



THE RELATIONSHIP BETWEEN PARENTING STYLE AND NUTRITIONAL INTAKE WITH CHILDREN'S LANGUAGE DEVELOPMENT

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ABSTRACT

Language development is a fundamental aspect of early childhood's golden period, influenced by environmental factors, namely parenting patterns and biological foundations through nutritional intake. This literature review aims to analyze the relationship between parenting patterns and nutritional intake and children's language development. The data used are secondary data in the form of articles from PubMed, Science Direct, and Google Scholar. Researchers used 21 national and international research articles published between 2020 and 2025. The inclusion criteria for this study were: 1) primary research articles published between 2020 and 2025; 2) article topics aligned with the research objectives; and 3) articles from accredited national full access journals and reputable international journals. The synthesis of results indicates that parenting patterns that provide positive verbal stimulation and interaction, as well as regulating gadget use, can improve children's receptive and expressive language skills. Conversely, excessive gadget use without parental supervision can increase the risk of language delay. From a nutritional perspective, stunting and micronutrient deficiencies (especially iron and zinc) contribute to impaired cognitive function and attention, which impact children's language acquisition. In conclusion, children's language development is influenced by a combination of parenting patterns and nutritional intake, with good parenting patterns and balanced nutritional intake being key components in supporting optimal language development.

Keywords: children's; language development disorders; nutritional intake; parenting style

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INTRODUCTION

Language development is a vital aspect of the golden period of early childhood, laying the foundation for cognitive abilities, social interactions, and future academic readiness. However, the phenomenon of delayed language development, both in the form of speech delay and Developmental Language Disorder (DLD), has shown an increasing trend in prevalence both globally and nationally in recent years. Epidemiological studies estimate that these disorders affect approximately 7–10% of the early childhood population, with long-term impacts including learning difficulties and socio-emotional barriers (Moges, Mengistu, & Tilahun, 2024). This increase in cases is not only influenced by internal biological factors but is also increasingly driven by drastic changes in children's external environment, particularly shifts in family interaction patterns and modern lifestyle transitions that impact parenting styles and nutritional status (Septyani, Lestari, & Suryawan, 2021).

In today's technological developments, parental parenting styles are a determining factor in guiding children's technology use. The transformation into the digital era has changed patterns of parent-child interaction, where parental restrictions, guidance, and strict attitudes toward device use also impact the quality of language stimulation children receive (Al Hosani et al., 2023). Several recent studies highlight that permissive parenting styles regarding device use, characterized by excessive screen time and minimal content selection, are positively correlated with a decline in children's verbal abilities (Astria, Rahmawati, & Firnanda, 2024). The absence of consistent rules causes

children to miss out on valuable opportunities for active verbal exploration, as time that should be used for interactive play is replaced by passive exposure to screens that do not require reciprocal responses (Wulandari, Hasanah, & Santoso, 2021).

Furthermore, parenting quality is measured not only by device restrictions but also by parental responsiveness to children's communication and emotional needs and the amount of time spent together. Parental responsiveness creates a scaffolding mechanism, where sensitive parents provide appropriate verbal feedback to their children's cues, thereby enriching their vocabulary (Santi & Asri, 2022; Lubis & Depalina, 2025). Conversely, limited time spent together due to parents' busy schedules or technological distractions hinders the formation of secure attachments, which are psychological prerequisites for children to express themselves confidently (Solikhah et al., 2023; Qoidah & Oktaviana, 2025). Therefore, the dimensions of parenting, including device restrictions, strictness, responsiveness, and time allocation, form a vital part of the stimulation ecosystem.

In language development, neurocognitive functions that regulate language function, such as Broca's and Wernicke's areas, are highly dependent on the availability of biological substrates through optimal nutritional intake. Poor dietary patterns in early life, such as macronutrient and micronutrient deficiencies, have been shown to inhibit the process of nerve myelination and brain synaptogenesis (Cahyanti & Zulaikha, 2020). Children with a history of poor nutritional intake tend to experience a decline in general cognitive function, which manifests as slow processing of auditory and visual information necessary for language acquisition (Nuryuliasih & Sumanto, 2024). Modern threats to language development also arise from the high consumption of additives in children's diets, such as flavor enhancers (MSG), which can reduce children's language abilities (Zhou et al., 2023). Thus, nutritional status not only influences physical growth (such as stunting) but is also a significant predictor of neurological maturity that supports speech ability. Therefore, this literature review was conducted to synthesize the latest empirical evidence regarding how parenting patterns and children's nutritional intake affect language development. This literature review aims to analyze the relationship between parenting patterns and nutritional intake and children's language development.

METHOD

This research employed a literature review. The data used were secondary data in the form of journals and international articles. The international electronic databases used included PubMed, ScienceDirect, and Google Scholar. Researchers used 21 national and international research articles published between 2020 and 2025. The inclusion criteria for this study were: 1) primary study articles published between 2020 and 2025; 2) the topic of the article aligns with the research objectives; and 3) articles from accredited national full-access journals and reputable international journals. The strategy employed by researchers in searching for the various international literature included several keywords related to the focus of the study, namely: Parenting Patterns, Nutritional Intake, Language Development Disorders, and Language Development.

RESULT

Based on the article review, 21 articles examined the relationship between parenting styles and nutritional intake and children's language development, which are briefly described as follows:

Table 1.
Description of Article Characteristics

Author, Year	Research Design	Location	Number of Samples	Sampling Technique	Research Subjects
Adiningsih & Anantyasari (2025)	Qualitative case study	Pacitan	5 children	<i>Purposive sampling</i>	Normal
Tsai et al. (2024)	<i>Cohort longitudinal</i>	Taiwan	4782 children	<i>Longitudinal KIT</i>	Normal
Nuryuliasih & Sumanto (2024)	<i>Cross-sectional</i>	Kebumen	64 children	<i>Random sampling</i>	Normal
Hoque et al. (2021)	<i>Cross-sectional</i>	Bangladesh	111 children	<i>Purposive sampling</i>	SLD
Cahyanti & Zulaikha (2020)	<i>Cross-sectional</i>	Samarinda	82 children	<i>Total sampling</i>	Normal
Salsabil & Susanti (2024)	<i>Cross-sectional</i>	Surakarta	65 children	<i>Purposive sampling</i>	Normal
Oktaviani et al. (2021)	Descriptive qualitative	Depok	20 parent	<i>Saturation sampling</i>	Normal
Astria et al. (2024)	<i>Cross-sectional</i>	Simpang IV	87 children	<i>Target sampling</i>	Normal
Al Hosani et al. (2023)	<i>Case-control</i>	UAE	454 children	<i>Purposive sampling</i>	SLD vs Normal
Siregar & Siagian (2023)	Qualitative Case-control	Indonesia	3 mother	<i>Purposive sampling</i>	Normal
Moges et al. (2024)	<i>Case-control</i>	Ethiopia	150 (50/100)	<i>Purposive sampling</i>	SLD vs Normal
Hendra Reni et al. (2021)	Simple regression	Padang	35 children	<i>Total sampling</i>	Normal
Qoidah & Oktaviana (2025)	Qualitative Case-control	Madiun	8 parents/caregivers	<i>Purposive sampling</i>	SLI
Wulandari et al. (2021)	<i>Service survey (observational)</i>	Indonesia	Preschool parents	<i>Purposive sampling</i>	Orang Tua anak prasekolah
Septyani et al. (2021)	<i>Observational Analytics</i>	Pamekasan	86 children	<i>Total sampling</i>	Risiko SLD
Alsaadi et al. (2024)	<i>Case-control</i>	Dubai/UAE	420 children	<i>Purposive sampling</i>	<i>Speech delay vs normal</i>
Abida et al. (2024)	<i>Case-control (subgroup meta-analysis)</i>	Indonesia	150 children	<i>Consecutive sampling</i>	Risiko SLD
Zhou et al. (2023)	<i>Cross-sectional</i>	China	1,204 children	<i>Multistage sampling</i>	Normal
Bellaïche et al. (2023)	<i>Observasional klinis</i>	Eropa	78 children	<i>Clinic-based</i>	Risiko gangguan fonologi (<i>feeding disorder</i>)
Alatorre-Cruz et al. (2024)	<i>Eksperimental (ERP neurocognitive)</i>	Mexico	43 children	<i>Consecutive sampling</i>	Normal
Fikawati et al. (2021)	<i>Cross-sectional</i>	Indonesia	380 toddler	<i>Cluster sampling</i>	Stunting

Table 2.
Characteristics of Findings

Author and Year	Parenting Aspect	Nutritional Intake	Language Development	Main Findings
Adiningsih & Anantyasari (2025)	Parental involvement, verbal stimulation (communication)	-	Mild language delay	The quality of mother-child interactions influences children's expressive abilities.
Tsai et al. (2024)	Screen time guidance	-	Language development score	Unsupervised screen time decreases language development scores.
Nuryuliasih & Sumanto (2024)	Caregiver communication patterns	-	Receptive and expressive language	Responsive communication improves language development.
Hoque et al. (2021)	-	Iron deficiency	Speech and language delay	Iron deficiency significantly increases the risk of SLD.
Cahyanti & Zulaikha (2020)	Democratic and permissive parenting styles	-	Expressive abilities	Democratic parenting improves language development.
Salsabil & Susanti (2024)	Screen time monitoring	-	Language scores	Excessive screen time is associated with language delays.
Oktaviani et al. (2021)	Mother-child communication patterns	-	Articulation disorders	Lack of speech stimulation affects articulation.
Astria et al. (2024)	Parental support (care)	-	Receptive language	Consistent support improves language comprehension.
Al Hosani et al. (2023)	Parenting and stimulation patterns	-	SLD	Low home stimulation increases SLD.
Siregar & Siagian (2023)	Parental communication patterns	-	Phonological delays	Daily verbal stimulation improves phonological awareness.
Moges et al. (2024)	-	Micronutrient deficiencies	SLD	Nutritional deficiencies (Fe, Zn) are strongly associated with SLD.
Hendra Reni et al. (2021)	Parenting Patterns	-	Language development	Positive parenting influences children's language.
Qoidah & Oktaviana (2025)	Caregiver Responsiveness	-	SLI	Lack of caregiver stimulation correlates with SLI.
Wulandari et al. (2021)	Parental Stimulation	-	Risk for language delay	Stimulation education improves language scores.
Septyani et al. (2021)	-	Malnutrition (Stunting)	Risk for speech delay	Malnutrition and stunting increase the risk of speech delay.
Alsaadi et al. (2024)	Screen time usage patterns	-	Language delay	Excessive screen time decreases receptive-expressive language skills.
Abida et al. (2024)	Parental stimulation patterns, screen time management	-	SLD	Low stimulation and high screen time are predictors of SLD.
Zhou et al. (2023)	-	MSG Consumption	Language scores	High MSG intake is associated with lower language skills.
Bellaïche et al. (2023)	-	Feeding Problems (oral-motor)	Phonology & articulation	Early-onset eating disorders impact phonology.
Alatorre-Cruz et al. (2024)	-	Variety of Food Textures	Phonology (ERP)	Dietary differences affect neurocognitive phonological processing.
Fikawati et al. (2021)	-	Malnutrition (stunting)	Expressive language	Stunting significantly reduces language skills.

DISCUSSION

Research Characteristics

Of the 21 articles analyzed in this study, 14 highlighted parenting aspects, and 7 discussed nutritional intake. The parenting aspects most frequently assessed were screen time management, communication patterns, and parental stimulation. Meanwhile, regarding nutrition, the most frequently discussed aspects of nutritional intake were stunting and micronutrient deficiencies (such as iron, phosphorus, and omega-3 fatty acids). Based on research location, 14 articles originated from Indonesia, followed by other Asian countries such as Taiwan, China, the UAE, and Europe and Mexico. This indicates that language delays are more frequently studied in developing countries. The most common research design was cross-sectional, while purposive sampling was the dominant sampling technique. These findings emphasize that language development disorders are a global problem influenced by environmental and biological factors, and the importance of family- and community-based interventions for their prevention and management.

Definition of Developmental Language Disorders

Ideal child language development encompasses receptive (understanding) and expressive (expressing) abilities, which develop rapidly during the golden period (0-5 years). During this phase, brain plasticity is highly developed, making environmental stimulation and nutrition crucial factors. However, developmental language disorders remain a significant public health problem. Globally, the prevalence of speech delay and Developmental Language Disorder (DLD) is estimated to range between 7–10% in the child population (Moges, Mengistu, & Tilahun, 2024). In Indonesia, data from various developmental services shows an increasing trend in cases of speech delay, particularly post-pandemic due to changes in social interaction patterns.

A review of the terms used in several journals reveals variations in terminology related to developmental language disorders, including speech delay, Speech and Language Delay (SLD), Speech-Language Impairment (SLI), and phonological disorders. For example, Hoque et al. (2021) and Moges et al. (2024) use the term Speech and Language Delay (SLD) to describe delayed language development based on micronutrient deficiencies of iron and zinc. Research by Qoidah and Oktaviana (2025) uses the term SLI to indicate language delay with a specific linguistic profile. Meanwhile, Al Hosani et al. (2023) and Abida et al. (2024) use SLD to describe disorders associated with minimal parental stimulation and inadequate parental regulation of screen time. Bellaïche et al. (2023) and Alatorre-Cruz et al. (2024) focus more on phonological disorders as a specific component of language problems. Although the terminology used varies, all studies agree that language disorders are multifactorial, encompassing biological factors, environmental factors, and social interaction patterns. This variation in terminology also indicates that the definition of language disorders in research practice is still evolving, depending on the assessment instruments, disciplines, and focus of each study.

Parenting Patterns and Children's Language Development

Of the 21 articles, 11 discussed the relationship between parenting patterns and children's language development. The most frequently identified parenting aspects were screen time management, communication patterns, and parental stimulation. Findings indicate that responsive and high-quality verbal interactions significantly contribute to children's receptive and expressive language skills (Adiningsih & Anantyasari, 2025; Nuryuliasih & Sumanto, 2024). Parenting patterns that encourage two-way communication have been shown to improve phonological and articulatory development (Siregar & Siagian, 2023; Oktaviani et al., 2021). Children who receive good verbal stimulation from their parents, actively engaging in daily dialogue, show a 60% increase in vocabulary (Oktaviani et al., 2021). Even in children with SLI, intensive communication and emotional responsiveness from parents can significantly improve their speaking skills (Qoidah & Oktaviana, 2025). Salsabil & Susanti (2024) also showed that parental involvement through storytelling or reading with children significantly correlates with receptive language skills. This demonstrates that simple but consistent stimulation can enrich children's language comprehension (Salsabil & Susanti, 2024).

Meanwhile, in today's modern transformation, parenting styles regarding gadget use are also crucial for children's language development. Unsupervised and unlimited gadget use has been shown to increase the risk of speech delay, as children receive less direct verbal stimulation from their environment (Septyani et al., 2021). Alsaadi et al. (2024) found that gadget use without social interaction worsens both receptive and expressive language skills. Furthermore, Al Hosani et al. (2023) also revealed that low levels of home stimulation and parental supervision of digital activities have been shown to increase the risk of Specific Language Delay (SLD). Al Hosani et al. (2023) revealed that children who own their own devices have an almost fourfold increased risk of SLD, while watching television for 3–4 hours/day increases the risk by more than threefold. Several studies have found that excessive screen time (>2 hours/day) is a factor that increases the risk of SLD by 42.4%. (Moges et al., 2024; Astria et al., 2024).

Therefore, parents who provide clear, consistent, and proportional rules regarding screen time have been shown to be better able to maintain the quality of verbal interactions with their children, thereby increasing opportunities for two-way communication (Astria, Rahmawati, & Firnanda, 2024). Conversely, inconsistent or overly permissive restrictions tend to lead to children being exposed to more passive content without supervision, which can reduce children's opportunities to learn language through direct interaction (Wulandari et al., 2021). Thus, several findings indicate that parenting styles rich in communication and parental regulation of gadget use are the environmental factors that most strongly influence children's language development.

Nutritional Intake and Children's Language Development

Of the 21 articles, 7 discussed nutritional aspects, including micronutrient status, food texture variation, feeding problems (oral motor skills), and MSG consumption. The most dominant finding was that poor macronutrient status, such as stunting, was found to affect children's language abilities, with stunted children showing lower linguistic scores than children with normal nutritional status (Septyani et al., 2021; Fikawati et al., 2021). Furthermore, children with micronutrient deficiencies, such as iron and zinc, were also associated with an increased risk of language delay. These nutritional deficiencies impact nerve myelination, attention, and working memory, which are critical components of language processing (Hoque et al., 2021; Moges et al., 2024). Children who consume excessive amounts of MSG also showed lower language scores than children with a nutritious diet, as MSG can cause excitotoxicity that damages hypothalamic neurons, impairing cognitive abilities such as attention and memory (Zhou et al., 2023). Additionally, two articles highlight that feeding issues and variations in food texture also affect phonological and articulation development, as poorly developed oral-motor structures can hinder speech development (Bellaïche et al., 2023; Alatorre-Cruz et al., 2024). Therefore, children with optimal nutritional status will have better language skills because nutrition affects brain function, memory, and attention (Cahyanti & Zulaikha, 2020).

However, some articles differ in their findings, noting that there is no direct relationship between nutritional status and language, and emphasizing that environmental factors, such as communication patterns and the quality of family interactions, have a greater influence on children's language development (Nuryuliasih & Sumanto, 2024; Adiningsih & Anantyasari, 2025; Astria et al., 2024). Thus, although nutrition is an important factor in cognitive development, its influence on language can be indirect and dependent on the quality of environmental stimulation. Nutrition remains crucial as a biological foundation, but its effect on language is stronger when combined with parental stimulation.

CONCLUSION

The study's results indicate that children's language development is influenced by a combination of environmental factors, namely parenting styles, quality of stimulation, and biological foundations, namely nutritional intake. Parenting factors are the most consistent determinants, particularly communication stimulation and parental regulation of screen time, which are associated with children's language development. Children who receive good stimulation will have rich and interactive language experiences, while excessive screen time without supervision consistently increases the risk of language delay. Furthermore, nutritional factors were found to act as a neurobiological foundation supporting cognitive function, while excessive consumption of MSG contributes to cognitive and attentional impairments that impact language acquisition. Overall, these findings emphasize the importance of family-based interventions to increase language stimulation, regulate gadget use, and meet nutritional needs to prevent language developmental disorders in children.

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