Associations Between Breastfeeding and Early Cognitive Development in Children Aged 2–3 Years: A Rapid Literature Review

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Abstract. Introduction: Breastfeeding is widely recognised as a key determinant of child health and development, with growing evidence suggesting a beneficial role in early cognitive and neurodevelopmental outcomes. However, evidence synthesis focusing specifically on children aged 2 to 3 years remains limited, despite this being a critical period of brain maturation and functional development.
Objective: This rapid review aimed to synthesise recent evidence on the association between breastfeeding practices—including duration and exclusivity—and cognitive and neurodevelopmental outcomes in children aged 2 to 3 years.
Methods: A rapid literature review was conducted in accordance with the WHO Rapid Review Guide and reported following PRISMA guidelines. A systematic search of PubMed, CINAHL, and Web of Science was performed for studies published between January 2021 and December 2025. Eligible studies included observational designs assessing breastfeeding exposure and cognitive or neurodevelopmental outcomes in children aged 24–36 months. Study selection, data extraction, and methodological quality appraisal were conducted by independent reviewers. Findings were synthesised narratively using a thematic approach.
Results: Six studies met the inclusion criteria, comprising four longitudinal cohort studies and two large-scale cross-sectional analyses conducted across diverse geographical settings. Overall, longer breastfeeding duration was consistently associated with more favourable neurodevelopmental outcomes, including higher global developmental scores, improved language and socioemotional development, and markers of advanced brain microstructural maturation. Evidence of a dose–response relationship was observed, with breastfeeding for 7–12 months showing the most robust associations across multiple developmental domains. Exclusive breastfeeding for six months was particularly associated with improved communication and problem-solving skills in low-resource settings. While exclusive breastfeeding was not consistently associated with long-term cognitive trajectories, cumulative breastfeeding exposure was linked to higher baseline cognitive performance in early childhood.
Conclusions: This rapid review suggests that breastfeeding, particularly when sustained beyond the early postnatal period, is positively associated with cognitive, neurobiological, and socioemotional development in children aged 2 to 3 years. Although causal inference is limited by the observational nature of the evidence,

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the overall consistency and biological plausibility of findings support current public health recommendations promoting exclusive and continued breastfeeding as part of strategies to optimise early childhood development.

Keywords: Breastfeeding · Breast Milk · Cognitive Development · Early Childhood · Neurodevelopment

1 Introduction

Breastfeeding is universally recognised as the optimal standard for infant feeding and nutrition, providing extensive short- and long-term benefits that positively influence child health and development across the life course [1–3]. Robust evidence demonstrates -that breastfeeding reduces infant morbidity and mortality, protects against infectious diseases and malnutrition, and confers lasting metabolic and immunological advantages [1, 4]. In addition to these well-established physical health benefits, increasing attention has been directed towards the role of breastfeeding in early neurodevelopment and cognitive outcomes [5–7].

The World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of life, followed by continued breastfeeding alongside appropriate complementary feeding up to two years of age or beyond [8]. These recommendations reflect the critical importance of the developmental window spanning pregnancy through the first three years of life, a period characterised by rapid brain growth, synaptogenesis, myelination, and the acquisition of foundational cognitive, language, motor, and socioemotional skills [5, 9].

From a biological perspective, human milk provides essential nutrients and bioactive components that support neural maturation, including docosahexaenoic acid (DHA), other long-chain polyunsaturated fatty acids (LC-PUFAs), choline, iron, growth factors, and hormones involved in neuroplasticity and neuronal signalling [6, 10–12]. In parallel, breastfeeding represents a unique context for early mother–infant interaction, promoting bonding, responsive caregiving, and sensory stimulation—factors independently associated with favourable cognitive and emotional development [7, 13, 14].

A growing body of literature suggests that breastfeeding is associated with improved cognitive outcomes during early childhood, including higher scores in general cognitive ability, language development, and executive function [2, 5, 15]. Recent longitudinal studies indicate that breastfed children tend to demonstrate superior developmental performance in the first years of life, with particularly consistent associations observed between 12 and 36 months of age [5, 16, 17]. Conversely, the absence or short duration of breastfeeding has been linked to an increased risk of developmental delay, especially in fine motor, language, and socioemotional domains [18–20].

Nevertheless, interpretation of these associations remains challenging due to the influence of confounding factors such as socioeconomic status, maternal education, parental intelligence, home stimulation, and maternal sensitivity—variables that are strongly related to both breastfeeding practices and child cognitive development [4, 15, 20, 21]. Although recent studies have employed advanced epidemiological and statistical approaches to better isolate the independent contribution of breastfeeding, findings remain heterogeneous, particularly regarding the magnitude and domain-specific nature of cognitive effects [16, 22].

Importantly, a notable gap persists in the literature concerning focused evidence synthesis for children aged 2 to 3 years. Many systematic reviews aggregate wide age ranges or prioritise cognitive outcomes assessed at school age, potentially obscuring effects specific to this critical transitional period of early childhood [15, 23]. Furthermore, there is limited clarity regarding the differential impact of breastfeeding duration and exclusive breastfeeding on distinct cognitive domains within this age group [17, 24].

In this context, the present rapid review aims to synthesise recent scientific evidence on the association between breastfeeding and cognitive development in children aged 2 to 3 years. Specifically, this review seeks to examine how breastfeeding type (exclusive versus non-exclusive) and duration relate to cognitive outcomes across specific domains, including language, global cognition, and fine motor skills. By addressing existing gaps in age-specific and domain-specific evidence, this rapid review intends to contribute to a more nuanced understanding of breastfeeding's role in early cognitive development and to support evidence-informed decision-making in public health and clinical practice.

2 Methods

This rapid review was conducted in accordance with the WHO Rapid Review Guide [25] and adheres to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) reporting guidelines [26].

The eligibility criteria were defined based on the PCC framework (Population, Concept, and Context) as follows: Population (P): Children aged between 2 and 3 years, born at term, and without severe pathologies that could compromise cognitive development; Concept (C): The primary concept of interest included breastfeeding—classified as exclusive, partial, or non-existent—and its influence on cognitive development, global neurodevelopment, or specific domains such as language, fine motor skills, socio-emotional development, or executive functions; Context (C): The context encompassed studies conducted in community, hospital, or population-based settings, with no geographical restrictions.

A comprehensive literature search was conducted in December 2025 across the following electronic databases: PubMed, CINAHL, and Web of Science. The search strategy utilized a combination of Medical Subject Headings (MeSH) and relevant keywords pertaining to breastfeeding and cognitive development. Terms were integrated using Boolean operators to maximize retrieval precision and recall. The finalized search string was defined as follows: (breast* AND cognitiv* development AND (breastfeeding OR cognitive development) NOT cancer). The eligibility period was restricted to peer-reviewed articles published between January 2021 and December 2025 to ensure the inclusion of the most contemporary evidence.

Studies were eligible if they reported results for children aged 24 to 36 months or provided data from broader age ranges that allowed for the extraction of age-specific data for this period. We included studies analyzing the duration or type of breastfeeding and those assessing cognitive development, neurodevelopment, or related domains using validated instruments (e.g., GDDQ, SIDEDI, ASQ-3, WPPSI, among others). Regarding study design, observational studies—including cohort, cross-sectional, and case-control designs—as well as secondary analyses of existing databases were considered. Only quantitative studies published in Portuguese, English, or Spanish were included. Studies were excluded if: (1) the study population fell outside the 2-to-3-year age range without the possibility of age-specific analysis; (2) the focus was exclusively on motor development without a cognitive component; (3) the investigation centered on nutritional interventions or programs unrelated to breastfeeding; (4) the sample included specific clinical populations (e.g., preterm infants or children with neurological pathologies); (5) the articles lacked original data (e.g., commentaries, narrative reviews, and letters to the editor); (6) the study did not provide clear information regarding breastfeeding practices.

The selection and screening process was conducted in two distinct phases by two independent reviewers to minimize selection bias. Initially, search results were screened based on title and abstract analysis. Subsequently, potentially eligible studies underwent a comprehensive full-text review to confirm adherence to the predefined inclusion criteria. Any discrepancies between the primary reviewers were resolved through consensus or by consultation with a third independent reviewer. To ensure inter-rater reliability and procedural consistency, a pilot exercise was performed prior to formal screening to calibrate the application of eligibility criteria. Following the selection phase, data were systematically extracted using a standardized form. The extracted data elements included: author and publication year, country, study design, period of data collection, setting, participant and sample size, follow-up time, comparator, outcome assessed, study main objective, main outcomes, key results summary, effect direction, and implications for practice.

The methodological quality of the included studies was rigorously evaluated using the AMSTAR-2 tool [27]. This critical appraisal was initially performed by one reviewer and subsequently verified by a second reviewer to ensure the validity and robustness of the quality assessment.

Data analysis was conducted using a structured narrative synthesis approach to integrate findings across studies with heterogeneous designs and outcome measures. Initially, a descriptive analysis was performed to summarise study characteristics, including geographical setting, study design, sample size, breastfeeding exposure definitions, and developmental assessment instruments. Subsequently, results were organised thematically according to key dimensions of interest, namely breastfeeding duration, breastfeeding exclusivity, and neurodevelopmental domains (global cognition, language, motor, and socioemotional outcomes). Given the methodological heterogeneity and variability

in outcome measurement, meta-analysis was not undertaken. Instead, patterns of association, consistency of findings, and direction of effects were examined across studies, with particular attention to dose–response relationships and age-specific outcomes. The synthesis emphasised results derived from adjusted analyses to account for potential confounding factors.

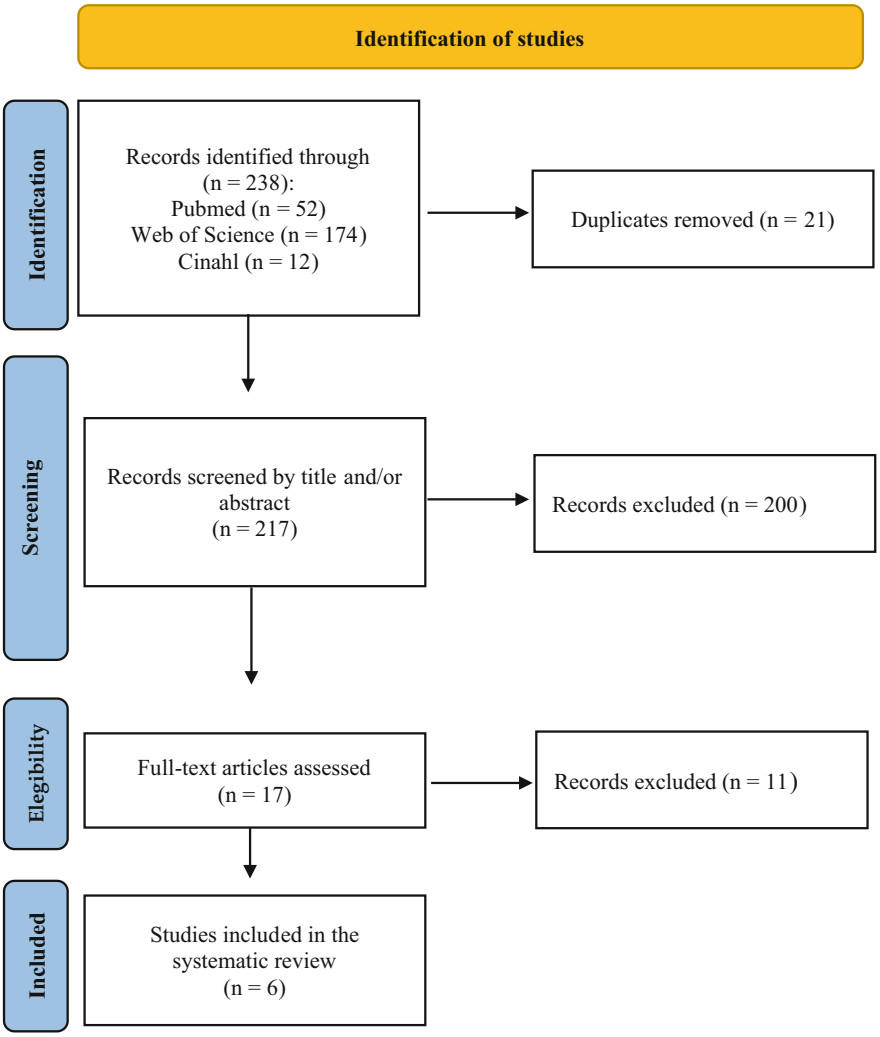

Fig. 1. Flowchart of the article selection and inclusion process.

3 Results

As depicted in the study selection flowchart (Fig. 1), the initial search across PubMed, Web of Science, and CINAHL yielded a total of 238 records. Following the removal of 21 duplicate entries, 217 records underwent title and abstract screening. Of these, 17 full-text articles were assessed for eligibility. After excluding 11 studies that failed to meet the predefined inclusion criteria, six studies were retained for inclusion in the final qualitative synthesis.

3.1 Characteristics of Included Studies

The six studies included in this rapid review were published between 2021 and 2025, reflecting recent and relevant evidence on breastfeeding and early cognitive development. The studies were conducted across diverse geographical contexts, including North America (Canada), Europe (Spain), Asia (China), South America (Dominican Republic), and Africa (Kenya), thereby enhancing the external validity and cross-cultural relevance of the findings.

In terms of study design, four studies employed prospective longitudinal cohort methodologies, while two utilized large-scale cross-sectional designs based on nationally representative datasets. Sample sizes varied considerably, ranging from small, intensively characterized neuroimaging cohorts ($n = 85$) to large population-based surveys comprising up to 7,748 participants. The study populations primarily consisted of typically developing children aged between 24 and 36 months, although some longitudinal cohorts extended follow-up assessments into later preschool and early school-age periods (Table 1).

3.2 Synthesis of Neurodevelopmental Outcomes

The synthesis of findings was structured according to key neurodevelopmental domains and breastfeeding characteristics, including duration and exclusivity. A summary of the evidence is presented in Table 2.

3.3 Structural and Global Cognitive Development

Longitudinal neuroimaging evidence indicates a positive association between breastfeeding duration and markers of structural brain maturation. Specifically, longer total breastfeeding duration was associated with higher global fractional anisotropy (FA) values, reflecting more advanced white matter microstructural organization. While exclusive breastfeeding during the first six months was not consistently associated with global white matter outcomes, cumulative breastfeeding exposure appeared to confer measurable neurobiological advantages.

Regarding cognitive performance, breastfeeding duration was associated with a higher initial cognitive level (cognitive intercept) in early childhood. However, no significant association was observed between breastfeeding exposure and the rate of cognitive growth over time, suggesting that breastfeeding may exert its strongest influence on early baseline cognitive functioning rather than on long-term developmental trajectories.

3.4 Socioemotional and Behavioral Outcomes

Several studies demonstrated consistent associations between breastfeeding and improved socioemotional outcomes. Children who had ever been breastfed exhibited superior socioemotional functioning compared with never-breastfed peers, even after adjustment for key socioeconomic and familial confounders. Furthermore, breastfeeding was associated with a reduced risk of externalizing behavioral problems during early childhood, including hyperactivity and conduct-related difficulties, indicating a potential protective effect on emotional regulation and behavioral adjustment.

3.5 Impact of Breastfeeding Type and Duration

A dose–response relationship emerged across multiple studies, underscoring the importance of breastfeeding duration for optimal neurodevelopmental outcomes. Breastfeeding for 7 to 12 months was consistently associated with significant improvements across all five assessed neurodevelopmental domains—gross motor, fine motor, adaptive behavior, language, and socioemotional development—after adjustment for confounding variables.

In low-resource settings, adherence to the World Health Organization recommendation of six months of exclusive breastfeeding was particularly associated with enhanced communication and problem-solving abilities. Conversely, the absence of breastfeeding or very short breastfeeding duration was associated with an increased risk of developmental delay, especially in language and socioemotional domains.

Overall, the findings suggest that both the duration and exclusivity of breastfeeding play a meaningful role in early neurodevelopment, with cumulative exposure demonstrating the most consistent and robust associations across cognitive and socioemotional outcomes.

4 Discussion

This rapid review synthesised contemporary evidence on the association between breastfeeding and cognitive development in children aged 2 to 3 years, with particular attention to breastfeeding duration, exclusivity, and domain-specific neurodevelopmental outcomes. Overall, the findings suggest that breastfeeding—especially when sustained beyond the early postnatal period—is positively associated with early cognitive, neurobiological, and socioemotional development. Although effect sizes varied across studies and domains, the direction of associations was largely consistent, reinforcing the relevance of breastfeeding as a modifiable early-life exposure with potential developmental significance.

Table 1. Characterization of the studies.

Author, year	Country	Study design	Period of data collection	Setting	Participants and sample	Follow-up Time	Comparator	Outcome
Kar et al., 2021 [28]	Canada	Prospective longitudinal cohort study	2013 – 2019	Tertiary research centre/University brain imaging facilities	85 typically developing children (42M/43F) from high SES/educated white families	Preschool age (mean age: 4.3 years)	Children with non-exclusive breastfeeding or shorter breastfeeding duration	Breastfeeding: total duration in months and exclusivity during the first 6 months
Onyango et al., 2022 [29]	Kenya	Longitudinal cohort study	2014 – 2018	Rural community	1,214 children (3–4 years) from the SLIMDEV maternal-infant health cohort	3 to 4 years of age	EBF 0–1 months (reference group)	Exclusive breastfeeding duration (0–1, 2–3, 4–5, 6 months)
Garon-Carrier et al., 2023 [30]	Canada	Prospective longitudinal birth cohort study (QLSCD)	1998 – 2005	Home-based interviews and clinical assessments	~ 1,780 children from the 1998/1999 representative birth cohort	Repeated measures up to 6 years of age (1.5, 2.5, 3.5, 4.5, 6 years)	Children who were never breastfed	Total breastfeeding duration (months) and exclusive breastfeeding duration (months)
Sánchez-Vincitore et al., 2024[31]	Dominican Republic	Cross-sectional secondary analysis of national standardization data	January – October 2022	Community-based early childhood centres	1,836 Dominican children (12–36 months) representative of the national surveillance system	12 to 36 months	Children who were never breastfed	Ever breastfed (Yes/No)
Zheng et al., 2024 [32]	China	Large-scale cross-sectional survey	September 2019 – January 2020	National level	7,748 Chinese children (2–3 years) from the National Nutrition and Health Systematic Survey	2 to 3 years of age	Never breastfed group	Breastfeeding duration (categorized as: Never, 0–6 months, 7–12 months, 13–18 months, > 18 months)
Martín-Ramos et al., 2025 [33]	Spain	Multicentre prospective longitudinal cohort study	May 2014 – May 2017	65 Primary Health Care centres	1,063 children recruited via Primary Care Paediatric consultations	18 to 36 months of age	Formula-fed (FF) children	Feeding type (breastfeeding of any duration, formula-feeding, mixed feeding)

Table 2. Evidence synthesis on the association between breastfeeding and neurodevelopmental outcomes in early childhood.

Author, year	Main Objective	Outcomes	Key Results Summary	Effect Direction	Implications for Practice
Kar et al., 2021 [28]	To investigate whether exclusive breastfeeding (6 months) and total duration were associated with white matter microstructure in young children	White matter microstructure (Fractional Anisotropy - FA), measured by Diffusion Tensor Imaging (DTI) on MRI	Exclusive breastfeeding was not associated with global white matter microstructure. However, longer total duration was associated with higher global FA (more mature microstructure). This improvement was more evident in females	Improvement (Positive association with total duration)	Findings support public health recommendations for long-term breastfeeding, suggesting a persistent beneficial effect on brain development
Onyango et al., 2022 [29]	To determine the association between exclusive breastfeeding (EBF) duration and ECD outcomes in children aged 3–4 years in rural Kenya	ECD (5 domains: communication, gross/fine motor, problem-solving, socioemotional), evaluated by ASQ-3	EBF for 4–5 and 6 months was associated with better total ASQ-3 scores. Specifically, 6 months of EBF was linked to communication and problem-solving; 2–5 months was linked to better gross motor skills	Improvement (Positive association with general and domain-specific development as EBF duration increased)	Findings in low-resource settings emphasize the importance of promoting 6 months of EBF, aligned with international guidelines
Garon-Carrier et al., 2023 [30]	To assess the effect of total breastfeeding duration and exclusive breast milk exposure on children's cognitive abilities up to age 6	Cognitive abilities (BSID Verbal/Performance, WPPSI-R Verbal IQ)	Total duration was associated with a higher cognitive intercept (initial ability). However, there was no association with the rate of cognitive growth over time. Exclusive breast milk had no significant effect	Improvement (Higher initial cognitive ability associated with total duration, but no impact on trajectory)	Health policies should continue to promote breastfeeding, regardless of duration, given its role in early cognitive levels
Sánchez-Vincitore et al., 2024[31]	To evaluate the impact of "ever breastfeeding" on early childhood development in Dominican children aged 12 to 36 months	Early Childhood Development (ECD) in fine motor, gross motor, language, and socioemotional domains (evaluated by SIDEDI)	"Ever breastfed" status was associated with better performance in all areas in the unadjusted model. After adjusting for SES, the association remained significant only for socioemotional development	Improvement (Significant positive association for socioemotional development in the adjusted model)	Results reinforce the role of breastfeeding in early socioemotional development. Public health interventions are needed to increase breastfeeding rates in the DR

(*continued*)

Table 2. (*continued*)

Author, year	Main Objective	Outcomes	Key Results Summary	Effect Direction	Implications for Practice
Zheng et al., 2024 [32]	To explore the relationship between breastfeeding duration and neurodevelopment in Chinese children aged 2 to 3 years	Neurodevelopment in 5 domains (gross/fine motor, adaptation, language, socioemotional), evaluated by GDDQ	Breastfeeding for 7–12, 13–18, and > 18 months was associated with higher total GDDQ scores. The 7–12 month duration showed significant associations with improvements in all 5 areas after adjustment	Improvement (Positive association with general neurodevelopment and all 5 domains for 7–12 months duration)	Promoting breastfeeding for at least 1 year (7–12 months) may be an important strategy for the neurodevelopment of Chinese children
Martín-Ramos et al., 2025 [33]	To investigate the influence of breastfeeding on psychomotor development in children aged 18–36 months, adjusting for confounders	Psychomotor (DCDQ) and Socioemotional development (externalizing/internalizing problems) evaluated by ITSEA	No significant differences in psychomotor development (DCDQ). However, breastfed children had lower scores for externalizing problems (better outcome) on the ITSEA, suggesting better emotional adjustment	Improvement (Association with lower risk of externalizing problems; No difference for psychomotor/motor development)	Results support breastfeeding recommendations to promote better socioemotional/behavioral development beyond nutritional benefits

EBF: Exclusive Breastfeeding; ECD: Early Childhood Development; DTI: Diffusion Tensor Imaging; MRI: Magnetic Resonance Imaging; FA: Fractional Anisotropy.
ASQ-3: Ages and Stages Questionnaire, Third Edition (Screening for developmental delays); BSID: Bayley Scales of Infant and Toddler Development (Assessment of cognitive, language, and motor skills); DCDQ: Developmental Coordination Disorder Questionnaire; GDDQ: Griffiths Developmental Differential Questionnaire; ITSEA: Infant-Toddler Social and Emotional Assessment; SIDEDI: Sistema Dominicano de Evaluación del Desarrollo Infantil (Dominican System for Evaluating Early Childhood Development); WPPSI-R: Wechsler Preschool and Primary Scale of Intelligence - Revised.

4.1 Breastfeeding and Global Neurocognitive Development

The results of this review suggest that longer breastfeeding exposure is associated with higher baseline cognitive functioning in early childhood. Children who were breastfed for extended periods tended to demonstrate superior global developmental scores and higher initial cognitive performance when compared with those who were never breastfed or breastfed for shorter durations. These findings are consistent with recent systematic reviews and meta-analyses demonstrating that exclusive or prolonged breastfeeding is associated with a significantly reduced risk of global developmental delay and improved outcomes in language and motor domains among children under five years of age [34, 35].

Neuroimaging evidence further reinforces these associations. Longitudinal and cross-sectional studies published over the past decade have shown that breastfeeding duration is positively associated with markers of brain maturation, including increased cortical thickness, greater cortical surface area, enhanced myelin content, and superior fluid cognitive performance extending into later childhood and adolescence [35–37]. These structural brain characteristics are widely recognised as indicators of more efficient neural processing and cognitive integration, suggesting that breastfeeding may exert lasting effects on neurodevelopment beyond infancy.

4.2 Biological Mechanisms Underpinning Neurodevelopmental Outcomes

The observed associations between breastfeeding and neurodevelopment are biologically plausible and supported by advances in nutritional neuroscience. Human breast milk contains long-chain polyunsaturated fatty acids, including docosahexaenoic acid (DHA), which play a critical role in synaptogenesis, myelination, and neuronal membrane stability during early brain development [38]. Diffusion tensor imaging studies have demonstrated that longer breastfeeding duration is associated with increased white matter integrity, as reflected by higher fractional anisotropy values, indicating more advanced microstructural organisation of neural pathways [39].

Additional neuroimaging research has identified associations between breastfeeding and improved connectivity in white matter tracts involved in language, executive functioning, and cognitive control [40]. Together, these findings suggest that the nutritional composition of breast milk contributes directly to structural and functional brain development during sensitive periods of neuroplasticity.

4.3 Socioemotional and Behavioural Development

Beyond cognitive and structural brain outcomes, this review identified consistent associations between breastfeeding and improved socioemotional development. Children who were breastfed exhibited fewer externalising behavioural problems and better emotional regulation compared with never-breastfed peers. These findings are in line with recent longitudinal studies demonstrating protective effects of breastfeeding against behavioural and emotional difficulties during early and middle childhood [40, 41].

Importantly, socioemotional development is influenced by both biological and psychosocial factors [43]. Breastfeeding facilitates close mother–infant interaction, physical proximity, and responsive caregiving, all of which are known to promote secure

attachment and emotional regulation. Recent evidence suggests that breastfeeding may exert synergistic effects by combining nutritional benefits with enhanced relational experiences, thereby supporting more adaptive socioemotional trajectories [44].

4.4 Duration, Exclusivity, and Dose–Response Relationships

A key finding of this review is the presence of a dose–response relationship between breastfeeding duration and neurodevelopmental outcomes. Breastfeeding for 7 to 12 months emerged as a particularly relevant exposure window, being associated with improvements across multiple developmental domains, including language, adaptive behaviour, fine motor skills, and socioemotional functioning. Meta-analytic evidence further supports these findings, indicating that exclusive breastfeeding is associated with lower odds of developmental delay compared with partial or no breastfeeding [34].

Moreover, large population-based neuroimaging studies have demonstrated that longer cumulative breastfeeding exposure is associated with more pronounced effects on cortical development and cognitive performance later in childhood, reinforcing the importance of sustained breastfeeding beyond the early postnatal period [35, 36]. These findings argue against a simple threshold effect and instead suggest that cumulative exposure to breast milk may confer incremental neurodevelopmental benefits.

4.5 Methodological Considerations and Limitations

Despite the overall consistency of findings, several limitations must be acknowledged. Most included studies employed observational designs, which limits causal inference and raises the possibility of residual confounding by factors such as parental intelligence, home learning environments, and caregiving quality. Although many studies adjusted for socioeconomic status and maternal education, unmeasured confounders may partially explain observed associations, as highlighted in recent methodological discussions within the literature [41, 42].

Additionally, heterogeneity in breastfeeding exposure definitions and developmental assessment tools complicates cross-study comparisons. Recall bias related to retrospective reporting of breastfeeding practices may also influence results, particularly in cross-sectional studies. The relatively small number of studies focusing specifically on children aged 2 to 3 years further underscores the need for age-targeted longitudinal research using harmonised methodologies.

4.6 Implications for Policy and Practice

The findings of this review provide further empirical support for international public health recommendations advocating exclusive breastfeeding for the first six months of life, followed by continued breastfeeding alongside complementary feeding. The demonstrated benefits for cognitive, socioemotional, and neurobiological development suggest that breastfeeding promotion should be integrated within broader early childhood development and nurturing care frameworks.

Policies addressing structural barriers to breastfeeding—such as limited maternity leave, inadequate workplace accommodations, and unequal access to lactation support—remain essential. To reducing health inequities and optimising developmental outcomes across populations [45–48].

5 Conclusion

In summary, this rapid review supports the conclusion that breastfeeding, particularly of longer duration and higher exclusivity, is associated with favourable neurodevelopmental outcomes during early childhood. These associations are observed across cognitive, structural, and socioemotional domains, and are consistent with biological mechanisms grounded in nutritional neuroscience and infant care practices. While causal inferences remain tentative, the convergence of evidence from epidemiological and neuroimaging studies strengthens the rationale for sustained breastfeeding as a component of strategies to optimise child developmental trajectories.

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