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REVIEW

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Health education as a strategy for encouraging children's vaccination: rapid review

A educação em saúde como estratégia de incentivo à vacinação de crianças: revisão rápida

La educación en salud como estrategia de incentivo a la vacunación infantil: revisión rápida

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ABSTRACT

Introduction: Although vaccines have significantly improved the lives of the world's population since their implementation, there has been recent stagnation and, in some cases, even a reversal of previously achieved gains. **Aim:** To summarize the evidence on how to use health education to encourage the vaccination of children. **Outlining:** Rapid review, guided by the question "How to use health education to encourage the vaccination of children?" carried out in 2023, using two databases and an electronic library. The searches yielded 2,666 documents, of which 12 articles were selected for data extraction, summarization, and discussion. **Results:** The community and the home were the main places described for interventions. Fathers, mothers, and guardians/caregivers of children were the audience most mentioned for interventions. Educational instruments, such as booklets, leaflets, and health manuals, were the most used. The most frequent strategies were conventionally transmitting information in the waiting room, teaching during care or home visits, and using or making educational instruments available. **Implications:** The study clarified how to use health education to encourage the vaccination of children, detailing the intervention locations, the target audience, the necessary instruments, and adequate strategies.

DESCRIPTORS

Child; Health Education; Vaccination; Review.

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INTRODUCTION

The development and distribution of vaccines have been among the most outstanding achievements in the history of public health, resulting in the protection of children, adolescents, adults, and the elderly by preventing preventable diseases and, more recently, by ending the COVID-19 pandemic.¹⁻²

In this context, it is noteworthy that efforts to distribute vaccines have been ongoing since the eradication of smallpox, with the launch of the Expanded Immunization Program (PAI) in 1974 by the World Health Organization (WHO) to ensure that all children, in all countries, have access to vaccines.³

Several countries worldwide have national immunization programs, such as Brazil, which has had the National Immunization Program (PNI) since 1973. This program is an efficient public policy that positively impacts the Brazilian population, reducing morbidity and mortality and adapting to changes in the political, epidemiological, and social fields, being guided by the doctrinal principles of the Unified Health System (SUS in Portuguese): universality, comprehensiveness, and equity in health care.⁴

However, despite improving the lives of the world's population, vaccines have recently faced stagnation and, in some cases, a reversal of previous gains, serving as a warning sign for programs that aim to provide universal access to immunization now and in the future.⁵ An example is the return of measles to the world stage and to Brazil, a country that had the eradication certificate until 2016 and lost it at the end of 2018.⁶⁻⁷

Notably, there was a significant reduction in vaccination coverage of vaccine-preventable diseases before and during the COVID-19 pandemic.⁸ The literature attributes the return of already eradicated diseases and the difficulty in preventing new diseases, such as COVID-19, to several factors.⁹ Among these factors are the collapse of national immunization programs due to conflicts, wars, and social tensions; the migration of unvaccinated people; inadequate vaccinations in hard-to-reach

groups and minority populations; as well as the anti-vaccination debate, often influenced by fake news shared through social networks.¹⁰

It is noteworthy that the emergence of the anti-vaccination movement, triggered by Andrew Wakefield around 1998 after the publication of an article that alleged an association between autism and vaccines, is of extreme global relevance. This movement is significant because it can lead to vaccine hesitancy and, consequently, a reduction in the population's intention to vaccinate.¹¹⁻¹² Vaccine hesitancy is the delay in accepting or refusing vaccination despite the availability of vaccination services.¹³

In this context, health education emerges as a strategy, defined by the WHO as any combination of learning experiences designed to help individuals and communities improve their health with increased knowledge, influence on motivation, and improved health literacy, promoting the development of knowledge and skills that enable action to address the determinants of health.¹⁴

Therefore, this rapid review is justified by the increasing difficulty of vaccination, which makes health education a feasible and cheap strategy to combat vaccine hesitancy and, consequently, to encourage vaccination in children. Knowing that governments and public health authorities must be proactive to mitigate potential losses in vaccine acceptance, the objective was to summarize the evidence on how to use health education to encourage the vaccination of children.

METHOD

Study Design

This rapid review is a highly efficient method primarily used for developing public policies. Despite its speed, it maintains a high level of methodological rigor, ensuring quick and effective evidence synthesis.¹⁵ From August to September 2023, we conducted the bibliographic survey, data collection, and analysis with precision and thoroughness.

Research Question

The acronym Population, Concept, and Context (PCC) was used to formulate the guiding question.¹⁶ The following were adopted: P: Children, C: Health education, C: Incentive to vaccination, generating the question: “How to use health education to encourage vaccination of children?”

After creating the question, we evaluated it using the acronym FINER (Feasible, Interesting, New, Ethical, and Relevant).¹⁷ The question appeared feasible as a rapid review is a low-cost alternative that did not require financing; interesting, motivating the team to seek answers and inspiring managers and policymakers to act on those answers; new, gaining prominence in recent years and capable of expanding current findings; ethical, meeting current ethical principles and requiring the team to reference the articles correctly; and relevant, as the results could summarize evidence to improve vaccination levels in children and support public policies.

Eligibility Criteria

We adopted the following inclusion criteria: original (primary) articles, without language or geographic restrictions, within the review's scope, and answering the research question, using the last five years (2018-2023) as a timeframe. We excluded articles without intervention, review articles, letters to the editor, book chapters, duplicate articles, theses, dissertations, and those that did not answer the guiding question.

Data Collection

For the bibliographic survey, we consulted two databases and an electronic library: the Medical Literature Analysis and Retrieval System Online (MEDLINE via PubMed®), Web of Science™ (WoS), and *Biblioteca Virtual em Saúde* (BVS in Portuguese). The searches were carried out on the Periodicals Portal of the Coordination for the Improvement of Higher Education Personnel (CAPES in Portuguese) through access from the Federated Academic Community

(CAFe in Portuguese) on August 2, 2023. We combined controlled and uncontrolled descriptors using the Boolean operators “OR” and “AND” according to the peculiarities of each database. We used the Medical Subject Headings (MeSH) vocabulary for terms in MEDLINE via PubMed® and WoS™, as well as the Health Sciences Descriptors for BVS research. The strategies used are detailed in Chart 1.

We exported all identified studies to EndNote® Web software to identify and remove duplicates, then transferred them to the Rayyan web application.¹⁸ Two reviewers evaluated the studies' eligibility, with a third reviewer intervening in cases of disagreement. The studies were selected independently and masked by three reviewers, following the PRISMA 2020 statement steps.¹⁹ We first searched the databases, applied filters according to the inclusion criteria, and removed duplicate records. In the screening stage, we selected records for reading titles and abstracts, as well as the complete text. Therefore, the full text of the selected articles was read, which led to the selection of studies to be included.

Data Analysis

After selecting the studies to include, two reviewers independently extracted data using an instrument they created. They extracted the following variables: authorship, year of publication, country of study, study title, type of study, place of study, participants, and main results. Both reviewers performed data extraction, compared the information collected, and synthesized it for inclusion in the review.

After extraction, we organized the data into tables. To summarize the findings, we used the data reduction method, critical reading, and classification of results into conceptual categories for discussion.²⁰

Chart 1. Strategies used to search for articles in the databases.

Data base	Strategy
MEDLINE via PubMed®	(Child[MeSH Terms] OR Children[All Fields]) AND (“Health Education”[MeSH Terms] OR “Education, Health”[All Fields] OR “Community Health Education”[All Fields] OR “Education, Community Health”[All Fields] OR “Health Education, Community”[All Fields]) AND (Vaccination[MeSH Terms] OR Vaccinations[All Fields] OR “Immunization, Active”[All Fields] OR “Active Immunization”[All Fields] OR “Active Immunizations”[All Fields] OR “Immunizations, Active”[All Fields])
WoS™	(ALL=(Child*)) AND (ALL=(“Health Education”) OR ALL=(“Education, Health”) OR ALL=(“Community Health Education”) OR ALL=(“Education, Community Health”) OR ALL=(“Health Education, Community”)) AND (ALL=(Vaccination*) OR ALL=(“Immunization, Active”) OR ALL=(“Active Immunization”) OR ALL=(“Active Immunizations”) OR ALL=(“Immunizations, Active”))
BVS	(Criança*) AND (“Educação em Saúde” OR “Educar para a Saúde” OR “Educação para a Saúde” OR “Educação para a Saúde Comunitária” OR “Educação Sanitária”) AND (Vacinação OR “Imunização Ativa”)

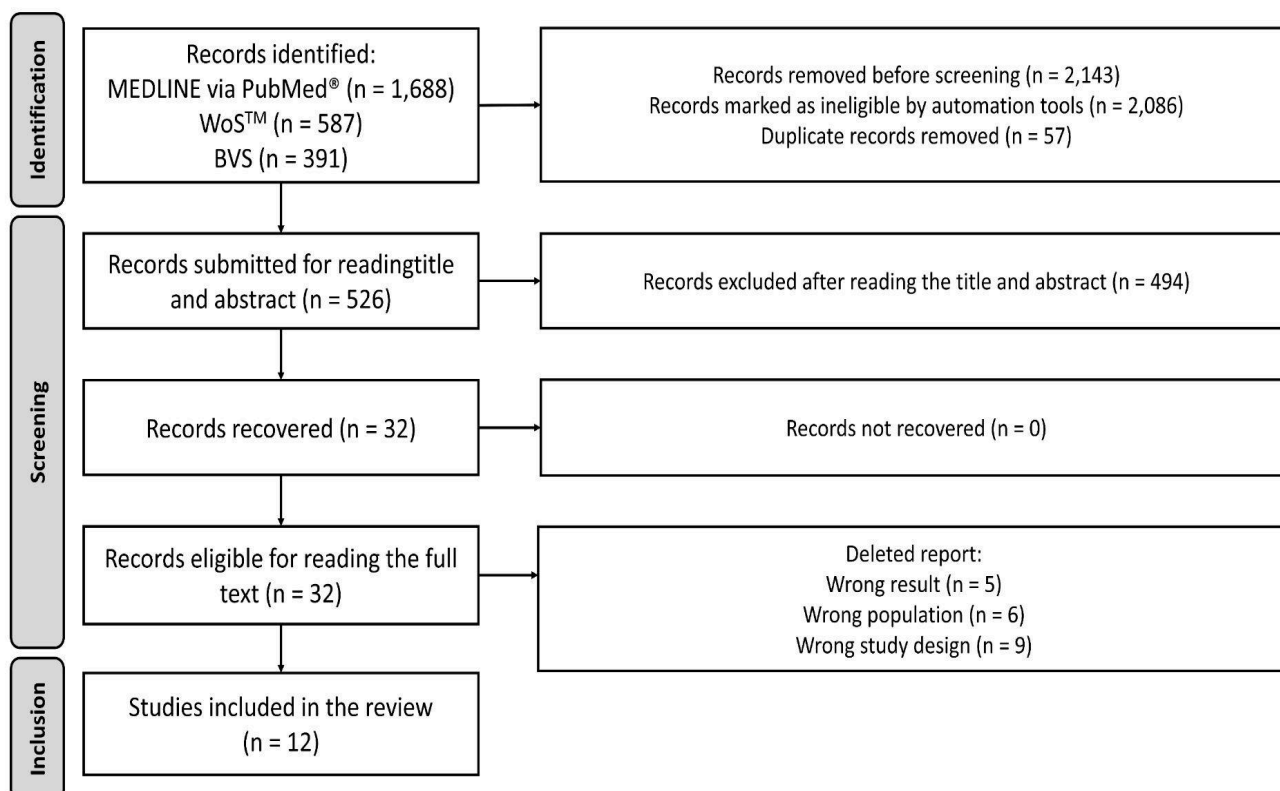
Source: The authors (2023).

RESULTS

Initially, the researchers identified 2,666 documents, which were reduced to 526 articles using automation tools and the removal of duplicates. During the screening process, they read the titles and

abstracts of the remaining articles, selecting 32 for full reading. Ultimately, 12 articles met the inclusion criteria and were included in this rapid review. Figure 1 shows the flowchart of this process.

Figure 1. Flowchart of the process of identifying, screening, and including articles.



Source: adapted from Page et al. (2021).¹⁹

The 12 studies included in this review were published mainly in 2021 and 2022 and span various geographical locations. A significant number (n = 3) were conducted in China. These studies, comprising randomized controlled clinical trials and

quasi-experimental studies, offer a diverse and comprehensive view of the topic. Chart 2 provides detailed data on the characterization of the included studies.

Chart 2. Characterization of included articles.

No.	Authorship	Country/Location	Title	Type of study
1 ²¹	Lubis <i>et al.</i> , 2022	Indonesia/ Community Health Centers - Community	Educational videos to address vaccine hesitancy in childhood immunization	Quasi-experimental study
2 ²²	Occa; Stahl; Julien-Bell, 2022	Italy/ Public school	Helping Children to Participate in Human Papillomavirus-Related Discussions: mixed methods study of multimedia messages	Mixed methods study (Focus group discussions and an integrated experiment)
3 ²³	Xu <i>et al.</i> , 2022	China/ Vaccination Stations	Effects of mobile APP for immunization on vaccination compliance of migrant children in southwest China: a community trial study	Randomized controlled clinical trial
4 ²⁴	Basheer <i>et al.</i> , 2021	Nigeria/ Primary Health Care	Effect of interpersonal communication training program on child's immunization among mothers living in Kebbi state of Nigeria	Quasi-experimental study
5 ²⁵	Di Mauro <i>et al.</i> , 2021	Italy/ Neonatal Intensive Care Unit	In-hospital and web-based intervention to counteract vaccine hesitancy in very preterm infants' families: a NICU experience	Prospective cohort study
6 ²⁶	Lv; Zhao; Zhang, 2021	China/ Hospital environment	The effect of community comprehensive nursing using scenario-based health education on the infant and young child immunization rates	Randomized controlled clinical trial
7 ²⁷	Timothy <i>et al.</i> , 2021	South Africa/ Public Health Clinics	Using an adaptive, codesign approach to strengthen clinic-level immunisation services in Khayelitsha, Western Cape Province, South Africa	Mixed methods study (cross-sectional and qualitative)
8 ²⁸	Dougherty <i>et al.</i> , 2020	Nigeria/ Local Government Areas - Community	Engaging traditional barbers to identify and refer newborns for routine immunization services in Sokoto, Nigeria: a mixed methods evaluation	Quasi-experimental study
9 ²⁹	Sitairesmi <i>et al.</i> , 2020	Indonesia/ School	Improvement of Parent's awareness, knowledge, perception, and acceptability of human papillomavirus vaccination after a structured-educational intervention	Quasi-experimental study
10 ³⁰	Otsuka-Ono <i>et al.</i> , 2019	Japan/ Private Hospital	A childhood immunization education program for parents delivered during late pregnancy and one-month postpartum: a randomized controlled trial	Randomized controlled clinical trial
11 ³¹	Scott <i>et al.</i> , 2019	U.S/ Pediatric Clinics	Office-Based Educational Handout for Influenza Vaccination: a randomized controlled trial	Randomized controlled clinical trial
12 ³²	Hu; Li; Chen, 2018	China/ Obstetric Hospitals	Evaluation of two health education interventions to improve the varicella vaccination: a randomized controlled trial from a province in the east China	Randomized controlled clinical trial

Source: The authors (2023).

To facilitate visualization and answer the guiding question, the researchers constructed Chart 3, synthesizing the evidence. They grouped the findings into four categories: 1) Locations for carrying

out the intervention; 2) Audience subject to intervention; 3) Instruments used; and 4) Strategies described as adequate.

Chart 3. Summary of evidence on health education in encouraging vaccination of children.

Locations for carrying out the intervention
<ul style="list-style-type: none"> - Primary Health Care - Community/Home - Schools - Generalist Hospitals - Obstetric Hospitals - Pediatric Hospitals - Vaccination Stations - Neonatal Intensive Care Unit
Audience subject to intervention
<ul style="list-style-type: none"> - Children - Health Team - Pregnant women - Community Leaders - Fathers, Mothers and Guardians/Child Caregivers
Instruments used
<ul style="list-style-type: none"> - Educational Application - Vaccination Calendar - Poster - Educational Instrument - Booklet, Leaflet, Booklet, Health Manual - Game - Social Networks - Slide - Photo - Video
Strategies described as adequate
<ul style="list-style-type: none"> - Sharing Information Over the Internet Using Social Networks - Information Sharing Using Radio - Health Education in a Conventional Way - Waiting Room, During Care or Home Visit - Education Using/Providing the Developed Educational Instruments - Practical Vaccination Trial - Organization of the Environment with Educational Materials - Lecture and Group Discussion - Healthcare Team Training - Training Community Leaders for Information Sharing

Source: The authors (2023).

DISCUSSION

The present study focuses on vaccine education, a subset of health education aimed at neutralizing the growing global hesitancy towards vaccines and encouraging the development of systems that increase public engagement with vaccination. Given the prevalence of diseases, epidemics, and pandemics, studies in this field are essential for enabling professionals to quickly advance in their

practical roles through vaccination education, developing vaccine policies, and promoting patient immunization.³³

The findings underscore the importance of promoting health education. Digital media has provided the public with unrestricted access to health information, presenting challenges for professionals, governments, and health organizations to manage

this vast information and ensure its quality and reliability to prevent harm. In this dynamic landscape, health education remains a cornerstone of public health, continually evolving with new concepts and strategies. Its content, methods, and communication channels are designed to inspire behavior modification and develop enduring, transferable skills.³⁴

It is crucial to identify the intervention sites for health education strategies to be effective. The studies described the following locations for health education: primary health care,^{24,27} community/home,^{21,24,28} schools,^{22,29} general hospitals,^{26,30} obstetric hospitals,³² pediatric hospitals,³¹ vaccination posts,²³ and neonatal intensive care units.²⁵

The School Health Program was established in Brazil to strengthen the connection between health networks and education. This program, guided by the principles of comprehensiveness, territoriality, and intersectoriality, aims to engage in disease prevention, health promotion, and recovery actions, contributing to the holistic education of schoolchildren. It collaborates with parents, the school community, and society through partnerships between Basic Health Units and public schools.³⁵

Thus, it is clear that strengthening this program as a public policy is necessary. In addition to covering most identified intervention locations, it includes the target populations, as described below.³⁶

The intervention's target populations, a key focus of this research, are notably diverse. They include children,²² health staff,²⁴ pregnant women,^{30,32} community leaders,²⁸ and parents/guardians/caregivers of children,^{21,23-27,29,31} all of whom are crucial in the context of improving vaccination rates.

The results of addressing different audiences during interventions align with the literature, which suggests that high and equitable vaccine adherence can only be achieved through research and engagement with target groups. Therefore, before

interventions, it is essential to consider social and cultural support, norms, and identity, including various religious, educational, or philosophical views that may influence attitudes towards vaccination and social determinants such as socioeconomic status, years of schooling, and ethnicity.³⁷

The instruments used in these interventions varied and included educational applications,²³ vaccination calendars,³⁰ posters,²³ educational booklets, leaflets, health manuals,^{23,26,30-32} games,²² social networks,²⁵ slides,^{26,29} photos,²⁶ and videos.^{21,22,26,32}

Health professionals, as the primary advocates for vaccination, play a pivotal role in promoting trust, validating parents' concerns for their children's well-being, avoiding coercive language, and valuing clear and positive communication. Negative or strained communication between providers and patients can reduce patient confidence and negatively impact health outcomes over time. Building trust is a key strategy to improve children's vaccination rates.³⁸

The practical strategies identified included sharing information via social networks and the internet,^{21,25} using radio broadcasts,²⁷ conducting health education in waiting rooms, during care, or home visits,^{24-27,30-31} utilizing educational instruments developed for different scenarios and populations with a focus on the social context,^{25-27,21-23,29-32} practical vaccination trials,²⁶ organizing environments with educational materials,²³ holding lectures and group discussions,²⁹⁻³⁰ training health teams,²⁴ and training community leaders to disseminate information.²⁸

Health professionals must be well-prepared to effectively implement these strategies. This requires training enlightened professionals to improve service quality and the health of patients and the broader population. Professional education is crucial to addressing contemporary health challenges, making it essential to include health education in the curricula

of undergraduate and postgraduate health courses.³⁹⁻⁴⁰

Limitations

The main limitation of this study lies in the lack of details in some studies regarding the method of conducting the intervention, which makes replication difficult and demonstrates the need for further research on the topic. These new studies should be conducted with high methodological rigor, enabling their execution in different contexts and contributing to the scientific literature and the creation of effective strategies for the use of health education.

Contributions to Clinical Practice

The article highlights important implications for clinical practice in promoting childhood vaccination through health education. It is essential to intensify health education efforts to combat vaccine hesitancy by providing clear, evidence-based information to patients and their families. Health professionals should use strategic locations, such as primary care units and hospitals, for educational interventions. Engaging diverse groups, including parents, caregivers, and children, with effective communication strategies is crucial. Clear, positive, and coercion-free communication must promote trust between healthcare professionals and patients.

RESUMO

Introdução: Apesar de as vacinas terem melhorado significativamente a vida da população mundial desde sua implementação, recentemente tem ocorrido uma estagnação e, em alguns casos, até uma reversão dos ganhos obtidos anteriormente. **Objetivo:** Sumarizar as evidências sobre como utilizar a educação em saúde para incentivar a vacinação de crianças. **Delineamento:** Revisão rápida, norteadas pela questão "Como utilizar a educação em saúde para incentivar a vacinação de crianças?", realizada em 2023, utilizando duas bases de dados e uma biblioteca eletrônica. As pesquisas resultaram em 2.666 documentos, dos quais 12 artigos foram selecionados para extração dos dados, sumarização e discussão. **Resultados:** A comunidade e o domicílio foram os principais locais descritos para intervenções. Pais, mães e responsáveis/cuidadores de crianças foram o público mais mencionado para as intervenções. Instrumentos educativos, como cartilhas, folhetos, livretos e manuais de saúde, foram os mais utilizados. A transmissão de informações de maneira convencional na sala de espera, o ensino durante o atendimento ou visita domiciliar, com utilização ou disponibilização de instrumentos educativos, foram as estratégias mais frequentes. **Implicações:** Foi esclarecido como usar a educação em saúde para incentivar a vacinação de crianças, detalhando os locais de intervenção, o público-alvo, os instrumentos necessários e as estratégias eficazes.

DESCRITORES

Criança; Educação em Saúde; Vacinação; Revisão.

Continuous education and training of professionals is necessary to address doubts about vaccines in an informed and empathetic manner. Therefore, it is necessary to strengthen health education as a public policy for a sustainable approach to disease prevention.

CONCLUSION

According to the studies, it was possible to elucidate how to use health education to encourage the vaccination of children. The intervention locations, target audience, necessary instruments, and most effective strategies were described. The community and the home were the main places mentioned for health education, while fathers, mothers, guardians, and childcare providers were identified as the most relevant audience for interventions.

Educational instruments, such as booklets, leaflets, and health manuals, were the most used. The most common strategy was conventional health education in waiting rooms, during care, or during home visits, where educational instruments developed according to the sociocultural reality of each location can be used and made available. In times of globalization and rapid information sharing over the internet, professionals must use mass media, create social networks for health services, and share scientific evidence.

RESUMEN

Introducción: A pesar de que las vacunas han mejorado significativamente la vida de la población mundial desde su implementación, recientemente ha habido una estagnación y, en algunos casos, incluso una reversión de los logros previamente obtenidos. **Objetivo:** Resumir la evidencia sobre cómo utilizar la educación en salud para incentivar la vacunación infantil. **Delineación:** Revisión rápida, guiada por la pregunta "¿Cómo utilizar la educación en salud para incentivar la vacunación infantil?", realizada en 2023, utilizando dos bases de datos y una biblioteca electrónica. Las búsquedas resultaron en 2.666 documentos, de los cuales se seleccionaron 12 artículos para la extracción de datos, la síntesis y la discusión. **Resultados:** La comunidad y el hogar fueron los principales lugares descritos para las intervenciones. Padres, madres y tutores/cuidadores de niños fueron el público más mencionado para las intervenciones. Los instrumentos educativos, como cartillas, folletos, libretos y manuales de salud, fueron los más utilizados. La transmisión de información de manera convencional en la sala de espera, la enseñanza durante la atención o la visita domiciliaria, con el uso o la disponibilidad de instrumentos educativos, fueron las estrategias más frecuentes. **Implicaciones:** Se aclaró cómo utilizar la educación en salud para incentivar la vacunación infantil, detallando los lugares de intervención, el público objetivo, los instrumentos necesarios y las estrategias eficaces.

DESCRITORES

Niño; Educación en Salud; Vacunación; Revisión.

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ARSN: substantial contributions to the conceptualization of the study. ARSN, ARBS and GNA: substantial contributions to the design of the study, analysis and interpretation of data, writing and/or critical review of the content. ARSN and AIQC: contributions to the review and final approval of the final version. **All authors agree and are responsible for the content of this version of the manuscript to be published.**

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CONFLICTS OF INTEREST

There are no conflicts of interest to declare.