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REVIEW ARTICLE

How parenting interventions affect early childhood development: a literature review

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Keywords:
Child development, Child behavior, Education, nonprofessional.

Abstract

Objective: To describe and evaluate the main models of parental intervention. **Method:** A search was carried out for randomized clinical trials in two electronic databases: PUBMED and Embase, during the period from 2018 to 2022. Articles with a primary outcome on child development in children during early childhood with typical development were included, including 19 articles. **Results:** As a result, we obtained 3 main intervention models: feedback model of the child-caregiver interaction, model with face-to-face delivery of instructions and model of remote delivery by application, with language and behavior domains being the most evaluated, mainly in pre-school children. school. The strategy that was most effective in child development was the model with greater interaction between caregiver-child and with the training team, with a minimum intervention time of one year for a sustained effect on the evaluated domains. **Conclusion:** The heterogeneity of the models makes more detailed evaluations difficult, requiring new evaluations with more homogeneous parameters in order to allow more consistent results. There is no conflict of interest.

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INTRODUCTION

Child development is a broad concept composed of biological and psychosocial definitions. From a neurobiological point of view, neurodevelopment begins in the fourth week of the prenatal period, concluding the process of neurological maturation around the second decade of life, occurring in a constant and sequential manner[1,2]. Integrated with biological development, according to constructive theories, child development occurs through stages of development that are progressive, that advance with age and that require the interaction of the subject with the environment to generate the learning of skills and behaviors, thus, it is characterized as an active process of the child[3].

Since development is individual and varies widely by age, the assessment of development based on the median milestones expected for each age group can be performed with standardized tests associated with clinical impressions. In this way, the assessment can identify and intervene early in neurodevelopmental changes through the systematic assessment of the domains of child development: motor (fine and gross), language (receptive and expressive), cognitive, socio-emotional and adaptive[1,4,5].

Although the genetic basis defines an individual's potential development, the influence of environmental factors on this basis is an important determinant of the full development of the human being[1,6].

The influences of the environment on the genetic basis occur dynamically and can have harmful consequences, such as prenatal diseases, perinatal complications and toxic postnatal experiences, with greater harm when accumulated. However, environmental factors can have a beneficial influence through a positive response to stress, a safe environment and stable relationships[4,6].

During early childhood, the period from conception to 6 years of age, there is a greater immediate impact of the toxic environmental effect on child development[1,7]. In addition to the immediate effect, long-term consequences have also been associated, such as learning difficulties, mental disorders (depression and anxiety) and behavioral problems (internalizing and externalizing)[6,8].

Strategies to improve nutritional support and improve child health are important factors in achieving full child development. However, evidence suggests that parental interventions are the most effective in improving motor, language, cognitive and socio-emotional skills, promoting optimal early childhood development[9].

Parental interventions began in the 1960s with the understanding that parents, in addition to therapists and educators, are important agents in modifying undesirable behaviors of children and adolescents by modifying parental behavior. Thus, programs for parents have proliferated over time, expanding their field of action to other areas of child development beyond behavioral development[10].

Parental interventions are heterogeneous programs developed with the objective of improving child development, mainly in early childhood, through the training of primary caregivers. The programs have different components, and can include parental education in child development, strengthening parent-child relationship, parental practices of play and reading, teaching socio-emotional and behavioral skills, and assessing the mental health of parents[10,11]. There is a wide variety of intervention models, which can contain different components, assessing one or more domains of child development[9]. In general, questionnaires are applied to assess development and parental complaints, and at this initial stage, practical assessment of the child may be associated. The content addressed with parents is delivered through follow-up sessions with weekly meetings, with a new assessment of parents and children being carried out at the end of the training[8,10].

The existing models are quite varied, differing in terms of the components assessed, age groups, economic profiles of parents, data collection methods, strategies for delivering practical content, and ways of measuring immediate results and during follow-up. Thus, it is difficult to assess the effectiveness of different intervention models[9,10]. In addition, there are cultural differences in parenting practices, making it a challenge to apply a model tested in a local community on a large scale[9].

Economic approaches focused on early childhood development have been the subject of public health measures with the aim of improving health indicators in the short and long term, through the creation of programs that support early childhood. Such practices are based on the greater effectiveness of significantly reducing chronic diseases, acting primarily in prenatal and early childhood compared to adulthood[6,12].

The main risks that threaten a child's development, such as nutritional, health, and psychosocial risks; impact 219 million children under 5 years of age, representing a risk that they will not reach their development potential[9].

The models of parental interventions that are active in early childhood, developed as social and behavioral strategies, have proven to be effective means of achieving full child development[10].

Given the diversity of the populations to which parental interventions are applied, the heterogeneity of existing models, associated with different environmental and social contexts[9], it is necessary to stratify the components of the main existing intervention models with an assessment of the results.

This work is a literature review of the most recent articles that will summarize parental interventions with a focus on unpacking the information on how the interventions are carried out and on which domains of development they acted on and which parental skills are addressed, thus facilitating a comparative evaluation between the models.

Given the above, the study's main objective was to identify parental interventions with outcomes that impacted child development in early childhood. Furthermore, it sought to describe the main components addressed in parental interventions: intervention models, content delivery method, intervention duration and outcomes on the development domains; and to evaluate the effectiveness of intervention models on the domains of child development.

METHODS

Type of study

This is a literature review of parental interventions that acted on at least one domain of child development in early childhood.

Data collection

Randomized clinical trials, in English and Portuguese, with full text were accepted.

The studies were obtained from the Embase and Pubmed/Medline databases. The following MeSH descriptors were used: "child development", "child behavior", "parenting education". The term "parenting training" was also added to the search, using the following search strategy:

- ((Child behavior) OR (child development)) AND ((Parenting education) OR (Parenting training)) for the Pubmed database;
- ('child development'/exp OR 'child development' OR 'child behavior'/exp OR 'child behavior') AND ('parenting education'/exp OR 'parenting education' OR 'parent training'/exp OR 'parent training') for the Embase database, adding a filter to select articles only from the Embase platform.

The age ranged from 1 month to 6 years and articles published between 01/01/2018 and 11/01/2022 were added as filters in the searches. From this initial search, 544 articles were listed in Pubmed and 24 articles in Embase.

The inclusion criteria were randomized clinical trials with parental intervention containing an outcome in at least one domain of child development, children with typical development and age range in early childhood, children under the care of biological parents.

The exclusion criteria used were studies in the neonatal period, studies that did not detail the intervention model.

Studies with a neonatal age range presented many interventions with outcomes in other aspects outside of child development and involved children with prematurity and were removed from the study. Studies prior to the last 5 years were removed to summarize the most recent interventions applied.

The primary outcome was interventions on the domains of child development and the secondary outcomes were interventions on parenting skills.

The data extracted from the randomized trials will be: type of study, country of intervention, caregivers who participated, mode of care (individual, group or both), location where the intervention was carried out (home, clinics, hospitals, community), number of intervention and control participants, age of children at the beginning of the intervention, method of content delivery (online, in person), description of the pre-test and who administered the questionnaire (caregivers, mediator, teacher), duration of the intervention, follow-up time, instrument to measure outcome and who administered it (caregivers, mediator, teachers), which domains were assessed (motor, language, cognitive, socio-emotional, behavior), which parenting skills were assessed (knowledge, parenting practices), and, when present, the level of qualification of the mediator.

Data analysis

The articles selected in these databases will be assessed using the CONSORT checklist, with the information specified in the method being extracted and presented in a summarized Chart.

Ethical issues

Because this review did not involve contact with people, ethics committee approval was not required.

RESULTS

Identification of eligible studies

According to the PRISMA flow diagram (Figure 1), the initial search identified 568 articles, resulting in 545 after exclusion of duplicate studies. The initial screening by reading the title and abstract led to the removal of 503 studies that did not meet the inclusion criteria (no parental intervention, n=8; not randomized trial, n=2; adoptive parents, n=1; did not present child development domains in the outcome, n=362; atypical development, n=105; age > 6 years, n=25). A total of 42 studies were eligible for text reading after title and abstract screening. Finally, 23 studies were excluded because they did not meet the inclusion criteria (no child development domains in the outcome, n=12; atypical development, n=6; age > 6 years or < 1 month of life, n=3; ongoing studies without results, n=2). Finally, 19 studies were eligible for the review.

Description of the population and study

The total number of caregiver-child participants in this review was 5,794 in the 19 articles included, as described in Chart 1. The studies were published between 2017 and 2022. The population is distributed across 10 countries, covering all continents: North America, n=6[13-18]; South America, n=3[19-21]; Europe, n=1[22]; Africa, n=5[23-27]; Asia, n=2[28,29]; Oceania, n=2[30,31].

The interventions were carried out between the age range of 1 month and 72 months of age, with 13 of the 19

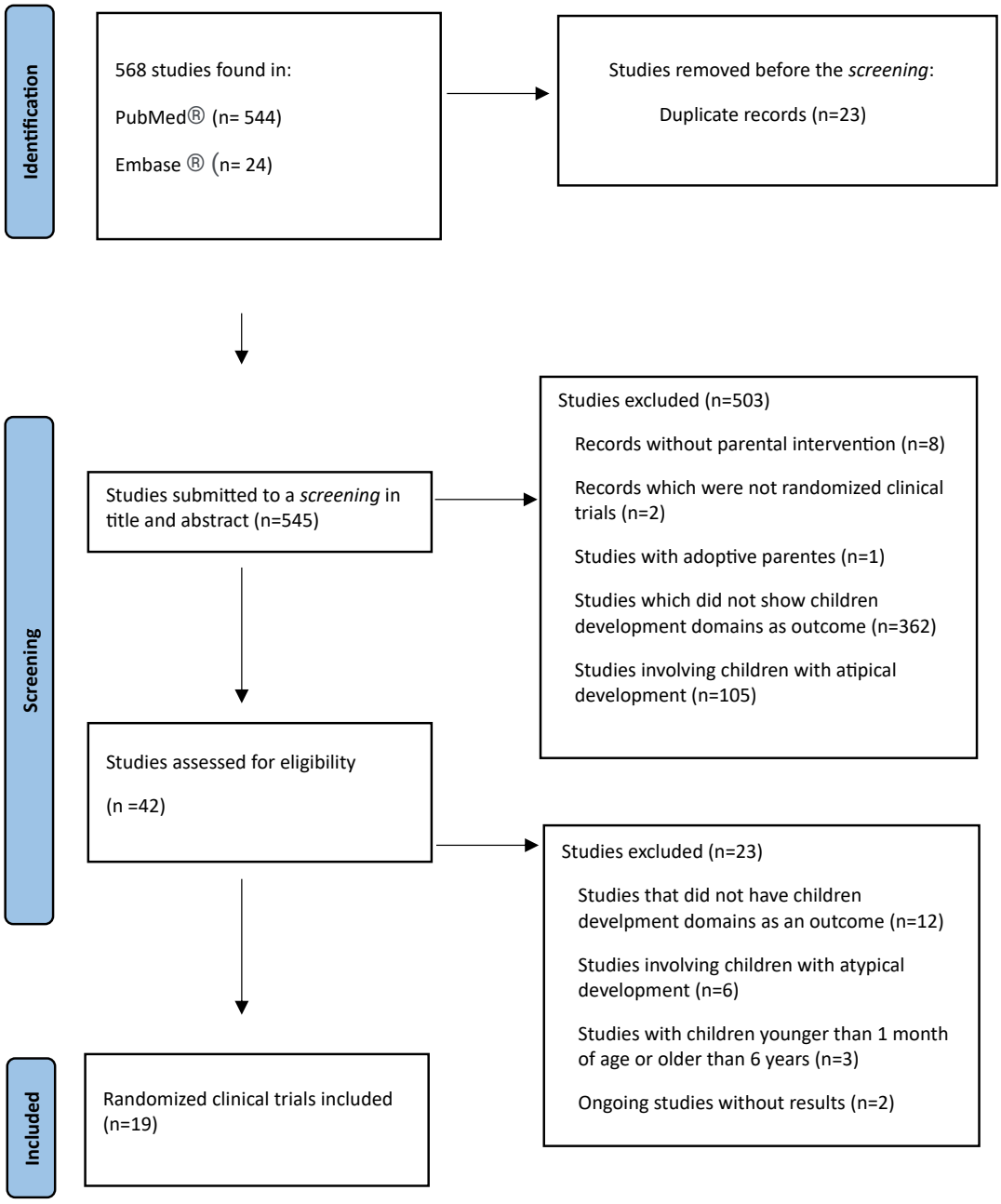


Figure 1. PRISMA flow diagram with the selection of eligible studies.

studies involving children under 48 months. The caregivers invited to participate in the studies were mostly mothers

All articles were single-blind randomized controlled clinical trials. The studies delivered the intervention predominantly in person, with only 1 study online[16].

There were 7 studies with individual application, 6 studies with group application and 4 applications in a hybrid model, that is, part of the intervention was individual and part was group; and 1 study with application of the intervention in both group and individual modalities[15].

The duration of the interventions varied from 2 weeks to 54 weeks. The frequency of the meetings varied according to the strategy adopted, as shown in Chart 2. Only 2 articles did not apply a pre-test, using only a post-test[14,17].

Description of parental interventions

The characteristics of parental interventions are described in Charts 2 and 3. All interventions aimed to act on child development by improving parenting skills.

Chart 1. Summary of the randomized controlled clinical trials included in this review.

Author, year, country	Sample, age (month)	Caregivers	Place of intervention, delivery model	Healthcare model
Chacko et al.[13], 2017, USA	I:64, C:62, Ag:48	father	clinic	group
Mendelsohn et al.[14], 2018, USA	I1:70(Id:0-36),I2:61(Ag:36-60), I3:62(Ag:0-60),C:59	mother	Clinic, home	individual
Ramirez et al.[15], 2018, USA	I1:53; I2:22; C:24, Ag:6	father, mother	clinic	Group individual
Weisleder et al.[19], 2018, Brazil	I:279, C:287, Ag:24-48	Mother, caregivers	Daycare centers	Group
Alvarenga et al.[20], 2019, Brazil	I:28, C:28, Ag:3-10	Mother	Home	individual
Cova et al.[21], 2019, Chile	I:178, C:154, Ag=36-72	Mother, Father, caregivers	clinic	Group
Kohlhoff et al.[30], 2020, Australia	I= 28, C=28, Ag = 14-24	caregivers	clinics	group
Dowdall et al.[25], 2021, South Africa	I=70, C= 70, Ag = 21-28	mother, caregivers	community	Hybrid
Jensen et al.[26], 2021, Ruanda	I = 541, C= 508, Ag:6-36	caregivers	home	individual
Luoto et al.[27], 2021, Kenia	I1:376, I2:400, C:376, Ag: 6-24	Father, mother	community, church	hybrid
O'Farrelly et al.[22], 2021, United Kingdom	I= 151, C=149, Ag=12-36	Father, mother	home	individual
Roby et al.[17], 2021, USA	I1:101,C1:99,I2:100,C2:103, Ag:1-6	mother, caregivers	clinic	individual
Havighurst et al.[31], 2022, Australia	I:166, C = 140, Age= 18-36	Father, mother caregivers	clinic	Group
Stuckelman et al.[18], 2022, USA	N=74, Age=36-60	Father, mother	home, lab, daycare, school	individual
Rockers et al.[23], 2018, Zambia	I=195, C=182, Ag= 6-12	Father, mother, caregivers	home, Community	hybrid
Luo et al.[28], 2019, China	I=222, C=227, Ag=6-18	caregivers	Home	individual
Abimpaye et al.[24], 2019, Rwanda	I1= 485; I2= 486; C = 479; Ag=6-36	Father, mother	home, community	hybrid
Shi et al.[29], 2020, China	I=82, C=86, Age = 1-2	caregivers	Clinic	Group
Breitenstein et al.[16], 2020, USA	I = 144, C=143, Age = 24-60	Father, mother, caregivers	Internet App (remote)	NA

Acronyms: I: intervention; C: control; Ag: age; NA: not applicable.

Chart 2. Description of the interventions employed in the clinical trials.

Author, year, country	Name of intervention	Identification and description of the parental intervention	Intervention duration	Follow up (months)	Total follow up (months)
Chacko et al.[13], 2017, USA	FSSP	Shared reading mediation, recording of interaction and feedback	8 weekly sessions (90') for 2 months	2	2
Mendelsohn et al.[14], 2018, USA	VIP	Parent-child interaction. Immediate review of videos with parents. Educational pamphlets were distributed.	15 30 sessions (up to 3 years) + 9 30-45' sessions (3-5 years)	54	54
Ramirez et al.[15], 2018, USA	LENA	Audio recording of interactions between child and caregivers. Cards with language stimulation instructions. Feedback on the interaction.	45' Every 4 months	8	8
Weisleder et al.[19], 2018, Brazil	ND	Weekly book lending, monthly book read-aloud workshop, interaction feedback	120'-monthly sessions for 12 months.	12	12
Alvarenga et al.[20], 2019, Brazil	Maternal sensitivity program	Video feedback of mother-child interaction and oral instructions	8 monthly sessions for 8 months	8	8

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Cova et al.[21], 2019, Chile	Day by day	Educational instructions and video feedback of the interaction	6 weekly 120'-sessions	0	1,5
Kohlhoff et al.[30], 2020, Australia	ND	CDI-T phase of PCIT-T - positive parenting skills teaching sessions, parent-child play mediation by therapist with video recording for independent analysis	12-16 sessions for 6-8 weeks, of 50-60' of teaching, 30-45' interaction supervision	No follow up	2
Dowdall et al.[25], 2021, South Africa	ND	Topic-mediated book reading, daily reading at home for 10-15 minutes, support with feedback on positive and negative aspects through videos of parent-child interaction.	8 weekly sessions (60-80') + 3 meetings in 6 months	6	6
Jensen et al.[26], 2021, Ruanda	Sugira--Muryango	Educational home visits 15 minutes of play with mediator supervision, focusing on parent-child interaction.	12 weekly 60'-sessions for 3 months	3	15
Luoto et al.[27], 2021, Quênia	ND	Delivery of educational material, practical skills teaching intervention, focusing on games and responsive group communication, intervention feedback	32 sessions Every fifteen days lasting 60-90'	8	8
O'Farrelly et al.[22], 2021, Reino Unido	VIPP-SD	Video feedback of parent-child interaction through challenging situations, reading and play	6 sessions Every fifteen days lasting 60-120'	5	5
Roby et al.[17], 2021, EUA	SB, VIP	Feedback on parent-child interaction in reading books, using games and toys. Real-time review. Delivery of instructions to aid interaction and informative pamphlets on child development.	14 sessions (25-30') of 0-3 years	6	6
Havighurst et al.[31], 2022, Australia	TOTS	Psychoeducation, demonstration videos, interaction with semi-structured activities recorded and analyzed with feedback, activities and educational material for home use	6 weeks (120')	12	12
Stuckelman et al.[18], 2022, EUA	ND	Recording of physical book reading with feedback. Delivery of educational e-book on parental relations and activities to interact	2 weeks	0	0,5
Rockers et al.[23], 2018, Zambia	The early childhood development participatory theatre-based curriculum	Educational home visits and family meetings with guided instructions from trained mothers.	Visits Every fifteen days (1st year) + Family meetings Every fifteen days (1st and 2nd years)	24	24
Luo et al.[28], 2019, China	ND	Structured script with suggested activities with parenting practices	15 sessions Every fifteen days for 1 year	12	12
Abimpaye et al.[24], 2019, Ruanda	ND	Educational radio sessions, instructional pamphlets and access to the local library.	17 weekly sessions for 17 weeks	12	12
Shi et al.[29], 2020, China	ND	Material with instructions on games, readings and educational sessions on child development	2 sessions lasting 120'	12	12
Breitenstein et al.[16], 2020, EUA	ezPARENT	Mobile app with educational videos on parenting skills and ways of interacting	12 weeks	12	12

Acronyms: FSSP (Fathers Supporting Success In Preschoolers) ; Video Interaction Project (VIP); Positive Parenting Ans Sensitive Discipline (VIPP-SD); Smart Beginning (SB); Tuning In To Toddlers (TOTS); ND: Not described.

Chart 3. Details of the scales and mediators of clinical trial interventions.

Author, year, Country	Pre-test used	Post-test, in which period of the intervention it was applied, who applied it (parents, mediator)	Mediator (qualification)
Chacko et al.[13], 2017, EUA	DPICS-R, ECBI, PLS, PSI-SF, CES-D	DPICS-R, ECBI, PLS, PSI-SF, CES-D	Any level of instruction with 3-week training
Mendelsohn et al.[14], 2018, EUA	Not applied	BASC-2, Externalizing Problems composite	ASSISTANT
Ramirez et al.[15], 2018, EUA	Lena	Lena, mb-cdis	Trained evaluator
Weisleder et al.[19], 2018, Brazil	Bnt qi (son-r), timt, itsea, cbcl	Bnt qi (son-r), timt, itsea, cbcl	University degree
Alvarenga et al.[20], 2019, Brazil	Cbds, citmi-r	Cbds, citmi-r	Psychology students
Cova et al.[21], 2019, Chile	Alabama parenting questionnaire, harsh discipline practice list, keys to interactive parenting scale, ecbi	Alabama parenting questionnaire, harsh discipline practice list, keys to interactive parenting scale, ecbi	Psychologists after a 40h-training session
Kohlhoff et al.[30], 2020, Australia	CBCL, EPDS, PSI-SF	DPICS-IV, EAS, CBCL	Therapists and physicians trained by therapists but supervised.
Dowdall et al.[25], 2021, Africa do Sul	Macarthur-Bates Communication Development Inventory, BAYLEY, ECVT, PACS, CBCL, SDQ	Macarthur-Bates Communication development inventory, BAYLEY, ECVT, PACS, CBCL, SDQ	Complete basic education
Jensen et al.[26], 2021, Ruanda	ASQ-3, MDAT, Household observation for environment measurement	ASQ-3, MDAT, Household observation for environment measurement	Lay people trained for 3 weeks by supervisors + 3 weeks of supervision during program intervention
Luoto et al.[27], 2021, Quênia	Bayley, HOME-SF	Bayley, HOME-SF	health workers and trainers from an NGO
O'Farrelly et al.[22], 2021, Reino Unido	PACS, CBCL, SDQ	PACS, CBCL, SDQ	Nurses, therapists, psychiatrists
Roby et al.[17], 2021, EUA	Not applied	Stimq, PVR	Bachelors with 3 days of training
Havighurst et al.[31], 2022, Australia	Multiple scales, parents answered the questionnaires	Scales answered by parents (multiple)	Trained by the TIK Program (Master's or PhD in Psychology or Education)
Stuckelman et al.[18], 2022, EUA	Parchisy codes	Parchisy codes	Recorder (does not specify qualification)
Rockers et al.[23], 2018, Zambia	Bayley	Bayley	Trained child development agents
Luo et al.[28], 2019, China	Bayley	Bayley	Healthcare agent
Abimpaye et al.[24], 2019, Ruanda	ASQ	ASQ. HOME-SF	Trained evaluators
Shi et al.[29], 2020, China	ASQ	ASQ	Child development specialists and pediatricians
Breitenstein et al.[16], 2020, EUA	ECBI, SDQ	ECBI, SDQ	Team member

Acronyms: Ages & Stages Questionnaires 3rd edition (ASQ-3), Dyadic Parent-Child Interaction Coding System-R (DPICS-R), Eyberg Child Behavior Inventory (ECBI), Language Environment Analysis System (LENA), CHILD BEHAVIOR CHECKLIST - CBCL, Malawi Developmental Assessment Tool (MDAT), Developmental Scale of Child Behavior (CBDS), Coding of Early Maternal and Child Interaction (CITMI-R), Dyadic Parent-Child Interaction Coding System, Fourth Edition (DPICS-IV), Strengths and Difficulties Questionnaire (SDQ), Home Observation Measurement of the Environment-Short Form (HOME-SF), Cognitive Home Environment Questionnaire (STIM-Q), Parental Verbal Responsiveness (PVR), BASC-2 Parent Rating Scales of the Behavior Assessment System for Children, MacArthur-Bates Communicative Development Inventories (MB-cdis), Edinburgh Postnatal Depression Scale (EPDS), Parenting Stress Index-Short Form (PSI-SF), Emotional Availability Scales (EAS), Infant-Toddler Social and Emotional Assessment (ITSEA), TIMP (Test of Infant Motor Performance), Center for Epidemiologic Studies Depression Scale (CES-D), Preschool Language Scales (PLS), Boston Naming Test (BNT), Parental Account of Children's Symptoms (PACS), Early Childhood Vigilance Test (ECVT).

In general, the interventions had satisfactory results on the domains of child development when compared to the control group.

The studies carried out parental interventions through 3 different models, according to Chart 2. The instruction delivery model with feedback on child-caregiver interaction was evaluated in 14 articles[13-15,17-20,22,21,25-27,30,31]. The material delivery model with instructions was evaluated in 5 articles, 4 of which were in-person, 2 of which provided only educational material[23,28], and 2 that, in addition to the educational material, carried out educational in-person sessions[24,29] and 1 online work, which carried out instructions through an application[16].

The feedback model generally had satisfactory results regarding child development, as shown in Chart 4. The most evaluated domains were child behavior and language, through face-to-face models.

Child behavior was assessed in 10 of the 14 papers on the intervention model with feedback. Havighurst et al.[31] obtained sustained improvements in child behavior with 12 months of follow-up, through group activities. The shortest duration of the intervention was observed in Cova et al.[21], with a duration of 1 and a half months. However, it was not possible to assess whether there would be a sustained response because there was no follow-up of the population, as well as in Chacko et al.[13], Kohlhoff et al.[30], O'Farrelly et al.[22]. The shortest duration of the parental intervention was 2 weeks, as assessed by Stuckelman et al.[18], but it presents problems in its methodology. Mendelsohn et al.[14] assessed child behavior using the feedback model, showing that interventions applied to the 0-3 and 3-5 age groups both had effects on improving child behavior, but a small to medium effect size was observed when interventions were performed in both age groups.

Chart 4. Details of the results and conclusions identified in clinical trials.

Author, year, country	Domains of children development					Parental skills	
	Motor	Language	Cognitive	Socio-emotional	Behavior	Knowledge	Parental practices
Chacko et al.[13], 2017	NA	**S**	NA	NA	**S**	NA	**S**
Mendelsohn et al.[14], 2018	NA	NA	NA	**F**	**S**	NA	**S**
Ramirez et al.[15], 2018	NA	**S**	NA	NA	NA	NA	**S**
Weisleder et al.[19], 2018	NA	**S**	**S**	NA	**F**	NA	**S**
Alvarenga et al.[20], 2019	NA	**F**	NA	NA	**F**	NA	**S**
Cova et al.[21], 2019	Na	Na	Na	Na	**S**	Na	**S**
Kohlhoff el al.[30], 2020	NA	NA	NA	NA	**S**	NA	**S**
Dowdall et al.[25], 2021	NA	**S**	**F**	NA	**F**	NA	**S**
Jensen et al.[26], 2021	**S**	**S**	**S**	**S**	NA	NA	**S**
Luoto et al.[27], 2021	NA	**S**	**S**	**S**	NA	**S**	**S**
O'Farrelly et al.[22], 2021	NA	NA	NA	NA	**S**	NA	**S**
Roby et al.[17], 2021,	NA	**S**	**S**	NA	NA	NA	**S**
Havighurst et al.[31], 2022	NA	NA	NA	NA	**S**	**S**	**S**
Stuckelman et al.[18], 2022	NA	NA	NA	NA	**S**	NA	**S**
Rockers et al.[23], 2018	**F**	**S**	**F**	**F**	**F**	**S**	**S**
Luo et al.[28], 2019	**F**	**F**	**S**	**F**	Na	Na	**S**
Abimpaye et al.[24], 2019	**S**	**S**	**S**	**S**	NA	**S**	**S**
Shi et al.[29], 2020	**S**	**S**	**F**	**F**	**F**	NA	NA
Breitenstein et al.[16], 2020	NA	NA	NA	NA	**F**	**S**	NA

Acronyms: NA = Not assessed; S = Satisfactory result; F= failed to present satisfactory result

In the feedback model, language was assessed in 8 of the 14 articles, with satisfactory results in all studies, except in Alvarenga et al.[20], who performed an intervention in the 3-10 month age group without follow-up, assessing the possibility of not having obtained satisfactory results due to not having had enough time for follow-up and being able to observe better outcomes. Roby et al.[17] performed an intervention in infants aged 1-6 months, obtaining satisfactory results on child language, with a follow-up time similar to that of Alvarenga et al.[20].

The model of delivering material with instructions only with educational material[23,28] did not produce results on most of the domains evaluated. Interventions that, in addition to delivering educational material, also held educational face-to-face sessions, achieved results in all domains evaluated. Abimpaye et al.[24] and Shi et al.[29] achieved results in 2 of the 5 domains evaluated.

In the only online trial, Breitenstein et al.[16], the intervention was delivered through a cell phone application, which contained training videos for acquiring parenting skills, videos suggesting how to interact with the child, as well as exercises to consolidate the content, the objective of which was to improve child behavior and enhance parenting skills. However, it did not present significant results in either.

DISCUSSION

This study assessed the effect of parenting interventions in obtaining beneficial effects on the domains of child development in early childhood. As already discussed in previous reviews[9,32], it was possible to observe in our review a small to medium effect size on all domains of child development with the improvement of parenting skills. The samples were selected in areas with a vulnerable economic profile, although the research was carried out in a developed country. The choice to intervene in parenting practices, even if the main caregivers are not the parents, focuses on the emotional bonds related to the child[33]. By improving parenting skills, it was possible to obtain improvements in child development, with limitations being observed in studies that did not perform an objective assessment of parents' skills and those that did not provide intervention in the mental health of caregivers, a variable intrinsically related to child development, especially in children under 3 years of age[34].

We observed better results in face-to-face interventions with instructions and feedback on caregiver-child interaction, to the detriment of interventions with less interactivity. Aligning studies in the literature that corroborate beneficial effects added to the combination of intervention strategies[35]. In contexts with limited resources, impossibility of face-to-face intervention, there was some benefit compared to no strategy[36].

There was a predominance of studies in preschoolers, with a systematic review with meta-analysis corroborating robust results of interventions in this age group, lacking more studies in older age groups. In our study, Mendelsohn et al.[14] assessed whether there would be a difference between interventions performed in an earlier age group (<3 years) and a later age group (>3 years), not evidencing any difference between the two, but there were better results when the interventions occur in both age groups, at a dose-cumulative effect.

Limitations

The heterogeneity of the interventions, in terms of content, scales, age group, and intervention models, makes comparative analysis between studies difficult. The non-standardized assessment of children at the beginning of the interventions, with some questionnaires being applied by the parents themselves, conferred an affective bias.

More studies are needed with the application of intervention models that have proven to be more effective, with more homogeneous variables, in order to improve results on child development.

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