

Health promotion through reading in the first thousand days: a systematic review and meta-analysis

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ABSTRACT

Background The first thousand days, the period from the conception to the second year of life, play a fundamental role in establishing the foundation of a newborn's health, growth and neurological development, finally impacting its entire life. Reading interventions during this period produce numerous positive outcomes for the infants, such as their language skills and development, as well as enhancing the relationship between caregivers and children, supporting the importance of studying the effectiveness of shared reading groups in this period among children without pathologies and their caregivers. This research aims to systematically review evidence on shared group activity in the first thousand days, including also their caregivers, exploring the following outcomes: children's language skills, cognitive development, prosocial behaviour, parent-child relationship, reading habits, health literacy, quality of life and empowerment.

Methods We conducted a systematic review and meta-analysis based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. Eight experimental studies met the inclusion criteria: shared group reading intervention involving children up to 24 months with their caregivers (especially parents, but also other caregivers). These interventions typically consisted of 6–12 group sessions led by trained facilitators in community settings.

Results The results showed no clear conclusions. Both the narrative synthesis and meta-analysis suggested improvements on children's language skills (comprehension), only the narrative analysis suggested positive changes in cognitive development and prosocial behaviour, alongside improved parent-child relationship and enhanced parental skills following the intervention. However, evidence was limited and inconsistent.

Conclusions These findings highlighted the importance of evidence-based interventions in supporting infant development, particularly in disadvantaged contexts addressing inequalities, and the promising role of shared reading as an integral part of such interventions. However, further studies are needed to confirm the effectiveness of these early interventions in fostering optimal developmental outcomes during the critical first thousand days.

INTRODUCTION

A substantial body of evidence has emerged in recent years on the importance of the

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Shared reading interventions are known to enhance language development and caregiver-child relationship. Evidence is limited from structured group-based interventions in the first thousand days of life.

WHAT THIS STUDY ADDS

⇒ Findings suggest the promising role of structured group-based shared reading interventions on children's language, cognitive and prosocial development, and caregiver-child interactions and parental skills. However, they also highlight methodological gaps in existing studies.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Shared reading interventions could be integrated into health promotion strategies in the first thousand days of life, especially in disadvantaged communities. Future research should use larger trials including standardised outcomes to strengthen evidence.

LIMITATIONS AND STRENGTHS

- ⇒ Multidisciplinary approach: the review included a search across several databases from various fields (health, education, and psychology). This ensured an extensive coverage of the literature.
- ⇒ Outcome diversity: the study examined many outcomes related to both child development (eg, language skills, cognitive ability) and parent-child interactions.
- ⇒ Quality assessment: the use of specific tools to assess the risk of bias in the included studies aimed at maintaining a high level of research quality.
- ⇒ Heterogeneity of interventions: the review analysed many different intervention types and measures of outcomes that complicated the synthesis of results.
- ⇒ Limited number of studies and participants: the small number of studies included in the review and the limited number of participants in each study may have limited the results.

first thousand days, the period from conception to a child's second year of life.¹ Indeed, this period plays a fundamental role in

establishing the basis of the newborn's health, growth and neurological development, impacting the entire life.² Interventions focused on prevention, promotion and treatment, during the first thousand days, have been associated with numerous positive outcomes including a reduced incidence of diseases and a better quality of life for infants and future adults, their families and future generations.³ Global health organisations, such as the WHO, recognise primary prevention and health promotion as a priority for both parents and children during this time.⁴

Caregivers require time and resources to contribute to children's optimal development by providing nurturing care. This process is facilitated by enabling environments which include policies, services, communities and families. The component 4 of the WHO framework on early child development identified the domain of early learning, particularly the establishment of reading and story-telling groups for caregivers and children, as an intervention to foster such enabling environments and creating opportunities for early learning.⁵

Research shows that reading aloud to children regularly supports their cognitive, linguistic, emotional and relational development, while strengthening the emotional bond between reader and listener.^{6 7} Early reading for pleasure plays a role in the subsequent brain and cognitive development and mental well-being.⁸ Additionally, early literacy skills are fundamental for the development of children, especially in disadvantaged families, and for breaking the cycle of disadvantage.⁹

In light of this, an increasing number of programmes have been established over the years to promote shared reading within families.¹⁰ They belong to two macro categories: home-based reading promotion models and group reading models, where parents are encouraged to adopt shared reading habits.¹¹

Shared reading interventions have been implemented in different contexts such as community centres, preschool halls, participants' homes, clinics or paediatric rooms¹²; they have also been used in disadvantaged communities, where they are promising for the development of language in children with limited access to reading resources¹³ and for increasing the caregiver engagement.¹¹

Outcomes of shared reading interventions include: development of children's abilities, attention, expressive vocabulary, comprehension, reading skills and relationship between parents or caregiver and infants.¹⁴ Some studies highlight the benefits of establishing a daily reading routine, such as an improvement of parent-child relationships,^{6 14 15} an increase in quality time spent together¹⁶ and an early participation in social interactive activities.¹⁷ Dowdall *et al* suggest that group interventions are more effective for children's language outcomes compared with home-based interventions,¹¹ as they provide social support for the caregivers involved, facilitate the possibility of sharing experiences and creating social connections.

Consequently, we decided to study the effectiveness of reading group intervention in the first thousand days, in line with the WHO framework and the benefits studied in systematic review (SR) of Dowdall. Indeed, previous systematic reviews (SRs) focused on various subgroups of infants, such as preterm infants and children with disabilities, but there are no studies including exclusively the first thousand days or specifically group-based interventions. Additionally, some reviews included other kinds of shared reading programmes,^{17–19} lacking evidence on early book sharing interventions on group activities during the first thousand days.^{11 12 16}

Aim

This research aims to systematically review the evidence on shared reading interventions in the first thousand days, including also their caregiver, recognising the fundamental impact of this period of life in cognitive and emotional development.

METHODOLOGY

Research question

For the development of this SR with meta-analysis, the starting point was the research question. Then, the PICOS framework was developed to guide the selection of keywords to be included in the search string used, as shown in [table 1](#).

Search strategy

The literature search and article screening were based on guidelines from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses.²⁰

We conducted a systematic search of the online five databases PubMed, Embase, Education Resources Information Center (ERIC), PsycINFO, CINAHL using the research string, shown in [table 1](#). We chose to focus on articles published from 1 January 2014 to 11 September 2023 to reflect the increased global focus on the first thousand days by organisations such as WHO and UNICEF over the past decade, which has led to an increase in related studies.

Inclusion and exclusion criteria

Studies included in the review had to meet several criteria. Specifically, they had to focus on shared reading interventions involving children in the first thousand days of life and their parents and caregivers; we also included experimental design including randomised controlled trial (RCT) and experimental pre-post test group design, age between 0 and 24 months, children without any disabilities, at least one caregiver involved for each child and intervention conducted in group setting. [Table 1](#) describes the research methodology (included PICOS framework with the description of outcomes) and the specific inclusion and exclusion criteria.

Table 1 Research methodology and eligibility criteria

Methodology	Keywords
Review research question	Do reading groups interventions within the first thousand days have positive impacts on reading habits and routine, language skills, cognitive development, health literacy, quality of life, empowerment, parent–child relationship?
PICOS framework	
P (participants/population)	First thousand days of life, that includes infants and their caregivers
I (intervention)	Reading group aloud
C (comparison group/control)	Absence of activity or other activity responding to the same outcome/no comparison
O (outcome)	Reading habits and routine, reading ability, language skill, cognitive ability, health literacy, quality of life, empowerment, parent–child relationship.
Definitions of outcomes	▶ Reading habits refer to the frequency and duration of shared reading at home. ▶ Reading and language skills included both expressive skills and receptive skills. ▶ Cognitive development included attention, social and motor skills, such as concentration, play initiation and fine motor skills. ▶ Parent–child interactions involve both the frequency of interactions and the parent's ability to respond appropriately. Empowerment focused on increasing parents' awareness of the significance of reading together and their confidence in engaging in this activity with their child.
Eligibility criteria	
Inclusion criteria	▶ Children during first thousand days of life with their parents or caregivers. ▶ Experimental studies, including RCTs. ▶ Studies published in English, Spanish and Italian languages. ▶ Studies published from 1 January 2014 to 11 September 2023. ▶ Group intervention.
Exclusion criteria	▶ No group intervention. ▶ Children older than 2 years. ▶ Children with disabilities such as autism, sensory impairment, cognitive impairment or emotional disturbance. ▶ Intervention did not include parents or caregivers in the programmes. ▶ Home/individual reading promotion models.
Search strategy	
Research string	(reading AND (shared OR aloud OR early OR dialogic OR interactive OR group*)) AND (reading (outcome* OR habit* OR routine) OR “language skill*” OR “cognitive abilit*” OR “health literacy” OR “quality of life” OR empowerment OR “parent-child relationship”)
RCTs, randomised controlled trials.	

Data extraction and presentation of results

Study selection

The initial search resulted in a total of 8686 articles. After eliminating duplicates (n=2494), a total of 6194 were screened by title and abstract. Three reviewers independently analysed the studies and determined which articles met the inclusion criteria for the review. Then, they compared the data collected from the selected studies.

During this phase, studies were excluded if there was no group intervention, they involved children older than 2 years, or they did not include parents or caregivers in the programmes. 58 articles remained after screening for title and abstract, considering the aforementioned criteria and 8 articles after full-text reading.

Study analysis

Data from the eight selected articles were independently collected by the three researchers. Agreed-upon

characteristics were then compiled into a descriptive table which provides a summary of the main information from each study. Outcomes assessed in the individual studies were identified and grouped into four categories. For each outcome, the instrument used for measurement was reported, as well as whether a significant difference emerged between the intervention and control groups.

Stata V.19 NOW software (StataCorp) was used for meta-analysis. Only studies reporting data from the Communicative Development Inventory (CDI) comprehension and expressive vocabulary scales were included, as these represented the only comparable outcomes across studies. Because CDI scores vary depending on the language and version used, the standardised mean difference, corrected for small-sample bias as Hedges' *g*, was employed to ensure comparability across studies. Heterogeneity was assessed with the *I*² statistic, and pooled estimates with 95% CIs were displayed in forest plots.

Quality assessment tool

The Risk of Bias of seven included RCT studies was measured by the Cochrane Risk of Bias Tool for RCTs ROB 2, in particular the current version (22 August 2019), suitable for individually randomised, parallel group trials.²¹ For one study that has an experimental pretest posttest comparison group design,²² we used ROBINS-I ('Risk of Bias in Non-randomised Studies-of Interventions'), the current version (16 September 2016).²³ For each of the five domains of ROB 2 and ROBINS-I tool, we reported a low risk, some concerns or high risk. Then, we scored the overall risk of bias of each study. We use an internationally comparable method for describing levels of education across countries called the International Standard Classification of Education.

Assessment of quality (certainty) of evidence by Grading of Recommendations Assessment, Development and Evaluation approach

The overall quality of evidence obtained from included RCTs for our categories of outcomes was assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach (Cochrane systematic review and guidelines) by two review authors independently and then discussed within the research team, until consensus was obtained, using the revised GRADE approach.^{24–26} GRADE results for each tool included in the meta-analysis were reported in online supplemental table n.1 'Description of risk of bias for each domain for all studies' in online supplemental material.

RESULTS

Studies characteristics

A total of eight articles (seven RCTs^{13 14 27–31} and one experimental pretest, post-test comparison group design²²) met the inclusion criteria and were included in the current study. Figure 1 shows the process of inclusion.

The included studies involved 362 participating infant–caregiver dyads. All the interventions were carried out in person. Two studies considered 0–24 months,^{27 28} the other two studies 14–16 months,^{14 30} one article 15–17 months¹³; some studies considered eight different months^{29 31} and another 3–12 months.²² Regarding the income of the population, five studies included predominantly low-income people in areas characterised by high poverty and deprivation,^{13 14 27 28 30} two studies included populations with a middle income^{29 31} and one study reported families who lived in an advantaged area.²²

Considering the organisation of the intervention groups, the number of sessions varied from 6^{13 22} to 12³¹, with the majority of studies involving 8 sessions.^{14 29 30} Most studies included local trained facilitators,^{13 14 30} who spent approximately 60 min discussing shared reading with caregivers and infants. In all studies, participants received specific books for home reading, such as picture books,^{13 14 22 29 30} followed by discussion in subsequent group sessions. Table 2 shows the characteristics of the eight studies included.

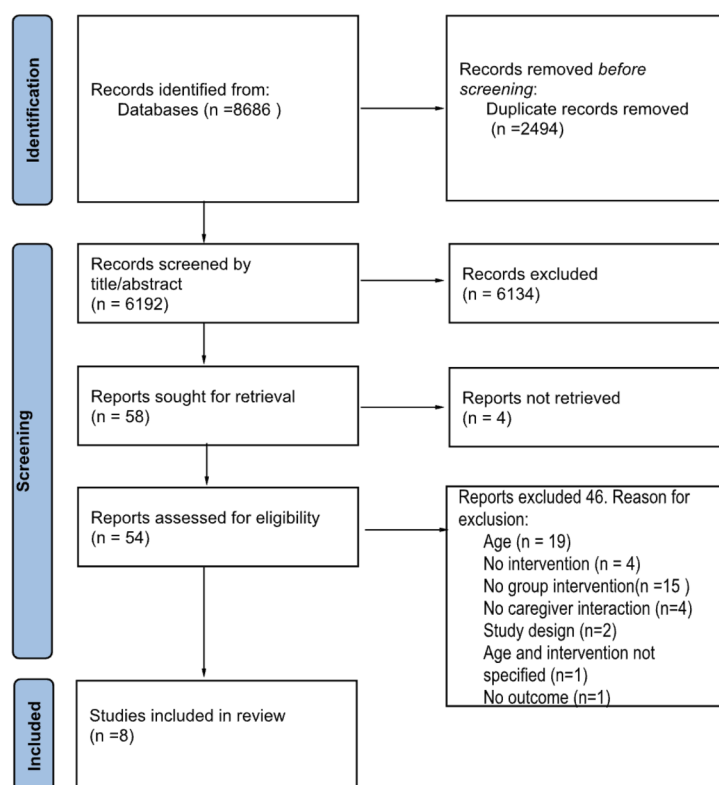


Figure 1 PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses).

Table 2 Description of the studies included

Author	Country	N (int, control)	Characteristics of participants (caregiver and child)	Group intervention	Control group	Characteristics of intervention (duration, follow-up, n sessions)	Results	Risk of bias
Cooper (2014) ¹³	South Africa	30 (17, 12)	Low income Mothers Mean age: 29.29 (SD=12.24) Years of education: 10.41 (SD=1.84) Child age (months): 15–17	Training in book sharing, individual guidance practice sessions and group discussions on a book	Toy play programme	6 weeks Outcomes assessment: ▲ immediately at the end of the intervention 6 sessions (75 min)	▲ Differences in mothers' sensitivity between groups ▲ Similar results in reciprocity and facilitation. ▲ Group intervention: ↑ child comprehension and vocabulary	Some concerns
Vally (2015) ³⁰	South Africa	91 (49, 42)	Low income Mothers, 13 grandmothers, 2 aunts, 4 fathers and 2 neighbours Mean age: 33.35 (SD=10.21) Years of education: less than 8 years 8%, between 8 and 12 years 88%, more than 12 years 4%	Training sessions: didactic presentation, demonstrations video clips, reading session and individual guidance practice	Wait list Control groups	8 weeks Outcomes assessment: ▲ immediately at the end of the intervention 8 sessions (90 min)	▲ Group intervention: ↑ child language and communication ▲ ↑ child attention	Some concerns
Murray (2016) ¹⁴	South Africa	91 (49, 42)	Low income Mothers, 13 grandmothers, 2 aunts, 4 fathers and 2 neighbours Mean age: 33.35 (SD=10.21) Only 4% of caregivers had >12 years of education Child age (months): 14–16	Training sessions: didactic presentation, demonstrations video clips, reading session and individual guidance practice	Wait list Control groups	8 weeks Outcomes assessment: ▲ immediately at the end of the intervention 1 week after the intervention 8 sessions (90 min)	▲ Group intervention: ↑ sensitivity of carers in book sharing ▲ ↑ child cognitive outcomes ▲ ↑ pro-social behaviour	Low risk

Continued

Table 2 Continued

Author	Country	N (int, control)	Characteristics of participants (caregiver and child)	Group intervention	Control group	Characteristics of intervention (duration, follow-up, n sessions)	Results	Risk of bias
Brown (2017)	Brisbane, Australia	32 (17, 15)	Advantaged area Parents (only two fathers) Mean age: no information Education: no information Child age (months): 3–12	HI intervention group. Parent training workshop/s, including a practice and consolidation session. Each session included videos and demonstrations of each reading strategy and consolidation of previous session's strategies.	HI intervention group. 90 min workshop containing the same strategies that the HI intervention group. No practice sessions.	18 weeks Outcomes assessment: ▲ 4 weeks after the intervention ▲ 12 weeks after the intervention ▲ Final assessment when the participants were between 22 and 24 months of age 6 sessions (45 min)	Group intervention: ▲ ↑ child language communication ▲ no differences in home reading environment and parent–child interaction	Low risk
Yumus and Turan (2022) ³¹	Turkey	20 (10, 10)	Middle income Parents Mean age: 28.9 (SD=3.7) 50.6% postgraduate education, 48.3% undergraduate education, only 1.1% no university degree Child age (months): 8–16	Parents shared reading education programme individual, orientation sessions, practice sessions	Parents only received children's books	12 weeks Outcomes assessment: 2 weeks after the intervention 12 sessions (90 min)	Group intervention: ▲ ↑ child language and communication ▲ ↑ infant and parents early literacy ▲ ↑ parent book reading skills	Low risk
Piccolo (2022) ²⁷	Brazil	400 (200, 200)	Low income Parents Mean age: 27.4 (SD=6.2) High school graduate 48.9%, Middle school graduate 69.5% Child age (months): 0–24	Workshops focusing on parents–child reading complemented by a book-lending library	No intervention	7 weeks Outcomes assessment: 8 weeks after the intervention 12 sessions programmed, but for COVID only 7 meets (60 min)	Group intervention: ▲ ↑ child cognitive and socioemotional development in dyads with low literacy level's parents ▲ ↑ parent beliefs about early literacy activities ▲ ↑ home reading environment and parent–child interaction ▲ no differences between parent literacy level	Low risk

Continued

Table 2 Continued

Author	Country	N (int, control)	Characteristics of participants (caregiver and child)	Group intervention	Control group	Characteristics of intervention (duration, follow-up, n sessions)	Results	Risk of bias
Salley (2022) ²⁹	USA	30 (15, 15)	Middle income Parents Mean age: 32.2 (SD=4.6) High school/some college 7%, College 71%, graduate school 21% Child age (months): 14–22	Group education and individual coaching for parents on dialogic book-sharing	Wait List Control Groups	8 weeks Outcomes assessment: –1 week after intervention-8 weeks after intervention-8 sessions (45min)	Group intervention: ▲ ↑ parent book sharing skills ▲ ↑ child attention	Some concerns
Piccolo (2023) ²⁸	Brazil	133 (69,64)	Low income Parents Mean age: 27.0 (SD=5.2) High School graduate 60.0% Child age (months): 0–24	Workshops focusing on parents–child reading complemented by a book-lending library	No intervention	7 weeks Outcomes assessment: 24 weeks after the intervention 7 sessions (60min)	Group intervention: ▲ ↑ changes in parenting practices during COVID ▲ ↑ home reading environment and parent–child interaction.	Low risk

Outcomes analysis

We divided outcomes into four categories: child language skills, child development, parent–child relationship and parenting outcomes. Table 3 contains a description of the outcomes, the tools used to measure each of them, in which of the included studies they were described and the quality of evidence for SR. The results of GRADE analysis conducted on articles included highlighted that three outcomes are very low (child language skills, parent–child relationship and parents’ outcome) and one low (child development).

Considering the effects on child outcomes, narrative results showed improvements in child language (expressive language, comprehension, vocabulary), child development (attention and prosocial behaviour).

Child language skills

Among the four studies that used the MacArthur-Bates CDI to assess children’s language skills, three found significant improvements in both receptive and expressive skills in the intervention group compared with controls,^{14 30 31} while one study²⁷ found no significant differences in vocabulary scores. A study found a significant improvement in the comprehension and vocabulary of children in the intervention group,¹³ while another found no significant differences.³⁰ Additionally, one study found significant improvements in the child’s language and communication skills using Preschool Language Scales– Fifth Edition and Communication and Symbolic Behaviour Scales Developmental Profile: Infant/Toddler Checklist.²² Thus, among the five studies assessing children’s language with various instruments, four reported significant improvements,^{13 22 30 31} while one did not.²⁷ Notably, a study²⁷ revealed that higher participation in sessions positively correlated with better outcomes in language development and cognitive characteristics.

Considering the meta-analysis results, five studies were included. For expressive language, only three studies (figure n.1 ‘Analysis on expressive language’ in online supplemental material) could be included (Vally et al., 2015; Yumus & Turan, 2016; Piccolo, 2022), with a non-significant intervention effect and very high heterogeneity (about 90%); for comprehension child language, only two studies were included (Vally et al., 2015; Yumus & Turan, 2016) (figure n.2 ‘Analysis on comprehension child language’ in online supplemental material), with a statistically significant effect and low heterogeneity, although the robustness of this finding is limited due to the very small number of included studies. The detailed description of score tools, CI and GRADE for each domain for five studies included in meta-analysis can be found in online supplemental table n.2 ‘Quality of Evidence (GRADE) for included studies for metanalysis’ in online supplemental material.

Child development

One study²⁷ also did not find significant improvements in children’s cognitive, motor and socioemotional

Table 3 Description of outcome and quality of evidence

Categories of outcome	Outcome	Tools used to measure outcome	Measure of outcome in the included studies	Evidence base	Reasons for downgrading or upgrading the evidence quality	Quality of evidence (GRADE)
Child language skills	Child language and communication	CDI	► Vally et al., 2015** ► Yumus & Turan, 2016* ► Murray, 2016* ► Piccolo et al., 2022	Study design: ► RCT studies; initial grading: high quality (Vally et al., 2015, Yumus & Turan, 2016, Piccolo et al., 2022, Murray, 2016, Cooper et al., 2014, Vally et al., 2015) ► experimental study; initial grading: High quality (Brown et al., 2017)	Downgrading factors: (–3) RoB e ROBINS-I: (–1) Included RCTs were with high RoB (n=0), moderate RoB (n=2) to low RoB (n=3). Included experimental study with moderate ROBINS-I (n=1). GRADE domain: ► Indirectness: (–1) outcomes and tools used are heterogeneous. ► Imprecision: (–1) yes, for 6/7 studies that have a simple size. ► Inconsistency: no, for the similar results of studies included ► Publication bias: Not serious, borderline	Very low (+000)
Child development		PLS 5	► Brown et al., 2017*			
		CSBS	► Brown et al., 2017*			
	Child comprehension and vocabulary	PPVT	► Cooper et al., 2014* ► Vally et al., 2015*			
	Child attention	Behaviour observation ECVT	► Cooper et al., 2014* ► Vally et al., 2015** ► Murray et al., 2016- ► Salley et al., 2022	Study design: RCT studies; initial grading: High quality (Cooper et al., 2014, Vally et al., 2015, Murray et al., 2016, Salley et al., 2022, Piccolo et al., 2022)	Downgrading factors: (–2) RoB: (–1) Included RCTs were with high RoB (n=0), moderate RoB (n=3) to low RoB (n=3). GRADE domain: Indirectness: Not serious, tools used are ECVT for four studies and CREDI for two studies. - Imprecision: (–1) for 4/5 studies because of a simple size. Inconsistency: no, for the similar results of studies included. Publication bias: not serious, borderline	Low (++)
	Children's cognitive, motor and socioemotional development	CREDI	► Piccolo et al., 2022			
	Pro-social behaviour	The Help Task	► Murray et al., 2016*			

Continued

Table 3 Continued

Categories of outcome	Outcome	Tools used to measure outcome	Measure of outcome in the included studies	Evidence base	Reasons for downgrading or upgrading the evidence quality	Quality of evidence (GRADE)
Parent-child relationship	Home reading environment and parent-child interaction	StimQ	▲ Piccolo et al., 2022** ▲ Piccolo et al., 2023**	Study design: ▲ RCT studies; initial grading: High quality (Piccolo et al., 2022; Piccolo et al., 2023; Murray et al., 2016; Cooper et al., 2014) ▲ Experimental study; initial grading: High quality (Brown et al., 2017)	Downgrading factors: (–3) RoB e ROBINS-I: (–1) Included RCTs were with high RoB (n=0), moderate RoB (n=1) to low RoB (n=3). Included experimental study with moderate ROBINS-I (n=1). GRADE domain: ▲ Indirectness: (–1) outcomes and tools used are heterogeneous. ▲ Imprecision: (–1) yes, for 4/5 studies that have a simple size. ▲ Inconsistency: Not serious, borderline ▲ Publication bias: not detected	Very low (+000)
	Carer-infant interactions	Observation of maternal sensitivity	▲ Cooper et al., 2014* ▲ Murray et al., 2016**			
		Observation of maternal facilitation	▲ Cooper et al., 2014 ▲ Murray et al., 2016			
		Observation of maternal reciprocity	▲ Cooper et al., 2014 ▲ Murray et al., 2016*			
Parents' outcomes	Changes in parenting practices during COVID-19	PIPS	▲ Piccolo et al., 2023 (parent-child reading*; Parenting)			
	Parent Beliefs About Early Literacy Activities	PRBI	▲ Piccolo et al., 2022**	study design: RCT studies; initial grading: High quality	Downgrading factors: (–3) RoB: (–1) Included RCTs were with high RoB (n=0), moderate RoB (n=1) to low RoB (n=2). GRADE domain: ▲ Indirectness: (–1) outcomes and tools used are heterogeneous. ▲ Imprecision: (–1) yes, for 2/3 studies that have a simple size. ▲ Inconsistency: Not serious, borderline ▲ Publication bias: not detected	Very low (+000)
	Parent book sharing skills	SRS Behaviour observation	▲ Yumus & Turan, 2016** ▲ Salley et al., 2022*			
	Discipline and negative parental behaviours	Social Discipline Survey	▲ Piccolo et al., 2022*			
	Screen time	Questions on daily hours spent watching screen	▲ Piccolo et al., 2022*			

Continued

Table 3 Continued					
Categories of outcome	Outcome	Tools used to measure outcome	Measure of outcome in the included studies	Evidence base	Reasons for downgrading or upgrading the evidence quality
	Parents' and infants' Early Literacy:	PELS	▲ Yumus and Turan, 2016**		
*p<0.05, **p<0.01. CDI, MacArthur-Bates Communicative Development Inventory; CREDI, Caregiver Reported Early Childhood Development-Long Form (parent-report questionnaire); CSBS DP, Communication and Symbolic Behavior Scales Developmental Profile; Infant/Toddler Checklist; ECVT, The Early Childhood Vigilance Task; GRADE, Grading of Recommendations Assessment, Development and Evaluation; PELS, Parent-Infant Early Literacy Skills Assessment; PIPS, Parenting in Pandemic Scale; PLS 5, Preschool Language Scales-Fifth Edition; PPVT, Peabody Picture Vocabulary Test; PRBI, Parent Reading Belief Inventory; ROBINS-I, Risk of Bias in Non-randomised Studies-of Interventions; SRS, Shared Reading Skills Scale.					

development measured with Caregiver Reported Early Childhood Development-Long Form. However, an interaction effect between parental literacy and child outcomes was found: in parents with low literacy, the intervention was more effective than the control in improving child outcomes. Two studies evaluated the effects of shared reading on children’s attention levels, both showing statistically significant improvements: one found significant enhancements in sustained attention measured with the The Early Childhood Vigilance Task compared with controls,³⁰ while the other measured attention using a behavioural test and found significant improvement in overall attention in the intervention group.¹³

Parent–child relationship

One study measured changes in children’s prosocial behaviours following the intervention through the Help Task, finding a significant increase among children in the intervention group compared with controls.¹⁴ Regarding the effect of book-sharing intervention on parent–child relationship, the following outcomes emerged with a significant statistical improvement: maternal sensitivity,^{13 14} maternal reciprocity,¹⁴ shared reading skills measured with behavioural observation²⁹ and by SRS questionnaire,³¹ shared reading frequency and reading stimulation measured with StimQ.²⁷

Parent outcomes

Regarding parent-related outcomes, the book-sharing intervention significantly improved parental literacy,³¹ awareness and perceived importance of early shared reading,^{27 29} reduction in the parents’ screen time²⁷ compared with the control group.

Methodological quality

The risk of bias in the included studies was assessed using two tools. The ROB 2 was applied to seven RCTs, categorising four studies as low risk,^{14 27 28 31} three as having some concerns^{13 29 30} and none as high risk. For a study with an experimental pretest, post-test design,²² the ‘ROBINS-I’ tool was used, determining it to have a low risk of bias. The final scores for each study are provided in table 2. Description of the studies included, while the detailed description of risk of bias for each domain for all studies can be found in online supplemental table n.1 “Description of risk of bias for each domain for all studies” in online supplemental material.

DISCUSSION

The current SR of eight studies evaluated the effects of shared group reading interventions, involving children and their parents or caregivers on different outcomes related to child development and parenting. Studies were grouped into four categories of outcomes: child language skills (five studies^{13 22 27 30 31}), child cognitive development (four studies^{13 22 28 30}), parent–child relationship (four studies^{13 22 27 28}) and parenting outcomes

(sensitivity, reciprocity and shared reading skills) in five studies.^{22 27–29 31} Most studies involved low-income families in disadvantaged areas including South Africa^{13 14 30} and Brazil,^{27 28} with interventions involving eight group sessions,^{14 29 30} and targeted both the parents.^{14 22 27–29 31}

The choice of including articles focusing on different outcomes came from the desire of evaluating the effectiveness of intervention in different domains, addressing the lack of research on the first thousand days. Some SRs on similar interventions but aimed at different age groups took similar choices,^{15 17} while others focused on specific outcomes.³² Across individual studies, the narrative synthesis reported a positive impact on comprehension and vocabulary,^{13 30} expressive language^{14 22 30 31} and prosocial behaviour.¹⁴ Regarding the latter and social competence, shared reading was shown to positively affect children's social understanding and prosocial behaviour at ages 5–6.³³ Although less frequently studied in the literature, a SR demonstrated the relationship between prosocial skills outcomes and shared reading. Our choice to include group interventions precisely aimed at evaluating the effect of the group on improving social-relational outcomes, not only in the dyadic interactions, as studied in other age groups.³⁴ However, quantitative analysis could include only expressive language and comprehension (child language skills), with limited and heterogeneous results, requiring further evidence.

For parents, considering narrative results, the improvement emerged on the quality of interactions with their children, showing improvements, particularly in terms of sensitivity^{14 22} and reciprocity,¹⁴ shared reading skills,^{29 31} the importance accorded to shared reading²⁷ and the quality of reading stimulation provided.^{27 28} In particular, results regarding children's language skills and other areas of development align with a previous SR that confirmed positive effects on language of shared reading in infants.³² One study shows a smaller effect when there is the inclusion of a control group, especially active control.³² Indeed, effects on children's language development beyond the first thousand days are well documented through various methods: community-based shared reading in groups, and in child-parents²⁹; both in persons with the use of paper books³² and ebooks,³⁵ unlike our SR only identified studies involving paper books. Furthermore, a recent SR demonstrated the effectiveness of screen-mediated intervention.³⁶

The findings on parent–child benefits align with other studies that show shared reading interventions increase parental warmth and sensitivity, reduce parenting stress at 18 months¹² and decrease harsh parenting.³⁷ The amount of time parents spend with their sons (up to 4 years old) is related to language and literacy development.¹⁵

Lastly, another important element is the equity and accessibility of the intervention. Five included studies involve specifically low-income families or belonging to low-income contexts,^{13 14 27 28 30} where low economic status of families is linked to poorer health, cognitive and socioemotional development in children—particularly

language, vocabulary size and language processing abilities,³⁸ language delay³⁹ and the differences are more pronounced over the preschool years. Reading and shared reading interventions to increase parents' frequency of reading represent an example of an accessible and available intervention for all socioeconomic groups to enhance parents' literacy.⁴⁰ For this reason, group intervention can reduce the gap between people by also supporting the consequences that delay in language has on cognitive skills.³⁹

Limitations and strengths

Our study has some limitations. Only eight articles were analysed, because of the limited scientific literature on this specific intervention, and each study included a small sample size. The wide range of outcomes and measurement tools chosen in the articles included complicated comparisons and resulted in limited conclusions for each individual outcome, as the GRADE analysis score demonstrated. While the results suggest the effectiveness of this intervention considering the narrative synthesis, the quantitative evidence was limited and the added value of the group dimension remains unclear, as potential benefits such as improved social relationships, increased social capital and reduced health disparities. Lastly, few studies included long-term follow-up, making it difficult to evaluate the sustainability of effectiveness of the intervention. Additionally, many studies focused on disadvantaged groups, resulting in unclear effectiveness and impact on higher-income groups or environments.

However, the study also presents many strengths. It is, to our knowledge, the first SR that focused on shared reading group interventions involving infants during their first thousand days, parents and caregivers. The research examined different outcomes related to child development (eg, language skills, cognitive ability) and parent–child interactions, providing evidence on the potential effects of group and community interventions with an interdisciplinary approach. The study included a search across multiple databases (health, education, psychology). This ensured an extensive coverage of literature. Moreover, the inclusion of outcomes regarding parents' and caregivers allowed us to explore the potential effect on educational poverty and family environment. Studies regarding disadvantaged settings explored the value of group-based interventions on social benefits.

Future research should consider more studies and participants to demonstrate the best scientific practices and standardise outcome measurement tools (using one tool for each outcome). Indeed, the studies could emphasise the influence of cultural contexts. For policy, future research should address the cost-effectiveness of including and adopting these interventions on a large scale. For example, a cycle of sessions could be organised to improve shared reading skills of caregivers in a primary and community care setting, providing low sustainable interventions. We recommended exploring the benefits of group reading interventions in terms

of mitigating adverse effects of infant cognitive and language development.

CONCLUSIONS

This literature review evaluated the effectiveness of shared reading interventions during the first thousand days of life. The included studies showed the promising value of shared reading interventions in promoting children's language development and social communication skills, the frequency of parent-child interactions in the home, and parents' shared reading skill. Most of the considered studies found that the intervention could be effective in disadvantaged settings, suggesting its potential in mitigating adverse effects on infant cognitive and language development. The same intervention seems promising in the middle and advantaged areas, too. However, quantitative evidence remains limited and inconsistent, highlighting the need for further studies to confirm the effectiveness of these interventions.

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REFERENCES

- Moore T, Arefadib N, Deery A, *et al*. The first thousand days: an evidence paper. parkville, victoria; centre for community child health, murdoch children's research institute. 2017. Available: <https://www.rch.org.au/uploadedFiles/Main/Content/ccchdev/CCCH-The-First-Thousand-Days-An-Evidence-Paper-September-2017.pdf>
- Thousand Days. Why 1,000 days - 1,000 days. 2018. Available: <https://thousanddays.org/why-1000-days/>
- Britto PR, Yoshikawa H, Boller K. Quality of Early Childhood Development Programs in Global Contexts: Rationale for Investment, Conceptual Framework and Implications for Equity and commentaries. *Soc Policy Rep* 2011;25:1-31.
- Europe WHORO for. The minsk declaration: the life-course approach in the context of health 2020. iriswho.int. 2015. Available: <https://iris.who.int/handle/10665/349095>
- World Health Organization, United Nations Children's Fund, World Bank Group. Nurturing care for early childhood development: a framework for helping children survive and thrive to transform health and human potential. *World Health Organization*; 2018.
- Canfield CF, Miller EB, Shaw DS, *et al*. Beyond language: Impacts of shared reading on parenting stress and early parent-child relational health. *Dev Psychol* 2020;56:1305-15.
- Law J, Charlton J, McKean C, *et al*. Parent-child reading to improve language development and school readiness: a systematic review and meta-analysis. Newcastle University & Queen Margaret University; 2018.
- Sun Y-J, Sahakian BJ, Langley C, *et al*. Early-initiated childhood reading for pleasure: associations with better cognitive performance, mental well-being and brain structure in young adolescence. *Psychol Med* 2024;54:359-73.
- Baker DW. The health care experience of patients with low literacy. *Archives of Family Medicine*. *Arch Fam Med* 1996;5:329-34.
- Connor Garbe M, Bond SL, Boulware C, *et al*. The Effect of Exposure to Reach Out and Read on Shared Reading Behaviors. *Acad Pediatr* 2023;23:1598-604.
- Dowdall N, Melendez-Torres GJ, Murray L, *et al*. Shared Picture Book Reading Interventions for Child Language Development: A Systematic Review and Meta-Analysis. *Child Dev* 2020;91:e383-99.
- Lorio CM, Delehanty AD, Romano MK. A Systematic Review of Parent-Child Shared Book Reading Interventions for Infants and Toddlers. *Topics Early Child Spec Educ* 2022;42:222-33.
- Cooper PJ, Vally Z, Cooper H, *et al*. Promoting Mother-Infant Book Sharing and Infant Attention and Language Development in an Impoverished South African Population: A Pilot Study. *Early Childhood Educ J* 2014;42:143-52.
- Murray L, De Pascalis L, Tomlinson M, *et al*. Randomized controlled trial of a book-sharing intervention in a deprived South African community: effects on carer-infant interactions, and their relation to infant cognitive and socioemotional outcome. *J Child Psychol Psychiatry* 2016;57:1370-9.
- Sloat EA, Letourneau NL, Joschko JR, *et al*. Parent-Mediated Reading Interventions With Children Up To Four Years Old: A Systematic Review. *Issues Compr Pediatr Nurs* 2015;38:39-56.
- Muhinyi A, Rowe ML. Shared reading with preverbal infants and later language development. *J Appl Dev Psychol* 2019;64:101053.
- Boissel L, Guilé J-M, Viaux-Savelon S, *et al*. A narrative review of the effect of parent-child shared reading in preterm infants. *Front Pediatr* 2022;10:860391.
- Grover V, Snow CE, Evans L, *et al*. Overlooked advantages of interactive book reading in early childhood? A systematic review and research agenda. *Acta Psychol (Amst)* 2023;239:103997.
- Hunt X, Saran A, White H, *et al*. Effectiveness of interventions for improving educational outcomes for people with disabilities in low- and middle-income countries: A systematic review. *Campbell Syst Rev* 2025;21:e70016.
- Moher D, Liberati A, Tetzlaff J, *et al*. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med* 2009;6:e1000097.

- 21 Sterne JAC, Savović J, Page MJ, *et al.* RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ* 2019;366:l4898.
- 22 Brown MI, Westerveld MF, Trembath D, *et al.* Promoting language and social communication development in babies through an early storybook reading intervention. *Int J Speech Lang Pathol* 2018;20:337–49.
- 23 Sterne JA, Hernán MA, Reeves BC, *et al.* ROBINS-I: a tool for assessing risk of bias in non-randomised studies of interventions. *BMJ* 2016;355:i4919.
- 24 Zeng L, Brignardello-Petersen R, Hultcrantz M, *et al.* GRADE Guidance 34: update on rating imprecision using a minimally contextualized approach. *J Clin Epidemiol* 2022;150:216–24.
- 25 Khan MK, Gurunathan D, Pandiyan R, *et al.* Effectiveness of laser photobiomodulation therapy in pulpotomy of primary teeth: A systematic review. *Journal of Indian Society of Pedodontics and Preventive Dentistry* 2025;43:28–43.
- 26 LuColunga-Lozano LE, Nampo FK, Agarwal A, *et al.* Less intensive antileukemic therapies (monotherapy and/or combination) for older adults with acute myeloid leukemia who are not candidates for intensive antileukemic therapy: A systematic review and meta-analysis. *PLoS ONE* 2022;17:e0263240. Available: <https://doi.org/10.1371/journal>
- 27 Piccolo LR, Batista Araujo Oliveira J, Hirata G, *et al.* Supporting Reading Aloud Beginning Prenatally and in Early Infancy: A Randomized Trial in Brazil. *J Dev Behav Pediatr* 2022;43:e590–7.
- 28 Piccolo LR, Oliveira JBA, Hirata G, *et al.* Pre-pandemic support for shared reading buffers adverse parenting impacts: an RCT in Brazil. *Pediatr Res* 2023;94:260–7.
- 29 Salley B, Daniels D, Walker C, *et al.* Shared Book Reading Intervention for Parents of Infants and Toddlers. *J Early Child Res* 2022;20:322–40.
- 30 Vally Z, Murray L, Tomlinson M, *et al.* The impact of dialogic book-sharing training on infant language and attention: a randomized controlled trial in a deprived South African community. *J Child Psychol Psychiatry* 2015;56:865–73.
- 31 Yumus M, Turan F. The impact of parent training intervention in early years: language and literacy development. *Int J Early Years Educ* 2022;30:697–713.
- 32 Noble C, Sala G, Peter M, *et al.* The impact of shared book reading on children's language skills: A meta-analysis. *Educational Research Review* 2019;28:100290.
- 33 Aram D, Bergman Deitcher D, Sabag Shoshan T, *et al.* Shared Book Reading Interactions Within Families From Low Socioeconomic Backgrounds and Children's Social Understanding and Prosocial Behavior. *J Cogn Educ Psych* 2017;16:157–77.
- 34 DeVries D, Bollin A, Brouwer K, *et al.* The Impact of Reading Groups on Engagement and Social Interaction for Older Adults with Dementia: A Literature Review. *TRJ* 2019;53:53–75.
- 35 Clinton-Lisell V, Strouse G, Langowski AM. Children's engagement during shared reading of ebooks and paper books: A systematic review. *Int J Child Comput Interact* 2024;39:100632.
- 36 Read K, Harrison H, Mireku B, *et al.* The challenge of screen mediated shared reading for children's learning and engagement. *Front Psychol* 2023;14:1212173.
- 37 Jimenez ME, Mendelsohn AL, Lin Y, *et al.* Early Shared Reading Is Associated with Less Harsh Parenting. *J Dev Behav Pediatr* 2019;40:530–7.
- 38 Bradley RH, Corwyn RF. Socioeconomic status and child development. *Annu Rev Psychol* 2002;53:371–99.
- 39 Fernald A, Marchman VA, Weisleder A. SES differences in language processing skill and vocabulary are evident at 18 months. *Dev Sci* 2013;16:234–48.
- 40 Cates CB, Weisleder A, Mendelsohn AL. Mitigating the Effects of Family Poverty on Early Child Development through Parenting Interventions in Primary Care. *Acad Pediatr* 2016;16:S112–20.