disagreements were resolved through discussion.

We included all educational interventions aimed to improve knowledge, attitudes, practices, and management of food allergy reactions. Specifically, we included studies that: I) were reported in English; II) were realized in school setting, at any educational level; III) evaluated the effectiveness of the training intervention; and IV) with pre-post evaluation or controlled study design. Studies that: I) did not include an educational intervention; II) without school setting; III) did not evaluate the impact of the training; IV) with focus only on epinephrine autoinjector were excluded. We also excluded studies that were not published in peer-reviewed journals, were not available in English, or that lacked sufficient data to describe educational strategies.

For each record included, two reviewers independently extracted the following information using a standardized data abstraction form: author/year/country, study design, outcome, sample, type of intervention and results. Discrepancies were resolved by discussion.

RESULTS

Thirteen [17-29] articles were eligible for inclusion and data analysis. The literature search identified 3260 potentially relevant articles. After removing duplicates, titles and abstracts were read and reviewed, and ineligible articles were excluded. After reading and reviewing the full text of the remaining articles, 294 studies were excluded. Figure 1 shows the flowchart for searching and selecting literature.

We included two randomized controlled trials with pre-posttest [17,22], which we defined as 'quasi-experimental studies with a control group' because the randomization process was not described in detail. The remaining included studies were before-after studies without a control group.

The sample sizes of the included studies ranged from 18 to 1745 participants. Table I shows the characteristics of the studies included.

Educational strategies

The method of delivery of the educational interventions was heterogeneous and tailored to the setting of the research group and schools. In four studies, with non-interactive computer module [20], video training [28], virtual classroom [29], and digital education module [25]. Some of the studies also included practical workshops, mainly demonstrating the management of severe allergic reactions, e.g. with scenario presentations, practical use of adrenaline autoinjectors [19,21,23,26,27]. The majority of the studies took place mainly in primary and secondary schools, including nursery schools [24,25,28]. This is consistent with the age when FA is most prevalent. Some studies did not specify the level of schools included [20-23].

The healthcare workers involved in the educational intervention were mainly allergy specialists or physicians, and in some studies nurses [23,26,27]. Two trials also included other professionals such as lawyers [24], psychologists [24] and experts in communication [18]. Although in some studies it was not clear which health professional provided the training, it could be inferred that it was an expert or the whole research group [19,21,27,28].

The content of the training was usually developed by experts and/or based on guidelines. It was comprehensive in all the studies and included recognition of allergic reactions, the identification of allergens, methods of allergy prevention, and emergency treatment. The target group consisted mainly of teachers in all studies except one that was targeted at students [29]. Moreover, some studies also included other school staff, such as canteen staff, support team [20,23-25], and school nurses [19].

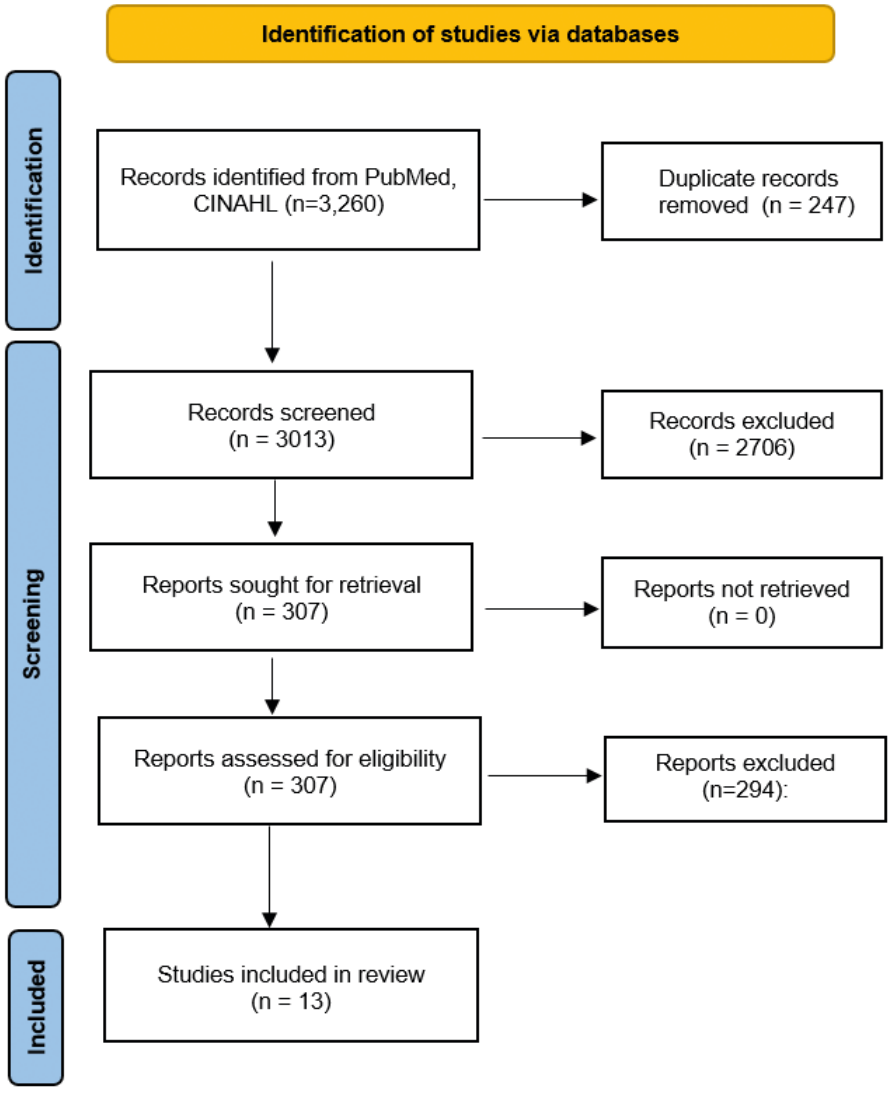

FIGURE 1. Flow diagram of the review process.

Outcome

Three studies assessed self-efficacy [21,24,27]; one study assessed both self-efficacy and practical experience acquired [19]. Three studies assessed only the level of knowledge acquired [17,18,23]; five other publications assessed not only knowledge but also other outcomes such as possible changes in attitudes, beliefs, feelings, and confidence [20,22,25,28,29]. One study looked at level of practical preparedness [26]. Significant improvements in these outcomes were reported in all research. All outcomes were assessed using questionnaires, most of which were not validated. Only four studies [22,24,27,28] used validated questionnaires, such as SPSMFAA-T (School Personnel's Self-Efficacy in Managing Food Allergy and Anaphylaxis Scale) and S.PER.SE-FAAQ (School Personnel Self-Efficacy-Food Allergy and Anaphylaxis Questionnaire).

DISCUSSION

This systematic review examined educational interventions aimed at improving management of FA in school settings. The results of the studies included highlight several key components of effective food allergy management in schools, with a focus on staff training, emergency preparedness, and consistent application of policies across institutions. The review highlights the critical role of collaboration between schools, students, families, and healthcare

TABLE I. Data Extraction.

Author, year, country	Study design	Outcome	Sample	Intervention	Results
Shah et al, 2013, USA Texas [17]	Controlled group-study	Knowledge (questionnaire*)	Teachers (n = 26-64 per school – 4 schools) [elementary schools]	Teaching session with slide presentation by physician	Significant results in intervention group
Ravarotto et al, 2014, Italy [18]	Before-After study	Knowledge (questionnaire)	Teachers (n = 158) [primary schools]	Workshops with slides presentation and discussion, by experts in allergy and communication	Significant improvement
Sasaki et al, 2014, Japan [19]	Before-After study	Self-efficacy, Experience	Teachers, school nurses, childcare workers (n = 276) [elementary or junior high school, nurseries]	Workshop with theoretical/ practical session and discussion	Significant improvement
White et al, 2015, USA, Massachusetts [20]	Before-After study	Knowledge, Confidence, Attitude (questionnaire)	Teachers, other school staff (administrators, secretaries, cafeteria staff) (n = 143)	Non-interactive computer module, created by allergists	Significant improvement
Gonzalez-Mancebo et al. 2018, Spain [21]	Before-After study	Self-efficacy (questionnaire)	Teachers, cooks, dining-room monitors, summer-camp leaders. (n = 191)	Educational Conference by allergists	Significant improvement
Canon et al. 2019, Spain [22]	Controlled group-study	Knowledge, Attitudes, Beliefs (questionnaire)*	Teachers (n = 375)	Educational Session by one HCW	Significant results in intervention group
Rodriguez Ferran et al, 2019 Spain [23]	Before-After study	Knowledge (questionnaire)	Teachers, school canteen staff (n = 53)	Theoretical presentation by allergist and practical sessions by nurse	Significant improvement
Polloni et. al, 2020, Italy [24]	Before-After study	Self-efficacy (questionnaire*)	Teachers and school caretakers (n = 592) [nursery, primary, middle, high schools]	Intensive education session with presentation and discussion, by allergists, psychologist, lawyer	Significant improvement
Poza-Guedes et al, 2021, Spain [25]	Before-After study	Knowledge, Attitudes, Feelings (questionnaire) -Quality /satisfaction	Teachers, supporting teams and state officials (n = 1403 + 225 + 117) [nursery, elementary, secondary, vocational education, language schools, arts, others]	Electronic learning intervention (5 units, digital instructional materials, videos, virtual forum) of allergists	Significant improvement
Raptis et al, 2021, UK [26]	Before-After study	Preparedness	Head teachers (n = 18) [secondary schools]	Theoretical and a practical workshop by allergy specialist	Significant improvement
Yıldırım et al, 2023, Turkey [27]	Before-After study	Self-efficacy (questionnaire*)	Teachers (n = 90) [primary, middle schools]	Diversified group training, with theoretical/practical parts and discussion	Significant improvement
Lejtman et al, 2024, France [28]	Before-After study	Knowledge, Confidence (questionnaire*)	Teachers (n = 218) [primary, nursery schools]	Video-training program	Significant improvement
Licata et al, 2024, USA [29]	Before-After study	Knowledge, Confidence levels (Questionnaire)	Students (n = 63) [8th-grade schools]	Virtual synchronous classrooms	Significant improvement

* Validated

providers in developing comprehensive food allergy management strategies. This is particularly relevant in Italy, where school staff do not include nurses and where the educational and management policies are heterogeneous across regions.

Several cross-sectional studies have been carried out with school staff as the target group. The overall aim is to explore their knowledge and perceptions of the chronic diseases of children that have the greatest impact on their quality of life, such as epilepsy and allergies [30-34]. Concerning FA, the results of all studies are consistent and agree in their conclusions. They highlighted that school staff on average have large knowledge gaps about allergic diseases in general and the dangers they pose. School workers cannot identify many important warning signs of anaphylaxis and consequently are unable to manage anaphylactic emergencies or provide first aid [35-40]. It follows that the conclusions are rigorous: it is necessary to intensify efforts to spread training to all schools and adopt standardized protocols for both risk prevention and emergency response. The results of this review therefore have a strong practical and political value: the evidence collected leaves no doubt and reinforces the belief that educational campaigns in schools aimed at training school staff are urgent, important, and sometimes life-saving interventions.

Pediatric allergology, strengthened by this evidence, should urge policy makers to consider and finance training programs in this field, but should at the same time monitor the methodological correctness and the outcomes of current training courses with specific evaluation tools.

The most significant improvements that emerged from our research were levels of knowledge and self-efficacy. These objectives, to be achieved, must follow a precise and impeccable methodology that is built on knowledge of the specific beliefs of teachers. Their attitudes and beliefs are in fact able to influence their decisions, aspirations, efforts, and perseverance, and therefore the competence and confidence of their work. In social cognitive theory, perceived efficacy is fundamental for human action and therefore in the intervention scheme it must be addressed and discussed in depth with school staff in order to support their self-confidence and optimize the effectiveness of the intervention (self-efficacy), especially when, as guidelines underline, there are no healthcare workers who act as a reference [41-43].

In practice, it was not possible to identify the best educational strategy and those adopted were extremely heterogeneous. Some applied mixed strategies [18,19,23,24,26,27], and others digital interventions [20,25,28,29] or standard classroom [17,21,22]. The current trend is to use informative workshops completed by laboratory or simulation activities that give operators a lot of security, because practical activities allow to apply theoretical knowledge in real life contexts, which improves understanding and acquisition of skills [44].

From this literature review the opportunity to extend training to canteen staff and other staff involved in food preparation and service also emerged, providing them with simple and practical information on food allergies. Operators must be well trained on safe food handling practices, adequate cleaning protocols, and greater supervision during meals, (especially in primary schools, with younger children) [33,45,46].

In spite of its strengths, our review also has some limitations. Firstly, it is important to highlight some methodological aspects of the included studies: mainly self-report measures were used and the authors did not include repeated measures over time to verify the retention of what was learned during training. Secondly, the lack of rigorous randomized controlled trials limits the strength and generalizability of the conclusions. Moreover, although all studies agree on the usefulness of the intervention, the outcomes used were too heterogeneous to allow us to identify an optimal parameter for evaluating its effectiveness.

Finally, we included studies generally related to FA, while excluding those solely focused on emergency reactions, despite their relevance for schools. Only two search engines, though fully accredited, were used to search for sources, and we did not evaluate the quality of the studies. However, to our knowledge, this is the first review summarizing the educational strategies of such interventions, offering valuable insights for future guidelines in school setting..

CONCLUSIONS

The implementation of clear and personalized emergency action plans and the organization of regular meetings between teachers, students, parents, and school staff are essential to improve communication and ensure that all parties are fully aware of their role in preventing allergic reactions and in responding appropriately in an emergency. It is essential that allergy physicians and nurses make a collective effort to create standardized school programs that can provide the necessary skills to those involved in the education and training of children with FA.

Acknowledgements

None.

Ethical consideration

This systematic review is based solely on previously published studies and did not involve direct contact with human participants or animals. Therefore, no ethical approval was required.

Funding

We would like to acknowledge that this research did not receive any specific funding.

Conflict of interest

The authors declare no conflict of interest.

Authors contributions

M.R. conceptualized the study, designed the methodology, analyzed data, drafted the manuscript. A.D. was involved in data collection and extraction and drafted the manuscript. M.D.

conceptualized the study, drafted, reviewed and revised the manuscript and, approved the final version. A.M.Z. conceptualized the study, drafted, reviewed and revised the manuscript and, approved the final version.

References

1 Calvani M, Anania C, Caffarelli C, et al. Food allergy: an updated review on pathogenesis, diagnosis, prevention and management. Acta Biomed 2020;91(11-S):e2020012. https://doi.org/10.23750/abm.v91i11-S.10316.

2 Food Allergy Research & Education (FARE). Common Allergens - Peanut, Egg, and Sesame Allergies.

3 Nocerino R, Carucci L, Coppola S, et al. Epidemiology of Paediatric Italian Food Allergy: Results of the EPIFA study. J Allergy Clin Immunol Glob 2024;3:100246. https://doi.org/10.1016/j.jacig.2024.100246.

4 Spolidoro GCI, Amera YT, Ali MM, et al. Frequency of food allergy in Europe: An updated systematic review and meta-analysis. Allergy 2023;78:351-368. https://doi.org/10.1111/all.15560.

5 Elghoudi A, Narchi H. Food allergy in children-the current status and the way forward. World J Clin Pediatr 2022;11:253-269. https://doi.org/10.5409/wjcp.v11.i3.253.

6 Spolidoro GCI, Ali MM, Amera YT, et al. Prevalence estimates of eight big food allergies in Europe: Updated systematic review and meta-analysis. Allergy 2023;78:2361-2417. https://doi.org/10.1111/all.15801.

7 Motosue MS, Li JT, Campbell RL. Anaphylaxis: Epidemiology and Differential Diagnosis. Immunol Allergy Clin North Am 2022;42:13-25. https://doi.org/10.1016/j.iac.2021.09.010.

8 Drakouli A-E, Kontele I, Poulimeneas D, et al. Food Allergies and Quality of Life among School-Aged Children and Adolescents: A Systematic Review. Children 2023;10:433. https://doi.org/10.3390/children10030433.

9 Thörnqvist V, Middelveld R, Wai HM, et al. Health-related quality of life worsens by school age amongst children with food allergy. Clin Transl Allergy 2019;9:10. https://doi.org/10.1186/s13601-019-0244-0.

10 Stjerna ML, Brady G. Inter-embodied parental vigilance; the case of child food allergy. Front Sociol 2023;8:1213769. https://doi.org/10.3389/fsoc.2023.1213769.

11 Kachru R. Psychosocial issues and quality of life associated with food allergy. J Food Allergy 2020;2:95-98. https://doi.org/10.2500/jfa.2020.2.200025.

12 Muraro A, Werfel T, Hoffmann-Sommergruber K, et al. EAACI food allergy and anaphylaxis guidelines: diagnosis and management of food allergy. Allergy 2014;69:1008-1025. https://doi.org/10.1111/all.12429.

13 Santos MJL, Merrill KA, Gerdts JD, et al. Food Allergy Education and Management in Schools: A Scoping Review on Current Practices and Gaps. Nutrients 2022;14:732. https://doi.org/10.3390/nu14040732.

14 Commissione Federasma Onlus - SIAIP per la tutela del bambino allergico. Raccomandazioni per la gestione del bambino allergico a scuola - 2015.

15 Muraro A, Agache I, Clark A, et al. EAACI food allergy and anaphylaxis guidelines: managing patients with food allergy in the community [published correction appears in Allergy. 2014 Oct;69(10):1428]. Allergy 2014;69:1046-1057. https://doi.org/10.1111/all.12441.

16 Liberati A, Altman DG, Tetzlaff J, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. J Clin Epidemiol 2009;62:e1-34. https://doi.org/10.1016/j.jclinepi.2009.06.006.

17 Shah SS, Parker CL, Davis CM. Improvement of teacher food allergy knowledge in socioeconomically diverse schools after educational intervention. Clin Pediatr (Phila) 2013;52:812-820. https://doi.org/10.1177/0009922813497425.

18 Ravarotto L, Mascarello G, Pinto A, et al. Food allergies in school: design and evaluation of a teacher-oriented training action. Ital J Pediatr 2014;40:100. https://doi.org/10.1186/s13052-014-0100-8.

19 Sasaki K, Sugiura S, Matsui T, et al. A workshop with practical training for anaphylaxis management improves the self-efficacy of school personnel. Allergol Int 2015;64:156-160. https://doi.org/10.1016/j.alit.2014.10.005.

20 White L, Aubin J, Bradford C, et al. Effectiveness of a computer module to augment the training of school staff in the management of students with food allergies. Ann Allergy Asthma Immunol 2015;114:254-255.e3. https://doi.org/10.1016/j.anai.2014.11.020.

21 Gonzalez-Mancebo E, Gandolfo-Cano MM, Trujillo-Trujillo MJ, et al. Analysis of the effectiveness of training school personnel in the management of food allergy and anaphylaxis. Allergol Immunopathol (Madr) 2019;47:60-63. https://doi.org/10.1016/j.aller.2018.05.005.

22 Canon N, Gharfeh M, Guffey D, et al. Role of Food Allergy Education: Measuring Teacher Knowledge, Attitudes, and Beliefs. Allergy Rhinol (Providence) 2019;10:2152656719856324. https://doi.org/10.1177/2152656719856324.

23 Rodríguez Ferran L, Gómez Tornero N, Cortés Álvarez N, et al. Anaphylaxis at school. Are we prepared? Could we improve?. Allergol Immunopathol (Madr) 2020;48:384-389. https://doi.org/10.1016/j.aller.2019.10.006.

24 Polloni L, Baldi I, Lazzarotto F, et al. Multidisciplinary education improves school personnel's self-efficacy in managing food allergy and anaphylaxis. Pediatr Allergy Immunol 2020;31:380-387. https://doi.org/10.1111/pai.13212

25 Poza-Guedes P, González-Pérez R. Implementing information and communication technology education on food allergy and anaphylaxis in the school setting. Clin Transl Allergy 2021;11:e12039. https://doi.org/10.1002/clt2.12039.

26 Raptis G, Totterdell R, Gerasimidis K, et al. School allergy training promotes internal policy review and enhances staff's preparedness in managing pupils with food allergy. Clin Transl Allergy 2021;11:e12042. https://doi.org/10.1002/clt2.12042.

27 Yıldırım A, Haney MO. Effects of training on teachers' food allergy and anaphylaxis management self-efficacy levels. Allergol Immunopathol (Madr) 2023;51:158-163. https://doi.org/10.15586/aei.v51i4.849.

28 Lejtman P, Hetroit-Vasseur E, Morello R, et al. Evaluation of a video training program's impact on primary teachers' knowledge of allergies and skills in using an adrenaline autoinjector during the 2021-2022 school year. Arch Pediatr 2024;31:299-305. https://doi.org/10.1016/j.arcped.2024.03.003.

29 Licata J, Evatt M, Pasek T, et al. Empowering middle school students to save lives through increasing awareness of food allergies and anaphylaxis through virtual media: A quality improvement project. J Pediatr Nurs 2024;75:221-223. https://doi.org/10.1016/j.pedn.2023.12.006.

30 Mecarelli O, Capovilla G, Romeo A, et al. Knowledge and attitudes toward epilepsy among primary and secondary schoolteachers in Italy. Epilepsy Behav 2011;22:285-292. https://doi.org/10.1016/j.yebeh.2011.06.019.

31 Mecarelli O, Messina P, Capovilla G, et al. An educational campaign toward

epilepsy among Italian primary school teachers: 1. Survey on knowledge and attitudes. Epilepsy Behav 2014;32:84-91. https://doi.org/10.1016/j.yebeh.2014.01.009.

32 Iannone LF, Roberti R, Arena G, et al. Assessing knowledge and attitudes toward epilepsy among schoolteachers and students: Implications for inclusion and safety in the educational system. PLoS One 2021;16:e0249681. https://doi.org/10.1371/journal.pone.0249681.

33 Jones C, Atkinson P, Helen Cross J, et al. Knowledge of and attitudes towards epilepsy among teachers: A systematic review. Epilepsy Behav 2018;87:59-68. https://doi.org/10.1016/j.yebeh.2018.06.044.

34 Jaramillo Y, Reznik M. Do United States' teachers know and adhere to the national guidelines on asthma management in the classroom? A systematic review. Scientific World Journal 2015;2015:624828. https://doi.org/10.1155/2015/624828.

35 Le TM, Kummeling I, Dixon D, et al. Low preparedness for food allergy as perceived by school staff: a EuroPrevall survey across Europe. J Allergy Clin Immunol Pract 2014;2:480-482.e1. https://doi.org/10.1016/j.jaip.2014.02.019.

36 Juliá-Benito JC, Escarrer-Jaume M, Guerra-Pérez MT, et al. Knowledge of asthma and anaphylaxis among teachers in Spanish schools. Allergol Immunopathol (Madr) 2017;45:369-374. https://doi.org/10.1016/j.aller.2016.10.019.

37 Lim SM, Law BP. Food allergy knowledge, attitude and management among preschool personnel in Malaysia. J Hum Nutr Diet 2023;36:2073-2084. https://doi.org/10.1111/jhn.13213.

38 Madooh L, Allahou S, Alshallal H, et al. Food allergy knowledge, attitudes and beliefs of kindergarten teachers in Kuwait: a cross-sectional study. BMJ Paediatr Open 2023;7:e001795. https://doi.org/10.1136/bmjpo-2022-001795.

39 Raptis G, Perez-Botella M, Totterdell R, et al. A survey of school's preparedness for managing anaphylaxis in pupils with food allergy. Eur J Pediatr 2020;179:1537-1545. https://doi.org/10.1007/s00431-020-03645-0.

40 Polloni L, Baldi I, Lazzarotto F, et al. School personnel's self-efficacy in managing food allergy and anaphylaxis. Pediatr Allergy Immunol 2016;27:356-360. https://doi.org/10.1111/pai.12550.

41 Schunk DH, DiBenedetto MK. Motivation and social cognitive theory. Contemp Educ Psychol 2020;60:101832. https://doi.org/10.1016/j.cedpsych.2019.101832.

42 Muraro A, Agache I, Clark A, et al. EAACI food allergy and anaphylaxis guidelines: managing patients with food allergy in the community [published correction appears in Allergy. 2014 Oct;69(10):1428]. Allergy 2014;69:1046-1057. https://doi.org/10.1111/all.12441.

43 Nielsen WW, Lindsey K. When there is no school nurse--are teachers prepared for students with peanut allergies? School Nurse News 2010;27:12-15.

44 UNESCO Institute for Lifelong Learning. 5th global report on adult learning and education: citizenship education: empowering adults for change - 2022.

45 Food Allergy Research and Education (FARE). Food Allergy Management in Schools (FAMS): Expert Recommendations. 2024.

46 Western Australian School Canteen Association (WASCA). Food allergen management guide for school canteens - 2021.