

Effectiveness of interventions for brazilian children and adolescents in social vulnerability: A systematic review

Eficácia das intervenções para crianças e adolescentes brasileiros em vulnerabilidade social: Uma revisão sistemática

Eficacia de las intervenciones para niños y adolescentes brasileños en situación de vulnerabilidad social: Una revisión sistemática

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Abstract

Objective: To evaluate the effectiveness of interventions aimed at Brazilian children and adolescents in situations of social vulnerability on outcomes of child development. **Methods:** A systematic review conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and a protocol registered with the International Prospective Register of Systematic Reviews - PROSPERO (No. CRD42023442457), conducted between 2022 and 2023, across databases including Medline, PubMed, Scielo, Embase, Cochrane, Scopus, CINAHL, Web of Science, PEDro, and Lilacs. The Cochrane scale was used to assess risk of bias, and the quality of evidence was evaluated using the Grading of Recommendations Assessment, Development, and Evaluation. **Results:** Ten studies were included, encompassing 7,134 children and adolescents in situations of social vulnerability. While not all studies showed significant changes, all identified some positive change in favor of the intervention. Outcomes such as mortality, infections, and diarrhea had the best results, with these indicators showing sensitivity to change with basic interventions like vaccination and surveillance. A lack of scientific production regarding programs and actions for the study population was also noted. **Conclusion:** It is essential to expand scientific research on programs and actions targeting this population to develop more comprehensive and effective strategies that address the persistent challenges in these communities.

Keywords: Social vulnerability; Intervention; Child development.

Resumo

Objetivo: Avaliar a efetividade de intervenções voltadas a crianças e adolescentes brasileiros em situação de vulnerabilidade social nos desfechos do desenvolvimento infantil. **Métodos:** Revisão sistemática realizada de acordo com as diretrizes do Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) e com protocolo registrado na International Prospective Register of Systematic Reviews – PROSPERO (nº CRD42023442457), conduzida entre 2022 e 2023. A busca foi realizada nas bases de dados Medline, PubMed, Scielo, Embase, Cochrane, Scopus, CINAHL, Web of Science, PEDro e Lilacs. A escala da Cochrane foi utilizada para avaliação do risco de viés e a qualidade das evidências foi analisada por meio do sistema GRADE (Grading of Recommendations Assessment, Development, and Evaluation). **Resultados:** Foram incluídos dez estudos, abrangendo 7.134 crianças e adolescentes em situação de vulnerabilidade social. Embora nem todos os estudos tenham apresentado mudanças significativas, todos identificaram algum efeito positivo em favor das intervenções. **Desfechos**

como mortalidade, infecções e diarreia apresentaram os melhores resultados, demonstrando sensibilidade a intervenções básicas, como vacinação e vigilância. Observou-se também uma escassez de produção científica sobre programas e ações voltados a essa população. Conclusão: É fundamental ampliar a produção científica sobre programas e ações direcionados a essa população, a fim de desenvolver estratégias mais abrangentes e eficazes que enfrentem os desafios persistentes nessas comunidades.

Palavras-chave: Vulnerabilidade social; Intervention; Desenvolvimento infantil.

Resumen

Objetivo: Evaluar la efectividad de las intervenciones dirigidas a niños y adolescentes brasileños en situación de vulnerabilidad social en los resultados del desarrollo infantil. Métodos: Revisión sistemática realizada de acuerdo con las directrices del Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) y con protocolo registrado en el International Prospective Register of Systematic Reviews – PROSPERO (n.º CRD42023442457), llevada a cabo entre 2022 y 2023. La búsqueda se realizó en las bases de datos Medline, PubMed, Scielo, Embase, Cochrane, Scopus, CINAHL, Web of Science, PEDro y Lilacs. La escala de Cochrane se utilizó para evaluar el riesgo de sesgo y la calidad de la evidencia se analizó mediante el sistema GRADE (Grading of Recommendations Assessment, Development, and Evaluation). Resultados: Se incluyeron diez estudios que abarcaron a 7.134 niños y adolescentes en situación de vulnerabilidad social. Aunque no todos los estudios mostraron cambios significativos, todos identificaron algún efecto positivo a favor de las intervenciones. Resultados como mortalidad, infecciones y diarreia presentaron los mejores efectos, demostrando sensibilidad a intervenciones básicas, como vacunación y vigilancia. También se observó una escasez de producción científica sobre programas y acciones dirigidos a esta población. Conclusión: Es fundamental ampliar la producción científica sobre programas y acciones destinadas a esta población, con el fin de desarrollar estrategias más amplias y eficaces que afronten los desafíos persistentes en estas comunidades.

Palabras clave: Vulnerabilidad social; Intervención; Desarrollo infantil.

1. Introduction

Human development encompasses a dynamic and multifaceted process that unfolds through continuous changes in cognitive, motor, and socio-emotional dimensions, beginning in prenatal life and extending through the individual's adaptation to physical and sociocultural contexts (Souza et al., 2021). In childhood and adolescence—especially during the early years of life (0–6 years)—this process becomes particularly intense, as the nervous system reaches a period of heightened plasticity that facilitates learning through synaptogenesis and other neurophysiological mechanisms (Jin, 2024). Nevertheless, both intrinsic and extrinsic conditions may interfere with health, well-being, and developmental trajectories, contributing to states of vulnerability (Santos et al., 2021). This vulnerability arises from circumstances that heighten exposure to risks and adversities, frequently associated with limited access to protective or supportive resources (Mah et al., 2023).

Childhood is defined as extending up to 12 years of age, while adolescence encompasses the period up to 18 years (ECA, 1990). According to data from UNICEF, approximately 32 million Brazilian children and adolescents live under poverty conditions, with deprivation in income, housing, sanitation, education, access to information, and protection from child labor. This scenario disproportionately affects Black and Indigenous populations and individuals residing in regions such as the North, Northeast, and parts of Minas Gerais (Jequitinhonha and Mucuri Valleys) and São Paulo (UNICEF, 2023). Addressing this issue requires the implementation of consistent and effective public policies. Both the Statute of the Child and Adolescent (ECA, 1990) and the Brazilian Federal Constitution (1988) emphasize that the State and society share the duty of guaranteeing and prioritizing the rights of children and adolescents, particularly those in situations of greater social vulnerability (Painter et al., 2024).

The Abrinq Foundation, in the edition of "A Portrait of Childhood and Adolescence in Brazil," highlighted the expansion of the social protection system until 2010 with projects such as Bolsa Família (PBF), Bolsa Alimentação, Auxílio Gás, and Cartão Alimentação (Castro & Kosminsky, 2010). Between 2021 and 2022, the number of PBF beneficiaries increased from 2.9% to 5.9%, reflecting the growing demand for social assistance.

Integrated collaboration among the education, health, and social assistance sectors is crucial to addressing complex

social challenges. Wiedemann and Ingold (2022) argues that intersectorality can achieve cross-sectoral dimensions, allowing for new perspectives and values. This approach enhances the effectiveness of interventions, benefiting both individuals and society. To serve the most vulnerable populations, it is necessary to implement specific interventions that promote not only health care and disease prevention but also positive development for the country (Prado et al., 2022).

The objective of this study was to evaluate the effectiveness of interventions aimed at Brazilian children and adolescents in situations of social vulnerability on child development outcomes.

2. Methodology

A systematic literature review was carried out following the methodological principles proposed by Snyder (2019). The review adopted a quantitative approach concerning the number of studies included (ten articles) and a qualitative perspective regarding the in-depth analysis of their content (Pereira et al., 2018). The procedures adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, ensuring methodological transparency and rigor. The corresponding protocol was duly registered in the International Prospective Register of Systematic Reviews (PROSPERO) under registration number CRD42023442457. The research question was structured based on the PICO model, which defines the essential components of the investigation: the population comprised Brazilian children and adolescents living in conditions of social vulnerability; the intervention referred to actions within the fields of health, education, or social assistance; the comparator included usual care, placebo, or absence of intervention; and the outcomes focused on indicators of child development, growth, and educational progress.

2.1 Identification and Selection of Studies

Comprehensive database searches were performed from September 2023 to November 2024, with an update in January 2024. The review included the following databases: Medline, PubMed, SciELO, Embase, Cochrane Library, Scopus, CINAHL, Web of Science, PEDro, and LILACS. No restrictions regarding publication date were applied. The search strategy combined descriptors related to the target population—children and adolescents experiencing social vulnerability—and a broad range of relevant interventions and determinants, including child development, early stimulation, public policies, public health, maternal and child care, maternal depression, food insecurity, social support, family dysfunction, poverty, mental health disorders, institutionalized childhood, domestic violence, sexual abuse, maternal morbidity and mortality, physical activity, and responsive caregiving. Filters for experimental and quasi-experimental designs were incorporated to ensure methodological consistency. The combination of keywords, subject headings, and Boolean operators (AND, OR) was customized to each database, and full search strategies are detailed in Supplementary Material 1. Additionally, a manual search was conducted by reviewing the reference lists of the included studies.

Study selection was performed independently by two reviewers (DOS and AB) in accordance with the predefined inclusion criteria. In cases of disagreement, a third reviewer (RLSM) resolved discrepancies through discussion and consensus. Eligible studies met the following inclusion criteria:

- (1) they involved interventions in the fields of health, education, or social assistance targeting Brazilian children and adolescents up to 18 years of age living in socially vulnerable contexts;
- (2) they were published in peer-reviewed journals; and
- (3) full texts were available in Portuguese, English, or both.

Studies were excluded if they:

- (1) lacked an experimental or quasi-experimental design;

- (2) did not assess intervention effects on child development; or
- (3) involved non-Brazilian participants.

2.2 Evaluation of Methodological Quality

The Cochrane Risk of Bias tool (RoB 2.0) was applied to evaluate the methodological quality and potential sources of bias in the included studies (Higgins, Altman, & Sterne, 2011). This instrument, developed for assessing experimental and quasi-experimental designs, examines five key domains: randomization process, deviations from intended interventions, missing outcome data, measurement of outcomes, and selection of the reported results. Each domain contains specific signaling questions with five possible responses: “Yes,” “Probably yes,” “No,” “Probably no,” and “No information.” The definitive responses (“yes” or “no”) represent stronger evidence, while the option “not applicable” is reserved for optional items. Based on these answers, an algorithm determines the risk of bias within each domain as low, high, or some concerns. The overall judgment of risk of bias follows these criteria: (1) if all domains are rated as low risk, the study is classified as having an overall low risk of bias; (2) if at least one domain raises concerns, but none are rated as high risk, the study is labeled as having some concerns; and (3) if one or more domains are rated as high risk, or multiple domains raise concerns, the study receives an overall high risk of bias rating (Higgins, Altman, & Sterne, 2011).

2.3 Participants

Brazilian children and adolescents (0 to 18) in situations of social vulnerability.

2.4 Intervention

Studies that encompassed interventions in the areas of health, education, and social assistance were considered. Thus, interventions from various health sectors that contribute to better development of the studied population were examined.

2.5 Data Extraction

A data extraction spreadsheet was developed in Microsoft Excel by the research team to systematically organize information from the studies included in this review. Data collection was performed by an independent reviewer (TBG), and the extracted information was subsequently verified by a second reviewer (DOS) to ensure accuracy and consistency. The extracted variables comprised: author and publication year, study title, design, objectives, thematic area (health, education, or social assistance), participant age (mean, standard deviation, and range), sex and sample size for both intervention and control groups (when applicable), type of vulnerability addressed, study outcomes, measurement instruments used, and main findings.

2.6 Data Analysis

The characteristics of the interventions in the included studies were categorized according to all outcomes found in the studies. A descriptive summary of the individual study results was compiled for all outcomes. After the baseline, standardized outcome measures were extracted, and alpha values were considered to verify the effects of the intervention.

2.7 Certainty of Evidence

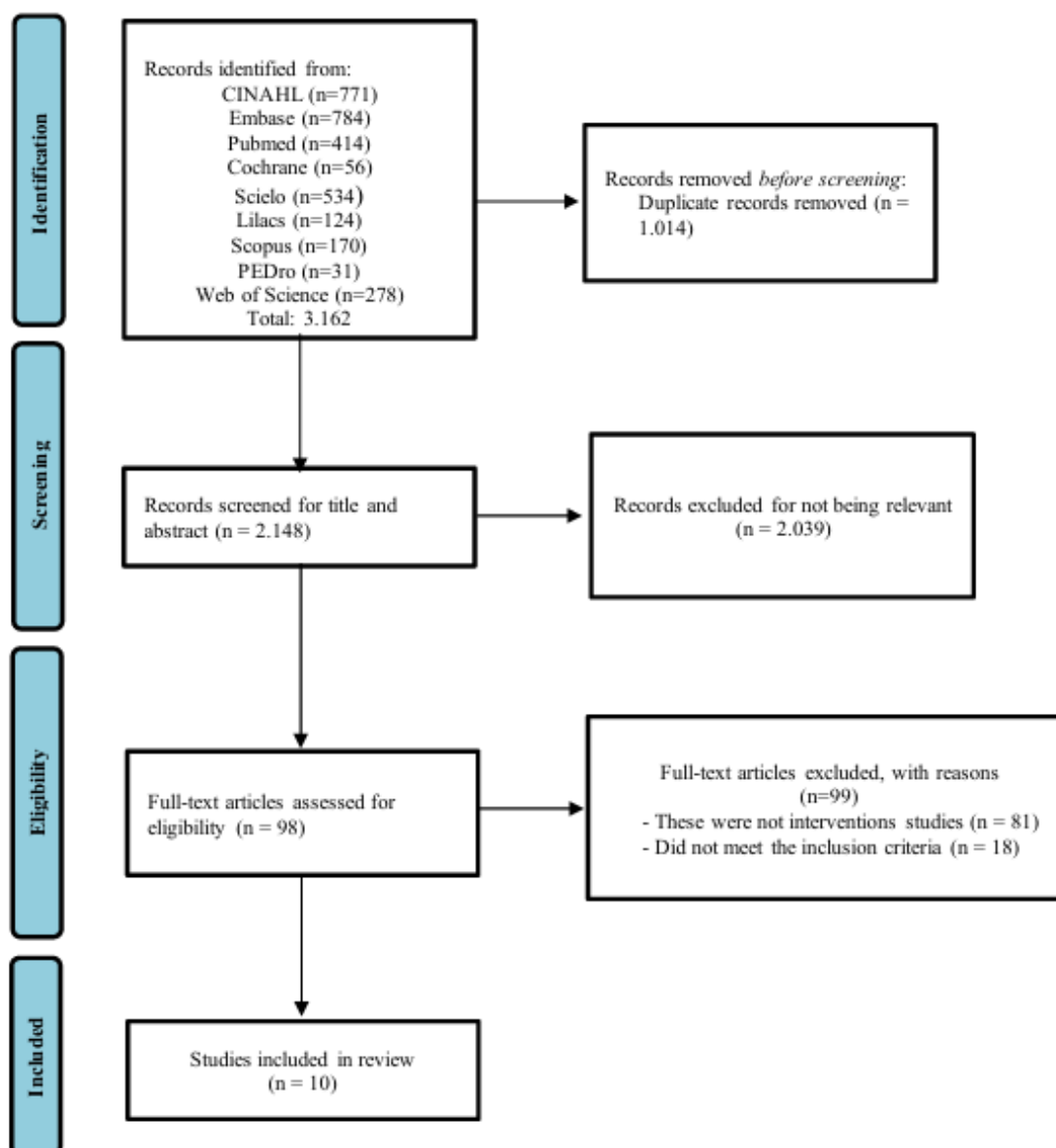
The Certainty of Evidence classification was assigned by two independent reviewers (TBG and DOS) for each outcome using the GRADE method (Grading of Recommendations Assessment, Development and Evaluation). GRADE has four levels: high, moderate, low, and very low. In randomized controlled trials (RCTs), the initial high score can be downgraded based on the following criteria: (1) risk of bias; (2) inconsistency among RCTs; (3) indirectness; (4) imprecision;

and (5) publication bias (Shao et al., 2023). High scores indicate that further research is unlikely to change the confidence in the effect estimate; moderate scores suggest that further research may significantly impact the confidence in the estimate; low scores indicate that further research is likely to have an important impact, potentially changing the estimate; and very low scores reflect great uncertainty about any effect estimate (Shao et al., 2023).

3. Results

A search strategy across the databases yielded a total of 3,162 potentially relevant studies. After screening by title and abstract, 109 records met the initial criteria and were independently reviewed for inclusion. Of these, 99 were excluded, leaving only 10 studies that were eligible and included in this review (Tomazoni et al. 2019; Teles et al. 2015; Rauber et al. 2014; Barbosa Filho et al. 2019; Alves et al. 2008; Lima et al. 2010; Bandeira et al. 2020; Gonçalves et al. 2019; Nahas et al. 2014; Santos et al. 2022). The study selection process is detailed in Figure 1.

Figure 1 - PRISMA flow chart diagram.



Source: Research data (2025).

3.1 Study participants and Characteristics

The ten studies included in this systematic review comprised a total of 7,134 Brazilian children and adolescents living in conditions of social vulnerability (Table 1). Participants' ages ranged from newborns (Teles et al., 2015; Santos et al., 2022) to 24 years (Nahas et al., 2014), thus encompassing both childhood and adolescence. The inclusion of participants up to 24 years old was retained because, in the study by Nahas et al. (2014), the mean age was 18.4 years, which remained consistent with the inclusion criteria. Sample sizes varied considerably, ranging from 78 participants (Alves et al., 2008) to 3,242 participants (Santos et al., 2022). In one study, the sampling unit was defined at the municipal level (26 municipalities; Teles et al., 2015), while another employed a school-based design involving 10 schools (Nahas et al., 2014).

Regarding study design, eight investigations were randomized controlled trials (Tomazoni et al., 2019; Rauber et al., 2014; Barbosa Filho et al., 2019; Alves et al., 2008; Lima et al., 2010; Bandeira et al., 2020; Nahas et al., 2014; Santos et al., 2022), whereas two employed quasi-experimental approaches (Teles et al., 2015; Gonçalves et al., 2019). The included studies represented a wide geographic distribution across Brazil. Approximately 40% were conducted in the Northeast region (Ceará and Pernambuco), while 30% originated from the South (Rio Grande do Sul). Additionally, 10% encompassed all five Brazilian regions (North, Northeast, Southeast, Central-West, and South), another 10% involved four regions (North, Northeast, Southeast, and Central-West), and the remaining 10% included two regions (Northeast and South).

Table 1 - Characteristics of the study participants.

Author and Year	Study Design	Sample Size (G1)	Age (Range)	Intervention (G1)	Sample Size (G2)	Age (Range)	Intervention (G2)	Outcome	Measurement Instrument	Results
Tomazoni et al., 2019	RCT	158	3 months	Health education on oral hygiene.	184	3 months	No intervention in the control group.	Oral health–related quality of life.	OHRQoL, SOC, and Community Periodontal Index probes.	Overall, long-term results in the intervention group were better, demonstrating the effectiveness of health education in improving oral hygiene.
Teles et al., 2015	Quasi-experimental	26 municipalities	0–4 years	Rotavirus vaccination. The study included only the intervention group.	–	–	–	Primary: impact of introducing rotavirus vaccination into the Brazilian immunization schedule on hospitalization rates for presumed acute infectious diarrhea. Secondary: vaccine safety regarding possible association with intestinal intussusception.	OHAH.	Hospitalization rates per 100,000 children before and after vaccination were 1,413 and 959, respectively, in DRX XII (Ribeirão Preto Regional Health Division), showing a decrease in hospitalizations.
Rauber et al., 2014	RCT	276	3–8 years	Dietary counseling.	376	3–8 years	No intervention in the control group.	Primary: longitudinal changes in diet quality. Secondary: impact of maternal dietary counseling during the first year of life on school-age children's diet quality.	HEI and McNemar test.	No significant difference was found between intervention and control groups in total HEI score ($p > 0.05$).
Barbosa Filho et al., 2016	RCT	548	11–18 years	Multicomponent exercise intervention.	537	11–18 years	No intervention in the control group.	Effect of the multicomponent intervention on lifestyle indicators (physical activity, screen time, healthy/unhealthy eating habits, tobacco and alcohol use).	McNemar test, logistic regression, and Youth Risk Behavior Surveillance questionnaire.	After the intervention, adolescents in the intervention schools were more likely to engage in physical activity. There was a significant increase in those meeting physical activity guidelines and reporting less than 2 hours/day of computer use.
Alves et al., 2008	RCT	39	Not reported	Physical exercise intervention.	39	Not reported	No intervention in the control group.	Effectiveness of physical exercise for weight control in overweight children.	BMI, weight, and anthropometric assessment.	All children gained weight, but the increase was smaller in the intervention group. A significant difference in BMI ($p = 0.049$) was observed between groups.
Lima et al.,	RCT	39	2	Vitamin A supplementation.	40	2	Placebo.	Improvement of intestinal	Lactulose test.	No difference in lactoferrin-positive

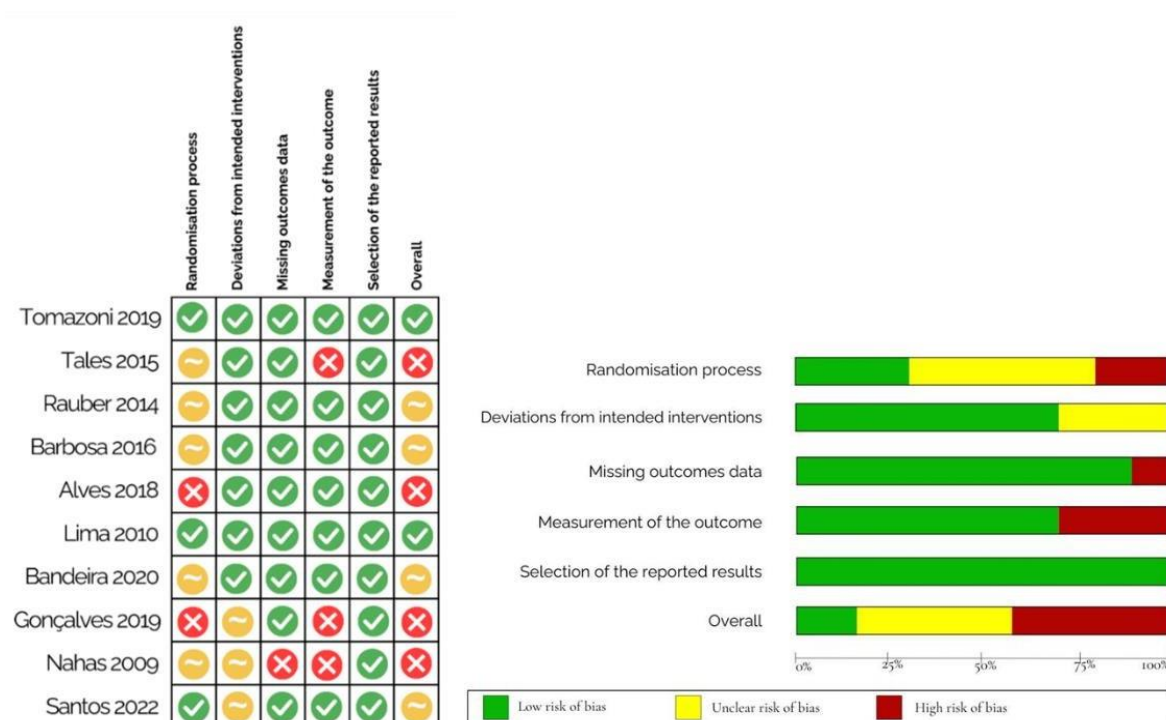
Author and Year	Study Design	Sample Size (G1)	Age (Range)	Intervention (G1)	Sample Size (G2)	Age (Range)	Intervention (G2)	Outcome	Measurement Instrument	Results
2010			months–9 years			months–9 years		barrier function, reduction of inflammation, parasitic infections, diarrheal diseases, and growth outcomes in children at high risk of subclinical vitamin A deficiency.		samples ($p > 0.05$). New intestinal parasitic infections were significantly lower in the vitamin A group, mainly due to fewer Giardia infections. No significant changes were observed in anthropometric z-scores (WHZ, HAZ, WAZ).
Bandeira et al., 2020	RCT	548	11–17 years	Multicomponent exercise program to reduce screen time.	537	11–17 years	Activities according to teachers' preferences (no instruction).	Effect of multicomponent intervention on screen time reduction.	Youth Risk Behavior Survey and self-efficacy scales.	Psychosocial factors did not mediate the intervention effect on screen time. However, school support improved significantly for both genders and older students.
Gonçalves et al., 2019	Quasi-experimental	364	Mean 5.73 (SD 0.69)	PIM – Primeira Infância Melhor program: home visits promoting early childhood development from pregnancy to 6 years.	207	Mean 5.80 (SD 0.75)	No intervention in the control group.	Impact of PIM on developmental vulnerability at school entry.	Early Development Instrument (EDI).	Multivariate analysis controlling for covariates found no significant differences in EDI outcomes between groups, although equity gaps were smaller in the PIM group.
Nahas et al., 2009	RCT	10 schools	15–24 years	“Saúde na Boa” project.	10 schools	15–24 years	No intervention in the control group.	Promotion of physical activity and healthy eating among high school students in Recife and Florianópolis.	Questionnaire and anthropometry.	Core intervention components were implemented in all 10 schools. Challenges included teacher strikes and limited engagement of canteen owners.
Santos et al., 2022	RCT	1,623	0–11 months	Criança Feliz Program.	1,619	0–11 months	No intervention in the control group.	Positive impact of the program across Brazilian municipalities.	Ages and Stages Questionnaire (ASQ-3), MICS, Edinburgh Postnatal Depression Scale, Parent-Child Conflict Tactics Scales, Juvenile Victimization Questionnaire, SDQ.	The implementation study revealed low coverage in the intervention group, contamination in controls, management deficiencies, and low-quality visits. No measurable impact was found under real-world conditions, highlighting the need for program improvement.

Source: Research data (2025).

3.2 Methodological Quality of Included Studies

Figure 2 presents the methodological quality of the studies according to Cochrane (RoB 2.0). The absence of some information, particularly regarding the randomization process (randomization sequence and allocation concealment) and outcome measurement (lack of information about the assessors' knowledge of allocation), were factors that increased the risk of bias in 80% of the studies.

Figure 2 - Methodological quality of studies according to Cochrane.



Description: green signal: low risk of bias; yellow signal: some concerns; red signal: high risk of bias. Source: Research data (2025).

3.3 Interventions

The analyzed studies include interventions from different health areas such as dentistry, nutrition, physical education, and public health. The reduction in parasitic infection rates, diarrhea, and mortality, particularly infant mortality, was the focus of two studies (Teles et al., 2015; Lima et al., 2010). One study (Tomazoni et al., 2019) evaluated the implementation of measures to improve oral health, and another study focused on improving dietary quality and nutrition (Rauber et al., 2014). Three studies analyzed interventions for a healthy lifestyle (Barbosa Filho et al., 2019; Alves et al., 2008; Nahas et al., 2014); one study (Bandeira et al., 2020) aimed at reducing screen time; and two studies (Gonçalves et al., 2019; Santos et al., 2022) worked on measures to promote health and development.

3.3.1 Efficacy of Interventions by Outcomes

Mortality, infections, and diarrhea

Two studies (Teles et al., 2015; Lima et al., 2010) analyzed the effects of interventions on mortality, infections, and diarrhea, with a total sample of 79 children/adolescents across 26 municipalities. Teles et al. (2015) investigated the effects of rotavirus vaccination (intervention group only) to reduce infections and mortality, while Lima et al. (2010) evaluated vitamin A supplementation (control group received a placebo) for reducing parasitic infections. The instruments used were OHAH

(Teles et al., 2015) and the lactulose test (Lima et al., 2010). Both studies demonstrated significant effects, with reductions in mortality, infection, and diarrhea. Teles et al. (2015) recorded a decrease in hospitalizations from 1,413 to 959 per 100,000 children in DRX XII, Ribeirão Preto, following vaccination. Lima et al. (2010) reported a lower rate of new parasitic infections in the supplemented group, suggesting that vitamin A enhances defenses against infections. The certainty of the evidence was rated as low according to GRADE (RCT evidence: high, downgraded due to risk of bias and imprecision). Annex X presents the GRADE results for all evaluated outcomes.

Oral health

One study (Tomazoni et al., 2019) evaluated the implementation of oral health programs in schools, with intervention and control groups comprising children and adolescents aged 8 to 14 years. The intervention group consisted of 158 participants, while the control group had 184. The intervention involved health education regarding oral hygiene (the control group received no intervention). The OHRQoL, SOC, and Community Periodontal Index probes were used as outcome measures. Overall, the long-term results were better in the intervention group, demonstrating the effectiveness of health education in improving oral hygiene. According to GRADE, the certainty of the evidence for this outcome was rated as moderate (RCT evidence: high, downgraded due to imprecision).

Improved dietary quality and nutrition

One study (Rauber et al., 2014) evaluated the effect of a dietary counseling intervention on the diet quality of 652 children aged 3 to 8 years, focusing on tracking dietary intake during childhood (with no intervention in the control group). The intervention group included 276 children (145 aged 3–4 years and 131 aged 7–8 years), while the control group had 376 children (200 aged 3–4 years and 176 aged 7–8 years). The HEI and McNemar test were used as measurement instruments. Although no significant difference was found between the intervention and control groups in the total HEI score ($p > .05$), as both did not meet the study's established targets, it was noted that eating habits are established early in life. Therefore, actions should be undertaken to promote healthy eating from an early age, which can be facilitated through maternal counseling during the first year of life. The certainty of the evidence for this outcome was rated as low according to GRADE (RCT evidence: high, downgraded due to risk of bias and inconsistency).

Healthy lifestyle

Three articles (Barbosa Filho et al., 2019; Alves et al., 2008; Nahas et al., 2014) addressed outcomes related to lifestyle and healthy habits, involving 1,163 children and adolescents aged 0 to 24 years. The study by Barbosa Filho et al. (2019) evaluated a multicomponent intervention; Alves et al. (2008) focused on an intervention involving physical exercise for weight control; and Nahas et al. (2014) described the methodology of the "Saúde na Boa" project in 10 schools. The measurement instruments used were the McNemar test, logistic regression, and the Youth Risk Behavior Surveillance questionnaire (Barbosa Filho et al., 2019); BMI, weight, and anthropometric assessment (Alves et al., 2008); and questionnaires and anthropometry (Nahas et al., 2014). Two studies (Alves et al., 2008; Nahas et al., 2014) showed significant effects: in Alves et al. (2008), there was weight gain in all children, greater in the control group, with $p = .049$ for the BMI outcome, favoring exercise; and in Nahas et al. (2014), the project significantly reduced school dropout rates despite adversities such as strikes. The study by Barbosa Filho et al. (2019) did not achieve the expected outcomes, with statistically significant differences only for the consumption of salty foods ($p = .005$) and sweets ($p = .017$), as well as an increase in the number of adolescents watching TV ($p = .004$) or using a computer for less than two hours a day ($p = .001$). The certainty of the evidence for these outcomes was rated as low in GRADE, downgraded due to risk of bias.

Reducing screen time

A study by Bandeira et al. (2020) analyzed the effect of a multicomponent program on reducing screen time among 1,085 children and adolescents aged 11 to 17 years. The intervention group included 548 participants (51.8% boys and 48.2% girls), while the control group consisted of 537 participants (51.2% boys and 48.8% girls). The measurement instruments used were the Youth Risk Behavior Survey questionnaire and self-efficacy scales. The post-intervention results did not show a significant effect on reducing screen time, with $p = .477$ for boys and $p = .686$ for girls. The certainty of the evidence for this outcome was rated as moderate according to GRADE (RCT evidence: high, downgraded due to risk of bias).

Health and development

Two health assistance programs were analyzed, involving a total of 5,601 children aged 0 to 6 years. One study by Gonçalves, Duku and Janus (2019) evaluated the Programa Primeira Infância Melhor (PIM), which promotes home visits and family monitoring, while another by Santos et al. (2022) analyzed the Programa Criança Feliz implemented in 30 municipalities in Brazil. The instruments used were the Early Development Instrument (EDI) in the study by Gonçalves, Duku and Janus (2019), and the Ages and Stages Questionnaire (ASQ-3), MICS, Edinburgh Postnatal Depression Scale, Parent-Child Conflict Tactics Scales, Juvenile Victimization Questionnaire, and SDQ in the study by Santos et al. (2022). Both investigations did not achieve the expected outcomes. Gonçalves, Duku and Janus (2019) found no significant differences in EDI scores between the groups analyzed, while Santos et al. (2022) faced challenges such as the COVID-19 pandemic, which hindered the program's implementation and limited its impact on promoting child development. These results indicate the need for programmatic improvement. According to GRADE, the certainty of evidence for these outcomes was rated as very low (RCT evidence: high, downgraded due to risk of bias and inconsistency).

4. Discussion

Childhood and adolescence represent developmental stages that demand integrated and multidimensional support, with both the State and society sharing the duty to provide conditions that foster holistic growth and well-being (ECA, 1990). The present review identified interventions with heterogeneous methodological quality, revealing that only about 20% of the studies exhibited a low risk of bias. Despite these methodological variations, the analyzed interventions consistently demonstrated positive effects on child and adolescent health and development. The certainty of the evidence, evaluated through the GRADE framework, ranged from very low to moderate, mainly due to issues related to inconsistency and imprecision among study findings.

The included studies illustrate that children and adolescents living in socially vulnerable contexts experience multifactorial challenges spanning the health, education, and social assistance sectors (Silva et al., 2024; Brito et al., 2024). Notable progress—such as declines in infant mortality and improvements in oral health, nutrition, and developmental outcomes—has been associated with public policies guided by the Statute of the Child and Adolescent (ECA) (Brito et al., 2024). Between 1996 and 2017, an estimated 827,000 child lives were saved in Brazil, accompanied by improvements in educational access and a reduction in child labor (UNICEF, 2020). Nonetheless, the majority of studies reviewed still focus predominantly on health-related outcomes, indicating an imbalance in the evidence across policy areas.

In earlier decades, public initiatives primarily sought to reduce infant mortality and manage common childhood diseases. Over time, however, the scope of these programs expanded to encompass emerging health and behavioral issues, such as childhood obesity, excessive screen exposure, and the promotion of overall psychosocial development, reflecting shifts in the national public health agenda. During the 1970s through the early 2000s, interventions were largely concentrated on

combating malnutrition and preventable causes of mortality (Teles, 2015; Lima, 2010). In more recent years, attention has increasingly turned toward comprehensive health promotion, as emphasized by Barbosa Filho (2016) and Da Silva Bandeira (2020), who highlight the role of physical activity, adequate nutrition, and a balanced integration of academic, leisure, and social experiences in fostering sustainable child development.

Despite substantial progress, persistent regional disparities continue to affect child and adolescent health in Brazil, particularly in areas of heightened vulnerability. The COVID-19 pandemic has further exacerbated these inequities (Hughes et al., 2021; Ribeiro et al., 2023), intensifying poverty and extreme poverty rates while worsening challenges related to health promotion. In addition, vaccine hesitancy has contributed to declining immunization coverage (FUNDAÇÃO ABRINQ, 2023). Since 2016, national vaccination rates have fallen below two-thirds of the population, and coverage among children under one year of age has also declined, increasing the risk of outbreaks of diseases previously under control (FUNDAÇÃO ABRINQ, 2023). Thus, while earlier advances remain significant, ongoing national and global crises pose serious threats of reversing the progress achieved in child and adolescent well-being.

The findings of this review align with previous research emphasizing the importance of early interventions in mitigating vulnerability (Birchwood, 2000). A systematic review by Marini, Lourenço, and Barba (2017) identified a scarcity of literature on this topic, underscoring the urgency of continuously updating healthcare professionals and aligning practices with international guidelines. Similarly, Fonseca et al. (2013) highlighted significant progress in public policies, particularly the Programa Saúde na Escola, which promotes comprehensive and intersectoral care for children and adolescents, reinforcing the principles and rights established in the ECA. Health education has emerged as a cornerstone strategy within primary care, fostering awareness and self-care behaviors among this population.

Although the implementation of the ECA represented a milestone in child protection and development, profound inequalities persist. In 2023, UNICEF reported that 32 million Brazilian children and adolescents were living in poverty—a condition that disproportionately affects those already in vulnerable contexts, perpetuating cycles of social inequity (UNICEF, 2023). This alarming scenario underscores the urgent need for intensified and coordinated efforts across multiple sectors. It is imperative to advance multidisciplinary research to better understand and address the structural determinants of inequality, expand and optimize social programs to ensure broader and more equitable access, increase public investment in early childhood and adolescence, and strengthen legislation that guarantees sustained, long-term impact. Without such coordinated actions, cycles of poverty and inequality will persist, threatening the health, education, and future opportunities of millions of Brazilian children and adolescents.

Finally, this review presents certain limitations, particularly the heterogeneity among included studies, which hindered direct comparisons and generalization of results. Furthermore, the limited number of studies addressing the fields of education and social assistance constrains the evidence base, revealing a clear need for further high-quality research in these areas to support comprehensive and equitable public policies for children and adolescents in situations of social vulnerability.

5. Conclusion

In summary, of the 10 intervention studies identified, although not all studies demonstrated clinically and/or statistically significant changes or fully achieved their initial objectives, all reported some positive change in favor of the intervention. The outcomes of mortality, infections, and diarrhea (hospitalizations, incidence, and prevalence) showed the best results, with these indicators proving sensitive to change through basic interventions such as vaccination and surveillance. In a general context, despite the heterogeneity of outcomes and results, all interventions were centered around the health sector. Finally, this review highlights the importance of well-structured and comprehensive interventions for the well-being and

development of children and adolescents in vulnerable situations. Advancements in this field require continuous research, practice, and cross-sector collaboration, always aiming to meet the needs of this population facing many adverse conditions.

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