REVIEW ARTICLE

REVISTA ENFERMAGEM ATUAL IN DERME

RESTRICTION OF FOOD INTAKE IN PRESCHOOLERS WITH FOOD HYPERSENSITIVITY: IMPACT ON GROWTH AND DEVELOPMENT

RESTRICCIÓN DE LA INGESTA DE ALIMENTOS EN PREESCOLARES CON HIPERSENSIBILIDAD ALIMENTARIA: IMPACTO EN EL CRECIMIENTO Y DESARROLLO

RESTRIÇÃO DA INGESTÃO DE ALIMENTOS EM PRÉ-ESCOLARES COM HIPERSENSIBILIDADE ALIMENTAR: IMPACTO NO CRESCIMENTO E DESENVOLVIMENTO

Karina Gonzaga da Costa[1]
Davide Carlos Joaquim[2]
Letícia Pereira Felipe[3]
Ana Carolina Matias Dinelly Pinto[4]
Ana Karine Rocha de Melo Leite[5]
Erika Helena Salles de Brito[6]
Ana Caroline Rocha de Melo Leite[7]

[1]Universidade da Integração Internacional da Lusofonia Afro-Brasileira – (UNILAB). Redenção, Ceará – Brasil. Orcid: https://orcid.org/0000-0002-4127-0424

[2]Universidade Federal do Ceará (UFC). Fortaleza, Ceará – Brasil. Orcid: https://orcid.org/0000-0003-0245-3110

[3]Universidade da Integração Internacional da Lusofonia Afro-Brasileira – (UNILAB). Redenção, Ceará – Brasil. Orcid: https://orcid.org/0000-0003-2551-9143

[4]Fundação para o Desenvolvimento Científico e Tecnológico em Saúde – (FIOTEC). Fortaleza, Ceará – Brasil. Orcid: https://orcid.org/0000-0002-2411-6708

[5]Centro Universitário Christus-Unichristus. Fortaleza, Ceará – Brasil. Orcid: https://orcid.org/0000-0003-4135-4545

[6]Universidade da Integração Internacional da Lusofonia Afro-Brasileira – (UNILAB). Redenção, Ceará – Brasil. Orcid: https://orcid.org/0000-0002-2807-4867

[7]Universidade da Integração Internacional da Lusofonia Afro-Brasileira – (UNILAB). Redenção, Ceará – Brasil. Orcid: https://orcid.org/0000-0002-9007-7970

Autor correspondente
Ana Caroline Rocha de Melo Leite.
Universidade da Integração Internacional da Lusofonia Afro-Brasileira – UNILAB, Campus das Auroras – Rua José Franco de Oliveira, s/n – CEP – 62.790-970 - Redenção, Ceará – Brasil.
E-mail: acarolmelo@unilab.edu.br.
Telefone +55 (85) 99168-0679.

ABSTRACT
Objective: To analyze scientific evidence on the impacts of food restriction on the growth and development of preschool children with a history of food allergy. **Method:** It is an integrative review of the literature that aimed to answer the following guiding question: "What are the impacts of food restriction on the growth and development of children in the preschool phase with a history of food allergy?". The database search was conducted on the Scopus, PubMed, LILACS and CINAHL platforms in August 2020. **Results:** Of the 9 articles included, 55.56% were in Scopus, all were in English and 33.33% were case-control. The publications found a higher number of children who manifested immunoglobulin E-mediated allergy, who used to avoid 1 or more foods, especially cow milk. Reductions in Z scores (≤ -2) of height/age, weight/age and weight/height were observed among children with food allergy and food restriction. **Conclusion:** The articles were limited to certain areas and a median level of evidence. However, they were not restricted to evaluating the growth of children allergic to foods on a restrictive diet, investigating, among other factors, the quality of life of caregivers and serum concentrations of vitamins.
Keywords: Food hypersensitivity. Restriction of Food Intake. Preschool. Development and Growth

RESUMEN
Objetivo: Analizar la evidencia científica sobre los impactos de la restricción alimentaria en el crecimiento y desarrollo de preescolares con antecedentes de alergia alimentaria. **Método:** Se trata de una revisión integrativa de la literatura que tuvo como objetivo responder a la siguiente pregunta orientadora "¿Cuáles son los impactos de la restricción alimentaria en el crecimiento y desarrollo de niños en edad preescolar con antecedentes de alergia alimentaria?". La búsqueda en bases de datos se realizó en las plataformas Scopus, PubMed, LILACS y CINAHL en agosto de 2020. **Resultados:** De los 9 artículos incluidos, el 55,56% estaban en Scopus, todos estaban en inglés y el 33,33% eran sensibles a mayúsculas y minúsculas. Las publicaciones encontraron un mayor número de niños que manifestaban alergia mediada por inmunoglobulina E, que solían evitar 1 o más alimentos, especialmente la leche de vaca. Se observaron reducciones en las puntuaciones Z (≤ -2) para altura/edad, peso/edad y peso/talla entre niños con alergia alimentaria y restricción alimentaria. **Conclusión:** Los artículos se limitaron a ciertas áreas y un nivel de evidencia medio. Sin embargo, no se limitaron a evaluar el crecimiento de niños alérgicos a alimentos con dieta restrictiva, investigando, entre otros factores, la calidad de vida de los cuidadores y las concentraciones séricas de vitaminas.
Palabras clave: Hipersensibilidad a los Alimentos; Restricción de la Ingesta de Alimentos; Preescolar; Desarrollo y Crecimiento.

RESUMO
Objetivo: Analisar evidências científicas sobre os impactos da restrição alimentar no crescimento e desenvolvimento de crianças em fase pré-escolar com história de alergia a alimentos. **Método**: Trata-se de uma revisão integrativa da literatura que teve como intuito responder a seguinte pergunta norteadora "Quais os impactos da restrição alimentar no crescimento e desenvolvimento de crianças na fase pré-escolar com história de alergia a alimentos?". A busca na base de dados foi conduzida nas plataformas Scopus, PubMed, LILACS e CINAHL, em agosto de 2020. **Resultados**: Dos 9 artigos incluídos, 55,56% constavam na Scopus, todos estavam em inglês e 33,33% eram caso-controle. As publicações constataram um maior quantitativo de crianças que manifestavam alergia imunoglobulina E mediada, que costumavam evitar 1 ou mais alimentos, especialmente o leite de vaca. Foram observadas reduções nos escores Z (≤ -2) de altura/idade, peso/idade e peso/altura entre as crianças com alergia alimentar e restrição de alimentos. **Conclusão**: Os artigos se limitaram a determinadas áreas e a um nível de evidência mediano. Contudo, eles não se restringiram a avaliar o crescimento de crianças alérgicas a alimentos em dieta restritiva, investigando, dentre outros fatores, a qualidade de vida de cuidadores e as concentrações séricas de vitaminas.
Palavras-chave: Hipersensibilidade Alimentar; Restrição da Ingestão de Alimentos; Pré-escolar; Desenvolvimento e Crescimento.

REVISTA ENFERMAGEM ATUAL IN DERME

INTRODUCTION

Food allergy consists of an adverse immune reaction triggered by previous contact with some food and/or its ingestion. Among the immunological mechanisms involved, we highlight the immediate hypersensitivity reaction (IgE-mediated allergy), whose process includes the production of antibody or immunoglobulin E (IgE) and its binding to receptors present in mast cells and basophils that, since the second contact with the allergen, triggers the release of vasoactive mediators and helper 2 T-cell cytokines (Th2 cell)[1].

Another proposed mechanism corresponds to non-IgE-mediated allergy, in which, although there are points to be clarified, there is no participation of IgE, but probable involvement of T cells, inducing a later clinical response. Another possible mechanism that has been proposed is mixed allergy, characterized by the action of IgE, T lymphocytes and pro-inflammatory cytokines[1].

Regarding epidemiological aspects, between 240 and 550 million individuals suffer from food allergy worldwide, with the highest incidence of severe cases occurring in children, affecting about 5 to 8% of children, while in adults this percentage is reduced to 1 to 2%[2]. In Brazil, in a survey conducted with 9,265 children, the prevalence of food allergy among preschoolers reported by parents was 17.6%[3].

Although the number of children with food allergy has increased in recent years due to changes in eating habits and lifestyle, there is an overestimation in the prevalence of this immune condition. In fact, in the survey by Gonçalves et al.[3], in which 17.6% of the preschoolers had a food allergy reported by their parents, after medical investigation, only 0.4% of them had the diagnosis for this type of allergy. In this light, the diagnosis adopted without medical confirmation exposes healthy children to unnecessary treatments, capable of impairing their growth and development[3].

Concerning the recommended treatment for food allergy, it consists in the elimination of the food that triggers the immune reaction[4]. However, this restriction may interfere with the intake of micro and macronutrients and, consequently, impact child growth and development[5]. Thus, it is necessary to establish nutritional counseling as a more effective measure for adequate nutritional intake and growth, as well as the establishment of laboratory biomarkers equivalent to those of healthy children[6].

Another aspect to consider is the individual's own immune condition, capable of promoting frequent gastrointestinal symptoms and local or systemic inflammation processes that interfere with nutrient absorption. As a result, there may be impairments in nutritional status, such as the reduction of iron absorption, frequently observed in these groups[7].

In this context, preschool children with food allergy become more vulnerable to impacts on their growth and development, since, in addition to the lack of interest in eating, appetite fluctuations, low acceptance of certain foods, and repetitions of preferred foods typical of this

REVISTA ENFERMAGEM ATUAL IN DERME

phase[7], they have impaired intestinal absorption that, associated with dietary restrictions, put at risk the intake of essential macro and micronutrients.

Given the need for nutritional monitoring and its influence on the growth and development of children with food allergy, nurses emerge as professionals capable of contributing substantially to this process, since they are responsible for conducting childcare consultations, recommended for early childhood. Moreover, the continuous bond will enable health promotion, child monitoring, and surveillance of diseases, facilitating the early identification of allergic diseases and their consequences[8].

In addition, through childcare consultations, it is possible to monitor children's growth and integral development, as well as the assessment of nutritional status and guidance on breastfeeding and feeding of these children, contributing to the prevention and minimization of possible unexpected harms to this phase[9].

Therefore, the present study aimed to identify and evaluate scientific evidence on the impacts of food restriction on the growth and development of preschool children with a history of food allergy.

METHOD

This is an integrative review of the literature, a method that contributes to the synthesis of knowledge from a collection of independent studies that address similar themes, aiming to facilitate its applicability in clinical practice. In addition, the integrative review is conducted through a rigorous systematic process, especially in the data analysis, a factor that favors the reduction of biases and research errors[10].

Regarding the stages of preparation of an integrative review, it can be conducted as follows: identification of the theme and elaboration of the guiding question; establishing inclusion and exclusion criteria for studies; definition of the questions to be extracted from the selected studies and their categorization; evaluation of the studies included in the integrative review; interpretation of the results and presentation of the review/synthesis of the subjects[11].

It is noteworthy that the delimitation stage of the guiding question requires a qualified elaboration, because it defines the information on which we will focus to solve the clinical situation, in addition to optimizing the search in the database. In general, to organize this question, the PICO strategy is used, an acronym meaning "Patient" (Person/Problem), "Intervention", "Comparison/Control" and "Outcome", fundamental elements in evidence-based research[12].

In the present study, the application of this strategy defined the "P" as children who manifest food allergy in the preschool phase, "I" represented the restriction of foods that trigger allergic reaction, "C" had no attribution to it, and "O" referred to the impacts of food restriction on the growth and development of these children. Thus, the study raised the following question: "What are the impacts of food restriction on the

REVISTA ENFERMAGEM ATUAL IN DERME

growth and development of preschool children with a history of food allergy?".

Based on the guiding question, the descriptors "Child/Preschool", "Food Hypersensitivity", "Food Fussiness" and "Growth and Development" were defined, extracted from the Health Sciences Descriptors (DeCS) platform, in order to facilitate access to articles. In addition, the combination of the descriptors allowed us to restrict the search for possible articles that were able to answer the predefined guiding question. To this end, we used the Boolean operators "AND", "OR", "AND NOT", resulting in the search: "Child/Preschool AND Food Hypersensitivity OR Food Fussiness AND Growth and Development".

Following the pre-established steps, the inclusion criteria of the search were primary articles, available electronically, indexed in the databases Scopus, National Library of Medicine (PubMed), Latin American and Caribbean Health Sciences Literature (LILACS) and Cumulative Index to Nursing & Allied Health Literature (CINAHL), published in the last 10 years (2010-2020), in Portuguese, English and Spanish. As exclusion criteria, we established studies that did not cover the theme, case studies, studies already included in one or more of the databases analyzed, editorials, reports, theses, dissertations, monographs, books, and reviews (narrative, systematic and integrative).

Regarding the search for the articles in the databases, it was carried out on August 12th 2020, when the titles and abstracts were read, followed by the selection of publications that answered the guiding question and met the inclusion and exclusion criteria. As they were selected, the studies were organized sequentially and subsequently read in full.

For the synthesis of the articles included in the review, we prepared a table consisting of the authors' names, journal, year of publication, country of publication, database, level of evidence, general objective, and results.

As for the level of evidence, it was categorized, based on Stillwell et al.[13], as follows: - level 1, which comprises systematic review and meta-analysis studies – randomized controlled trials or clinical guidelines inspired by systematic reviews of randomized controlled clinical trials; - level 2, which covers well-delineated randomized controlled clinical trials; - level 3, which constitutes well-delineated non-randomized clinical trials; - level 4, which includes cohort and case-control studies – well-delineated and non-randomized; - level 5, in which studies originate from systematic reviews of descriptive and qualitative studies; - level 6, which has evidence of a single descriptive or qualitative study; - level 7, which aggregates opinion of authorities and/or report of expert committees.

RESULTS

According to the methodological continuity of the study, 1,215 articles were identified, of which, after temporal delimitation, 762 remained. Out of these, after reading titles and abstracts, 744 were excluded for not answering the guiding question and 8 for duplicity. Of the 10 remaining

REVISTA ENFERMAGEM ATUAL IN DERME

publications read in full, 1 was excluded because it did not correspond to the target population. Thus, 9 articles remained in the review.

Regarding the database, 55.56% (n = 5) of the studies were included in Scopus, 33.33% (n = 3) in PubMed and 11.11% (n = 1) in CINALH. Concerning the language, all the studies included were in the English language. Regarding the year of publication, 22.22% (n = 2) of the articles were published in 2018, 22.22% (n = 2) in 2015 and 11.11% (n = 1) in 2010, a percentage also observed in 2013, 2014, 2017 and 2019.

Concerning the place of study, 22.22% (n = 2) of the publications were conducted in the United States of America, 22.22% (n = 2) in Finland, 11.11% (n = 1) in Thailand, the same percentage obtained among those developed in Korea, France and the United Kingdom, and 11.11% (n = 1) were carried out in seven countries, represented by the United Kingdom, United States of America, South Africa, Brazil, Netherlands, Spain, and Thailand. About the field of publication, 33.33% (n = 3) of the papers were published in journals in the area of nutrition and 22.22% (n = 2) in the field of pediatrics, quantitative equal to that found among the journals of allergology and immunology and pediatric allergology and immunology (Table 1).

Regarding the research design, 33.33% (n = 3) of the articles were case-control studies, 22.22% (n = 2) approached a prospective cohort study and 11.11% (n = 1) comprised cross-sectional observational studies, a percentage also found among the retrospective and prospective observational studies and retrospective cohort studies included here. Regarding the level of evidence, 66.67% (n = 6) of the publications were classified as level IV and 33.33% (n = 3) as level VI.

Table 1 – Characterization of the publications included in the review, according to authors, journal/year, country, type of study, level of evidence and database. Redenção, CE, 2020

N.	Authors	Journal/Year	Country	Type of Study	LE*	Database
1	MEYER, R. et al.	Journal of Human Nutrition and Dietetics/2018	UK, USA, SA, Brazil, Netherlands, Spain, and Thailand	Prospective cohort study	IV	Scopus
2	KAJORNRATTANA, T. et al.	Asian Pacific Journal of Allergy and Immunology/ 2018	Thailand	Cross-sectional observational study	VI	Scopus
3	TUOKKOLA, J. et al.	Acta Paediatrica/2017	Finland	Case-control study	IV	Scopus
4	KIM, S. H.; LEE, J. H.; LY, S.Y.	Asia Pac J Clin Nutr/2015	Korea	Retrospective cohort study	IV	Scopus

5	BERRY, M. J. et al.	Pediatric Allergy and Immunology/2015	Finland	Prospective cohort study	IV	Scopus
6	BOAVENTURA, R.M. et al.	Allergologia et Immunopathologia /2019	United States of America	Cross-sectional case-control study	IV	Pubmed
7	MEHTA, H. et al.	The Journal of pediatrics/2014	United States of America	Retrospective observational study	VI	Pubmed
8	FLAMMARION, S. et al.	Pediatric Allergy and Immunology/2010	France	Cross-sectional case-control study	IV	Pubmed
9	MEYER, R. et al.	Journal of Human Nutrition and Dietetics/2013	United Kingdom	Prospective observational multicenter study	VI	CINAHL

*LE – Level of Evidence; UK – United Kingdom; USA – United States of America; SA – South Africa.

Source: The authors

Regarding the objectives of the studies, most of them aimed to evaluate the growth and nutritional status of children with food allergy who were on a restrictive diet. In addition to these, other objectives mentioned were: - to evaluate the quality of life of caregivers of children with food allergy; - assess the severity of atopic dermatitis in children with food allergy; - evaluate serum concentrations of vitamin A and 25 (OH) D in children with cow milk allergy (Table 2).

Concerning the results obtained in the studies included, the number of children who manifested IgE-mediated allergy was highlighted, followed by non-IgE-mediated and mixed. In addition, children used to avoid 1 or more foods, especially cow milk.

Regarding the anthropometric study conducted in the collected articles, in most of them we observed reductions in Z scores (≤ -2) of height/age, weight/age and weight/height among children with food allergy and food restriction. Among the aggravating factors for alterations in infant growth, there were: restriction of more than one food; impossibility of consumption of cow milk; time of dietary restriction of more than 1 year; self-declaration as white; lack of follow-up with a nutritionist or pediatrician; and non-supplementation of vitamins and minerals.

On nutritional aspects, in general, the studies highlighted nutritional impairment among allergic children compared to healthy children, scoring a lower intake of proteins, calcium, saturated fats, sugar, vitamin D, folic acid, and n-3 and n-6 fatty acids. The articles also reported low serum concentrations of retinol, β-carotene, lycopene and 25 (OH) D. However, according to the publications, nutritional intake stood out with higher intake of iron and vitamin C.

REVISTA ENFERMAGEM ATUAL IN DERME

Table 2 – Characterization of the publications included in the review, according to the objectives and results. Redenção, CE, 2020

N.	Objective	Results
1	Make a worldwide assessment of the impact of food allergies on child growth	Of the 430 children included, 45% had IgE-mediated allergy, 30% non-IgE-mediated and 25% mixed. The most avoided allergen was cow milk. Regarding growth, 6% had low weight, 9% atrophy, 5% malnutrition and 8% overweight. Regarding the impacts on growth, the restriction of cow milk led to lower Z scores in all parameters and wheat exclusion reduced height/age Z scores. Children who were accompanied by a nutritionist had higher growth parameters in weight/age, height/age, and BMI. Children diagnosed early had a lower BMI average than those diagnosed late.
2	Assess the quality of life (QoL) of caregivers and the growth of children with food allergy reported by parents	200 children with allergy reported by their parents were included, of whom 69% were allergic to one food, 21% to two allergens. The most allergenic food was cow milk. The mean duration of avoidance was 10 months. Weight and height, according to age, showed no differences when compared to the general population. There was no statistical difference between children allergic or not to cow milk in relation to weight and height for age.
3	Compare the growth and nutrient intake patterns of children with elimination of milk and/or wheat and barley or rye to their corresponding controls	Of the 295 children with diet restriction and 265 controls, those with milk restriction grew less, tending to have this reduction after 1 year of restriction, and without recovery until the age of 5 years. On the other hand, 2.9%, 1.7%, 1.6% and 0.7% were 2 standard deviations above the height expected for their age at 1, 2, 3, 4 and 5 years, respectively, in the entire study population. The obesity rate at 5 years was 4.7% for children who restricted milk, and 5.7% for controls. The elimination of wheat and milk, barley or rye had an impact on growth similar to milk restriction alone. In relation to avoided foods, there was no association between the amount of these foods and growth. In the nutritional aspects, protein and calcium intake was lower in children in the milk elimination group than in the control group. However, children on a milk elimination diet consumed less saturated fats and sugar and more vitamin C and iron than children in the control group.
4	Identify factors related to the severity of atopic dermatitis and nutritional status in pediatric patients with atopic dermatitis and food allergy.	77 children were included. Before the nutritional intervention, 2 children had a <-2 Z score of weight/age and 5 of them had a Z < -2 weight/height score. Of the participants, 48.1% had experienced dietary restriction, but only 27.8% had nutritional follow-up. Children who were in food restriction had a higher rate of atopic dermatitis. The average energy intake, as well as the consumption of n-6 and n-3 fatty acids, calcium, folic acid, and vitamin D, was lower than the recommended intake for Koreans. After individualized nutritional intervention, weight/height increased, and height/age decreased. As for the index of atopic dermatitis, it decreased significantly.
5	Compare growth, nutritional status	Of the 46 children under 3.5 years included, 18 eliminated only cow milk

	and nutrient intake in children with food allergy, avoiding cow milk or cow milk and wheat	from the diet (group M) and 28 avoided milk and wheat (MW group). Both groups had weight and height for age in common, but below healthy children. Two children in group M and five in group MW had a Z score <-1 of height/age and one child in group MW had a Z score <-2 of height. Two children from group M and six from group MW had a relative weight <10% and none had this weight <20%. Group MW consumed more total calories, proteins, and fats than group M. The intake of iron, calcium and vitamin D was comparable between groups. Growth, nutritional status and nutrient intake were similar between groups.
6	Compare anthropometric measurements and food intake of children with cow milk allergy with the corresponding controls. Evaluate serum concentrations of vitamin A and 25 (OH) D in children with cow milk allergy	Twenty-seven children allergic to cow milk (CMA) and 30 controls were included. More than 70% of allergic participants did not receive regular vitamin and mineral supplementation. The CMA group showed lower height in relation to the control group and lower calcium and lipid intake. Low serum concentrations of retinol, β-carotene, lycopene and 25 (OH) D were found in 25.9%, 59.3%, 48.1% and 70.3% of the CMA group, respectively.
7	Examine the effects of food deprivation on the growth of children with food allergy	Of the 9,938 children, 439 (4.4%) avoided one or more foods. Those with food allergy and commercial health insurance were significantly shorter and weighed less than children without food allergy. In contrast, children with food allergy and state insurance were not smaller than healthy children, in height or weight. Children allergic to milk weighed less compared to the other children. Among children seen as white, food allergies impacted height and weight. These findings were not observed among Hispanic/Latin, Black or Asian children.
8	Evaluate food intake and nutritional status of children with food allergy on an elimination diet	Of the 96 children with food allergy (FA) included, 88% were advised by nutritionists and the others by pediatricians. The weight and height score by age was lower in the group of allergic children when compared to the control. The weight/height ratio had no significant difference between the groups. Nine children with FA had a <-2 Z score of weight/age and no control had this weight score. Seven allergic participants and two controls had a <-2 height/age Z score. Children allergic to three or more foods were smaller than those allergic to up to two foods. Energy, protein and calcium intake was similar between the two groups.
9	Establish growth status in children allergic to food receiving dietary information in the United Kingdom	Of the 97 children, 45 had IgE-mediated allergy, 29 had an allergy not mediated by IgE and 23 had mixed allergy. Of the total number of participants, 66 excluded two or more foods from the diet and 30 excluded three or more. The exclusion of three or more foods had an impact on weight/age elevation. Of the children, 8.5% had Z score ≤ -2 (underweight) and 8.5% had Z score ≥ +2 (overweight). Of the participants, 11.5% were short for their age and 5.5% were tall for their

		age. Of the total number of children, 3.7% had moderate malnutrition, with Z score ≤-2 of weight/height, and 7.5% were obese, Z score ≥ +2 weight/height. Of the participants, 91.5% are unlikely to be underweight and 89% will not have atrophy, although they may still have food allergies.

*BMI – Body Mass Index.

Source: The authors

DISCUSSION

This review showed that food restriction, for the most part, impaired the growth and nutrient intake by children with food allergy during the preschool phase. However, regular dietary monitoring, as well as vitamin and mineral supplementation, proved to be effective against anthropometric and nutritional deficit of these children. Therefore, this survey alerts health professionals about the risks that allergic children are exposed to in the growth phase, in addition to providing a scientific basis for the appropriate therapeutic monitoring of this clinical condition.

Regarding the database that provided more articles aimed at the guiding question, the fact that the Scopus platform stood out can be understood if it is assumed that this database has the largest collection of peer-reviewed abstracts and scientific citations, ensuring better credibility in its publications[14]. For the language, the predominance of English may be linked to the fact that it is the official language of the United States of America, a country that assumes the 1st place in the world ranking of scientific publications[15]. Another justification for this finding is that English is a universal language[16], which can expand the reach of studies published in this language.

As for the year of publication, the increase in the number of articles in 2015 and 2018, although associated with a fall in 2017 and 2019, demonstrates the interest of the scientific community in researching the theme addressed here. Notedly, the reduction of studies published in 2019 can be justified by the redirection that occurred among scientific productions to cope with Coronavirus Disease 19 (COVID-19), decreasing publications in other lines of study in that year[17].

Concerning the country where the study was conducted, the predominance of the US is consistent with the high stimulus to scientific production experienced by this nation. In relation to Finland, its greater involvement with studies portraying the theme of this review can be understood observing the increased prevalence of food allergy among children of up to 5 years of age[18], in addition to the increase in cases of hospitalization for allergic reactions among children aged 0 to 19 years recorded in recent decades in this country[19].

As for the fact that the highest percentage of articles included in the review are published in journals in the field of nutrition, this result can be justified based on the fact that one of the focuses of the study involved the impact of dietary restriction. In particular, this piece of data

highlights the importance that the nutrition professional exerts in the dietary management of children allergic to food, through evaluation, diagnosis, prescription and dietary intervention[20], helping in the growth and development of children.

Regarding the study design, the focus that the studies presented here had on the methodologies of case-control research shows the interest of evaluating the contribution of the risk/exposure factor in the outcome of the event(s) (occurrence of the disease) in predefined groups, represented by cases (in which an outcome is expected) and controls (in which it is not expected)[21]. This information is relevant if it is assumed that the case-control study is considered as the first stage of the etiological study of a disease[22].

For the predominance of the level of evidence IV among the publications discussed, this result arises from the predominance of case-control studies among these articles, classified by Stillwell et al.[13] with this level of evidence. Although a high degree of relevance is not attributed to this level, this knowledge can support the clinical performance of health professionals, integrating clinical experience with scientific evidence and enabling ethical respect and safety in interventions[23].

Regarding the objectives mentioned in the articles, the central focus in assessing the growth and nutritional status of children with food allergies who were on a restrictive diet is based on the fact that the treatment of this type of allergy consists of restrictive diets, which, for the most part, require the removal of multiple foods, sources of micro and macronutrients essential for child growth and development[5].

Among the other objectives, the study assessing the quality of life of caregivers of children with food allergy may be associated with the condition that, due to the risks of fatal manifestations to which allergic children are susceptible, the quality of life of their caregivers is impaired by vulnerability to stress, depression and social isolation, especially due to constant fear of exposure to the allergen[24].

Another objective contemplated in the articles was the evaluation of the severity of atopic dermatitis in children allergic to food (article n. 4). This objective is consistent with the evidence that around one third of individuals with moderate to severe atopic dermatitis are diagnosed with food allergy[25]. According to the authors, the loss of immune tolerance is a consequence of restrictive diets made by children with more severe manifestations of dermatitis. In this context, for Kim et al.[26] (article n. 4), adequate dietary guidance reduces the manifestations of atopic dermatitis.

In addition to the objectives reported above, the study by Boaventura et al.[27] (article n. 6) sought to evaluate the serum concentrations of vitamin A and 25 (OH) D in children with cow milk protein allergy (CMPA), confirming a decrease in these levels in 70.4% and 59.3% of the sample, respectively. According to Cavichini and Martins[28], the deficit of 25 (OH) D, circulating form of vitamin D in the blood after

REVISTA ENFERMAGEM ATUAL IN DERME

hepatic hydroxylation, is considered a risk factor for the development of CMPA.

In this sense, the literature points out, as one of the possible mechanisms involved in this relationship, the fact that vitamin D provides a greater differentiation of naive T cells into regulatory T cells (Tregs), which inhibit responses from T helper 2 cells (Th2) and, consequently, the production of IgE. On the other hand, CMPA seems to favor vitamin D deficiency by interfering in the absorption of this vitamin and inducing a systemic inflammatory response, which may be associated with a deficiency of fat-soluble vitamins, such as vitamin D. It can also be proposed that mothers of children with CMPA and exclusive breastfeeding may restrict the consumption of cow milk and dairy, without vitamin D supplementation, which may compromise the child's access to this vitamin[29].

Regarding the relationship between vitamin A and CMPA, the biomarker β-carotene, a type of carotenoid present in colorful fruits and vegetables and source of vitamin A[30], represents a protective agent against food allergy, since it can inhibit the production of specific IgE and the degranulation and chemotaxis of mast cells and basophils[31].

Regarding the immunogenic profile, the manifestation of IgE-mediated allergy among the children evaluated (articles n. 1 and 9) stood out, result which resembled Chong et al.[32]. In this context, it is worth mentioning that food allergy can be classified, according to the immunological mechanism, in IgE-mediated, non-IgE-mediated and mixed. The first, admittedly the most frequent in childhood[33], involves the production of IgE, its fixation to mast cell and basophil receptors and degranulation of these cell types, triggering acute signs and symptoms. The second does not involve the production of IgE, but the participation of other cell types (supposedly T cells), inducing late symptoms. On the mixed dietary allergic reaction, it comprises the participation of IgE and T cells[1,34].

In reference to the number of foods that caused an immune reaction and were avoided, the included publications indicated a predominance of one (articles n. 2 and n. 7) to two (articles n. 5 and n. 9) foods avoided by the participants, which corroborated Mendonça et al.[35]. However, in the study by Meyer et al.[5], they observed a higher number of participants that avoided four or more foods.

On the fact that cow milk was the most avoided food among the works of this review (articles n. 1, 2, 5 and 6), this was an expected result, since it is among the 8 most allergenic foods ("big eight"), along with egg, peanut, crustacean, soybean, tree nuts, sources of gluten, and fish[36]. In fact, there is a high incidence of reaction to this type of food, with almost all children in the studies by Meyer et al.[5] and Mendonça et al.[35] being affected by it.

Regarding the growth of preschoolers with food allergy, in general, weight/age was in unspecified deficit (articles n. 7 and n. 8) or in Z score ≤ -2 (articles n. 1, 4 and 9) and height/age was low and undetermined (articles n. 4, 6 and 7) or in Z score ≤-2 (articles n. 1, 3, 8 and 9)

REVISTA ENFERMAGEM ATUAL IN DERME

between publications, while weight/height ranged between Z score ≤ -1 (articles n. 5 and n. 7) and Z score ≥ +2 (articles n. 1, 3 and 9). These findings of growth retardation coincide with Pavic and Kolacek[37] and Chong[32], which showed that food allergy hinders the growth process, making allergic children lighter and smaller.

For the result of obesity in the BMI of these children, we suppose that the attempt to compensate for foods restricted by adding others, without adequate guidance, results in the consumption of more caloric foods. These data raise the need for the multidisciplinary team to be alert for weight deviations when accompanying patients with food hypersensitivity[37].

Concerning the aggravating factors of inadequate growth in children with food allergy mentioned in the publications presented in this review, they were similar to those mentioned by Venter, Laitinen and Vlieg-Boerstra[38], represented by having "multiple food allergies", "elimination of various foods from the diet", "elimination of basic foods (such as milk and cereals)" and "extreme self-restriction of food". However, as Chong et al.[32] state, the risk factor for inadequate growth in food allergy is a multifactorial issue, requiring further studies to establish the relationship between these factors and this type of hypersensitivity.

Regarding the nutritional intake of preschoolers, it was reduced in both essential micronutrients and macronutrients, an aspect that diverged from the literature, which demonstrated a greater impairment in the consumption of essential micronutrients in relation to macronutrients[39]. In this context, in spite of the low intake of nutrients helping to investigate risks of nutritional deficiency, a deeper analysis of blood markers is necessary before the confirmation of the deficiency[40].

Although dietary restriction has shown low nutrient intake by allergic children, other studies show that, with regular nutritional monitoring, growth was equivalent to that of healthy children, in addition to adequate food intake[41].

As for the emphasis of iron consumption in the face of food restriction, it may be related to the role that this mineral plays in the synthesis of the hemoglobin's heme group and, consequently, in the transport of oxygen and other hemeproteins, responsible for energy production[42], in addition to the important contribution to tissue growth in children aged 6 to 12 months[43]. For vitamin C, its intake by children in the face of food limitation may be related to the fact that this vitamin is not produced in the body, in addition to participating in several biochemical and physiological processes, including the accumulation of iron in the bone marrow, collaborating in the immunological response against microorganisms[44].

Regarding the limitations of the study, there was a lack of research portraying the impact of food allergy on child development, which may include psychosocial and behavioral repercussions in childhood, with increased anxiety, school absences and bullying[24]. Another limitation occurred due to the reduced engagement of Nursing in the monitoring this

REVISTA ENFERMAGEM ATUAL IN DERME

clinical condition, especially because of the role played by the multidisciplinary team, which includes nurses, in addition to nutritionists, physicians, psychologists and allergists, in ensuring the growth and development of children allergic to foods[45].

CONCLUSION

We conclude that, although the articles included in this review were published mainly in a reference database, in an accessible language, in recent years and a country noted for its research, they were limited to certain areas and a median level of evidence. However, they were not restricted to evaluating the growth of children allergic to foods on a restrictive diet, investigating, among other factors, the quality of life of caregivers and serum concentrations of vitamins.

The accurate survey of these predictors can revolutionize multiprofessional care in food allergy, since it directs the intervention to modifiable risks and contributes to the development of strategies to prevent inadequate growth and development. However, further studies are needed to evaluate these multiple factors and their correlation with the growth of allergic children.

The results of this integrative review will enable the debate of a theme necessary for care practice, in addition to providing a scientific basis to be applied in clinical practice, considering that allergology is not explored deeply in the curriculum of health courses.

REFERENCES

1. Solé D, Silva LR, Cocco RR, Ferreira CT. et al. Consenso Brasileiro Sobre Alergia Alimentar: 2018 – parte 1- etiopatogenia, clínica e diagnóstico. Documento conjunto elaborado pela Sociedade Brasileira de Pediatria e Associação Brasileira de Alergia e Imunologia. Arg. Asma Alerg. Imunol [Internet]. 2018 [Acessado em 04 dez 2020];2(1):7-38. Disponível em: http://aaai-asbai.org.br/detalhe_artigo.asp?id=851

2. World Allergy Organization. White Book on Allergy**.** Estados Unidos da América: A World Federation of Allergy, Asthma & Clinical Imunology Societies [Internet]. 2013 [Acessado em 04 dez 2020]. Disponível em: https://www.worldallergy.org/UserFiles/file/ExecSummary-2013-v6-hires.pdf

3. Gonçalves LC, Guimarães TC, Silva RM, Cheik MF, de Ramos Nápolis AC, Barbosa E Silva G, Segundo GR. Prevalence of food allergy in infants and pre-schoolers in Brazil. Allergol Immunopathol (Madr) [Internet]. 2016 [Acessado em 04 dez 2020];44(6):497-503. Disponível em: https://doi.org/10.1016/j.aller.2016.04.009

4. Putera AM, Maramis MM.The Success of Elimination Diet in Indonesian Children with Food Allergy: The Role of Caregiver's Stress, Family Activities, and Coping. Sys Rev Pharm [Internet]. 2020 [Acessado em 05 dez 2020];11(11):1604-1611. Disponível em: https://www.sysrevpharm.org/articles/the-success-of-elimination-diet-in-indonesian-children-with-food-allergy-the-role-of-caregivers-stress-family-activities.pdf

5. Meyer R, De Koker C, Dziubak R, Godwin H, Dominguez-Ortega G, Chebar Lozinsky A, Skrapac AK, Gholmie Y, Reeve K, Shah N. The impact of the elimination diet on growth and nutrient intake in children with food protein

induced gastrointestinal allergies. Clin Transl Allergy [Internet]. 2016 [Acessado em 05 dez 2020];14(6):25. Disponível em: https://doi.org/10.1186/s13601-016-0115-x

6. Berni Canani R, Leone L, D'Auria E, Riva E, Nocerino R, Ruotolo S, Terrin G, Cosenza L, Di Costanzo M, Passariello A, Coruzzo A, Agostoni C, Giovannini M, Troncone R. The effects of dietary counseling on children with food allergy: a prospective, multicenter intervention study. J Acad Nutr Diet. [Internet]. 2014 [Acessado em 07 jan 2021];114(9):1432-9. Disponível em: https://doi.org/10.1016/j.jand.2014.03.018

7. Sociedade Brasileira de Pediatria. Departamento Científico de Nutrologia**.** Manual de Alimentação: orientações para alimentação do lactente ao adolescente, na escola, na gestante, na prevenção de doenças e segurança alimentar**.** – 4. ed. - São Paulo: SBP [Internet]. 2018 [Acessado em 07 jan 2021]. Disponível em: https://www.sbp.com.br/flip/consenso-alergia-alimentar-parte-01/20/

8. Barbani R, Nora CR, Schaefer R. Práticas do enfermeiro no contexto da atenção básica: scoping review. Rev. Latino-Am. Enfermagem [Internet]. 2016 [Acessado em 07 jan 2021];24:e2721. Disponível em: https://doi.org/10.1590/1518-8345.0880.2721

9. Gaiva AM, Monteschio CAC, Moreira MDS, Salge AKM. Avaliação do crescimento e desenvolvimento infantil na consulta de enfermagem. Av. Enferm. [Internet]. 2018 [Acessado em 07 jan 2021];26(1):9-21. Disponível em: https://doi.org/10.15446/av.enferm.v36n1.62150

10. Souza MT, Silva MD, Carvalho R. Revisão integrativa: o que é e como fazer. Einstein, São Paulo [Internet]. 2010 [Acessado em 10 jan 2021];8(1):102-6. Disponível em: https://doi.org/10.1590/S1679-45082010RW1134

11. Sousa LMM, Marques-Vieira CMA, Severino SSP, Antunes AV. A metodologia de revisão integrativa da literatura em enfermagem. Revista Investigação em Enfermagem [Internet]. 2017 [Acessado em 10 jan 2021]; 17-26. Disponível em: https://www.sinaisvitais.pt/images/stories/Rie/RIE21.pdf

12. Santos CMC, Pimenta CAM, Nobre MRC. The pico strategy for the research question construction and evidence Search, Rev. Latino-am Enfermagem, São Paulo [Internet]. 2007 [Acessado em 10 jan 2021];15(3):508-11. Disponível em: https://doi.org/10.1590/S0104-11692007000300023

13. Stillwell SB, Fineout-Overholt E, Melnyk BM, Williamson KM. Evidence-based practice, step by step: searching for the evidence. Am J Nurs. [Internet]. 2010 [Acessado em 20 jan 2021]; 10(5):41-7. Disponível em: https://doi.org/10.1097/01.naj.0000372071.24134.7e

14. Severo EA, Dorion ECH, Guimarães JCF de, Souza IRA de, Severo PO. Trajetórias da inovação: uma análise na base de dados Scopus. Espacios [Internet]. 2016 [Acessado em 20 jan 2021];37(11):1. Disponível em: http://www.revistaespacios.com/a16v37n11/16371101.html

15. Vinkler P. Stucture of the scientific research and science policy. Scientometrics [Internet]. 2018 [Acessado em 04 mar 2021];114:737-756. Disponível em: https://ideas.repec.org/a/spr/scient/v114y2018i2d10.1007_s11192-017-2568-7.html

16. Rani VM. Task based language teaching in promoting the target language culture through idioms and proverbs-a case study.

International Journal of Linguistics and Literature [Internet]. 2017 [Acessado em 04 mar 2021];6(1):1-10.

17. Sousa TF, Santos SF da S dos, Farias GS, Brandão AC, Chaves AO, Mussi FC, Grisotti M. Grupos de pesquisa brasileiros com ênfase na pandemia da covid-19. Revista Interfaces [Internet]. 2020 [Acessado em 20 abr 2021];8(3): http://interfaces.leaosampaio.edu.br/index.php/revista-interfaces/article/view/829

18. Satitsuksanoa P, Jansen K, Głobińska A, van de Veen W, Akdis M. Regulatory Immune Mechanisms in Tolerance to Food Allergy. Front Immunol.[Internet]. 2018 [Acessadoe em 20 abr 2021]; 12(9):2939. Disponível em: https://doi.org/10.3389/fimmu.2018.02939

19. Kivistö JE, Protudjer JL, Karjalainen J, Wickman M, Bergström A, Mattila VM. Hospitalizations due to allergic reactions in Finnish and Swedish children during 1999-2011. Allergy [Internet]. 2016 [Acessado em 20 abr 2021];71(5):677-83. Disponível em: https://doi.org/10.1111/all.12837

20. Fernandes M, Almeida MR de, Costa V. Papel do nutricionista numa dieta restrita em FODMAPs. Acta Portuguesa de Nutrição [Internet]. 2020 [Acessado em 20 jun 2021];23:50-53. Disponível em: https://repositorio.ipl.pt/handle/10400.21/13015

21. Oliveira MA, Vellarde GC, Sá RAM de. Entendendo a pesquisa clínica IV: estudos de caso-controle. FEMINA [Internet]. 2015 [Acessado em 20 jun 2021]; 43(4): 175-180. Disponível em: http://files.bvs.br/upload/S/0100-7254/2015/v43n4/a5310.pdf

22. Fronteira I. Estudos observacionais na era da medicina baseada em evidência: breve revisão sobre a sua relevância, taxonomia e desenhos. Acta Med. Port. [Internet]. 2013 [Acessado em 20 jun 2021];26(2):161-170. Disponível em: https://actamedicaportuguesa.com/revista/index.php/amp/article/viewFile/3975/3223

23. Machado RC. Níveis de evidência para a prática clínica. Rev. Sobecc. São Paulo [Internet]. 2015 [Acessado em 20 jun 2021];20(3):127. Disponível em: https://revista.sobecc.org.br/sobecc/article/view/115

24. Gomes RN, Silva DR, Yonamine GH. Impacto psicossocial e comportamental da alergia alimentar em crianças, adolescentes e seus familiares: uma revisão. Arg. Asma Alerg. Imunol [Internet]. 2018 [Acessado em 20 jun 2021];2(1):95-100. Disponível em: http://aaai-asbai.org.br/detalhe_artigo.asp?id=854

25. Graham F, Eigenmann PA. Atopic dermatitis and its relation to food allergy. Curr Opin Allergy Clin Immunol. [Internet]. 2020 [Acessado em 20 jun 2021];20(3):305-310. Disponível em: https://doi.org/10.1097/aci.0000000000000638

26. Kim SH, Lee JH, Ly SY. Children with atopic dermatitis in Daejeon, Korea: individualized nutrition intervention for disease severity and nutritional status. Asia Pac J Clin Nutr. [Internet]. 2016 [Acessado em 22 jun 2021];25(4):716-728. Disponível em: https://apjcn.nhri.org.tw/server/APJCN/25/4/716.pdf

27. Boaventura RM, Mendonça RB, Fonseca FA, Mallozi M, Souza FS, Sarni ROS. Nutritional status and food intake of children with cow's milk allergy. Allergol Immunopathol (Madr) [Internet]. 2019 [Acessado em 22 jun 2021];47(6):544-550. Disponível em: https://doi.org/10.1016/j.aller.2019.03.003

28. Cavichini NL, Martins LC. A. Associação da vitamina D com as alergias alimentares. Revista Conexão Saúde

[Internet]. 2016 [Acessado em 22 jun 2021];3(3). Disponível em: https://revistas.fibbauru.br/healthfib/article/view/319/294

29. Silva CM, Silva AS da, Antunes MM de C, Silva GAP da, Sarinho ESC, Brandt KG. Do infants with cow's milk protein allergy have inadequate levels of vitamin D? Jornal de Pediatria [Internet]. 2017 [Acessado em 22 jun 2021];93(6):632-638. Disponível em: https://doi.org/10.1016/j.jped.2017.01.006

30. Gangakhedkarm A, Somerville R, Jelleyman T. Carotenemia and hepatomegaly in na atopic child on an exclusion diet for a food allergy**.** Australasian Journal of Dermatology [Internet]. 2015 [Acessado em 22 jun 2021];58(1):42-44. Disponível em: https://doi.org/10.1111/ajd.12414

31. Akiyama H. Role of ingestion of caratenoids in the prevention of food allergies. CAB Reviews, Japão [Internet]. 2017 [Acessado em 04 jul 2021];12 (9):1-7. Disponível em: https://www.cabdirect.org/cabdirect/abstract/20173105695

32. Chong KW, Wright K, Goh A, Meyer R, Rao R. Growth of children with food allergies in Singapore. Asia Pac Allergy. [Internet]. 2018 [Acessado em 04 jul 2021];8(4):e34. Disponível em: https://dx.doi.org/10.5415%2Fapallergy.2018.8.e34

33. Araújo LCS, Torres SFR, Carvalho M. Alergias alimentares na infância: uma revisão da literatura. Rev. UNINGA [Internet]. 2019 [Acessado em 04 jul 2021];56(3):29-39. Disponível em: http://revista.uninga.br/index.php/uninga/article/view/2147

34. Brito HCA, Brandão HFC, Lins TI de S, Neves CMAF, Macêdo DJ do N, Silva DRL dos S. Estado nutricional e hábitos alimentares de crianças diagnosticadas com alergia a proteina do leite de vaca em dieta de exclusão. Brazilian Journal of Development [Internet]. 2021 [Acessado em 04 jul 2022];7(1):10029-10042. Disponível em: https://doi.org/10.34117/bjdv7n1-680

35. Mendonça RB. Tradução para o português (cultura brasileira) e adaptação cultural de questionário para avaliação da qualidade de vida de crianças com alergia alimentar e seus pais. Arg. Asma Alerg. Imunol. [Internet]. 2018 [Acessado em 04 jul 2021];2(3):364-371. Disponível em: http://aaai-asbai.org.br/detalhe_artigo.asp?id=936

36. Aquino A, Conte-Junior CA. Uma revisão sistemática da alergia alimentar: nanobiossensor e detecção de alérgenos alimentares. Biossensors [Internet]. 2020 [Acessado em 04 jul 2021];10(12):194.

37. Pavić I, Kolaček S. Growth of Children with Food Allergy. Horm Res Paediatr. [Internet]. 2017 [Acessado em 20 ago 2021];88(1):91-100. Disponível em: https://doi.org/10.1159/000462973

38. Venter C, Laitinen K, Vlieg-Boerstra B. Nutritional aspects in diagnosis and management of food hypersensitivity-the dietitians role. J Allergy (Cairo) [Internet]. 2012 [Acessado em 20 ago 2021];2012:269376. Disponível em: https://doi.org/10.1155/2012/269376

39. Venter C, Mazzocchi A, Maslin K, Agostoni C. Impact of elimination diets on nutrition and growth in children with multiple food allergies. Curr Opin Allergy Clin Immunol. [Internet]. 2017 [Acessado em 20 ago 2021]17(3):220-226. Disponível em: https://doi.org/10.1097/aci.0000000000000358

40. Meyer R, De Koker C, Dziubak R, Skrapac AK, Godwin H, Reeve K, Chebar-Lozinsky A, Shah N. A practical approach to vitamin and mineral supplementation in food allergic children. Clin Transl Allergy [Internet]. 2015

[Acessado em 20 ago 2021];10(5):11. Disponível em: https://doi.org/10.1186/s13601-015-0054-y

41. D'Auria E, Fabiano V, Bertoli S, et al. Growth Pattern, Resting Energy Expenditure, and Nutrient Intake of Children with Food Allergies. Nutrients [Internet]. 2019 [Acessado em 20 ago 2021];11(2):212. Disponível em: https://dx.doi.org/10.3390%2Fnu11020212

42. Freire ST, Alves DB, Maia YLM. Diagnóstico e tratamento da anemia ferropriva. RRS-FESGO [Internet]. 2020 [Acessado em 20 ago 2021];3(1):124-131.

43. Fonseca MLT, Santiago T. Análise do consumo estimado de ferro ofertado para crianças de 6 a 12 meses de idade, através de papas, fórmulas infantis e suplementação. Revista Científica UMC [Internet]. 2020 [Acessado em 20 set 2021]. Disponível em: https://www.umc.br/_img/_diversos/pesquisa/pibic_pvic/XXIII_congresso/artigos/n/MarianaLikaTakeuchiFonseca.pdf

44. Rocha TS, Lopes EC, Bernal LPT. Análise de qualidade de formulações farmacêuticas líquidas de vitamina c comercializadas em Dourados- MS. Braz. J. of Develop, Curitiba [Internet]. 2020 [Acessado em 20 set 2021];6(12):101288-101294. Disponível em: https://doi.org/10.34117/bjdv6n12-574

45. Giovannini M, D'Auria E, Caffarelli C, Verduci E, Barberi S, Indinnimeo L, Iacono ID, Martelli A, Riva E, Bernardini R. Nutritional management and follow up of infants and children with food allergy: Italian Society of Pediatric Nutrition/Italian Society of Pediatric Allergy and Immunology Task Force Position Statement. Ital J Pediatr [Internet]. 2014 [Acessado em 20 set 2021];3(40):1. Disponível em: https://doi.org/10.1186/1824-7288-40-1

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