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EARLY DETECTION AND STIMULATION INTERVENTIONS OF GROWTH AND DEVELOPMENT IN CHILDREN CHARACTER FORMING: SYSTEMATIC REVIEW

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Abstract

Introduction: *Child development involves cognitive-language, sensory-motor, and social-emotional aspects, with recognition of the significance of non-cognitive domains in predicting long-term outcomes. Factors such as genetics, health, and environment play crucial roles, with disparities in development observed in children from disadvantaged backgrounds. Approximately 250 million children in low and middle-income countries are at risk of poor development due to poverty, undernutrition, and limited stimulation, but early nurturing care can mitigate these effects. Integrated early detection and stimulation interventions are gaining importance, offering a comprehensive approach to child growth and development, and understanding their characteristics is crucial for tailored, context-specific interventions.*

Method: *This study followed the 2020 PRISMA guidelines to ensure research alignment with necessary standards for accuracy. Articles were retrieved from databases including PubMed and Google Sholar database in October 2023.*

Result: *The search strategy produced a total of 7 results. After a thorough evaluation of the full-text papers, we ultimately included five papers in the final analysis, consisting of four retrospective analysis and studies.*

Conclusion: *In summary, the study revealed significant associations between respondents' knowledge and attitudes with early child development practices. It also emphasized the importance of culturally relevant interventions and the involvement of extended family in fostering child development, particularly in disadvantaged regions.*

Keywords: *early detection, children, growth development, character forming*

INTRODUCTION

Child development encompasses various dimensions, including cognitive-language, sensory-motor, and social-emotional aspects, all of which are interconnected. While earlier literature primarily emphasized the significance of early cognitive development for later outcomes, there is growing recognition of the importance of non-cognitive domains in forecasting children's academic achievements, productivity, and social functioning in adulthood.[1,2]

Child development is also influenced by multiple factors, involving the interplay of genetic inheritance, biological well-being (such as health and nutritional status), and the immediate (like the quality of maternal-child interactions) and more distant (e.g., neighbourhood features) environment. During the initial years of life, there is rapid growth and development in all domains, forming a sturdy foundation for acquiring more advanced skills later on. Children growing up in disadvantaged settings are more prone to encountering biological and environmental risks that impede brain development and result in enduring changes in the structure and functioning of the developing brain. By the ages of four to six years, notable gaps become evident in children's development in both cognitive and non-cognitive aspects, distinguishing children from disadvantaged backgrounds from their more advantaged peers.[1]

Approximately 250 million children under the age of 5 in low and middle-income countries (LMICs) are at risk of experiencing poor development due to factors like poverty, undernutrition, and insufficient stimulation. These adverse conditions have long-lasting physical and psychosocial repercussions that persist into adulthood, perpetuating the cycle of poverty across generations. However, early exposure to nurturing care, encompassing optimal nutrition and adequate stimulation, significantly impacts children's development, mitigates the negative effects of adversities, and enhances their potential for success.[2]

In recent times, there has been a growing emphasis on implementing early detection and stimulation interventions as a more comprehensive approach to enhance child growth and development while optimizing available resources. These integrated interventions have shown significant potential to produce greater effects on developmental outcomes than nutrition interventions alone.[4,5] Several reviews have highlighted the importance of identifying the specific characteristics of integrated interventions that are linked to positive effects. Understanding these characteristics is essential for developing interventions tailored to specific contexts, improving their quality, and supporting broader implementation. To address the research gap in this area, the authors aimed to systematically identify stimulation interventions designed to enhance growth and development in children character forming.

METHOD

Protocol

By adhering to the guidelines outlined in the 2020 Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA), researcher of this study ensured its alignment with the necessary standards. This was carried out to guarantee the accuracy of the conclusions drawn from the investigation.

Criteria for Eligibility

To be included in the research, published articles had to meet specific criteria. They had to be research papers written in English that specifically addressed early detection and stimulation interventions of growth and development in children character forming. The studies had to adhere to the following conditions: the research papers needed to have been published after 2018 but within the relevant timeframe for this systematic review. Articles falling into categories such as editorials, lacking a DOI, review articles that had already been published, or those duplicating previously published journal papers were excluded from consideration.

Search Strategy

Systematic literatures were retrieved using these databases following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA): PubMed and Google Scholar database. The search was carried out on October 2023. The subjects were trial research related to early detection and stimulation interventions of growth and development in children character forming key words included were (((((("early detection and the"[All Fields] stimulation interventions) AND (growth)) OR (development)) AND (children)) AND (character)) AND (character forming) to find recent research articles, clinical trials, and analytical studies on these subjects. These databases will provide the latest studies and information related to early detection and stimulation interventions of growth and development in children character forming. We supplemented the studies and trials articles manually for potential additional studies.

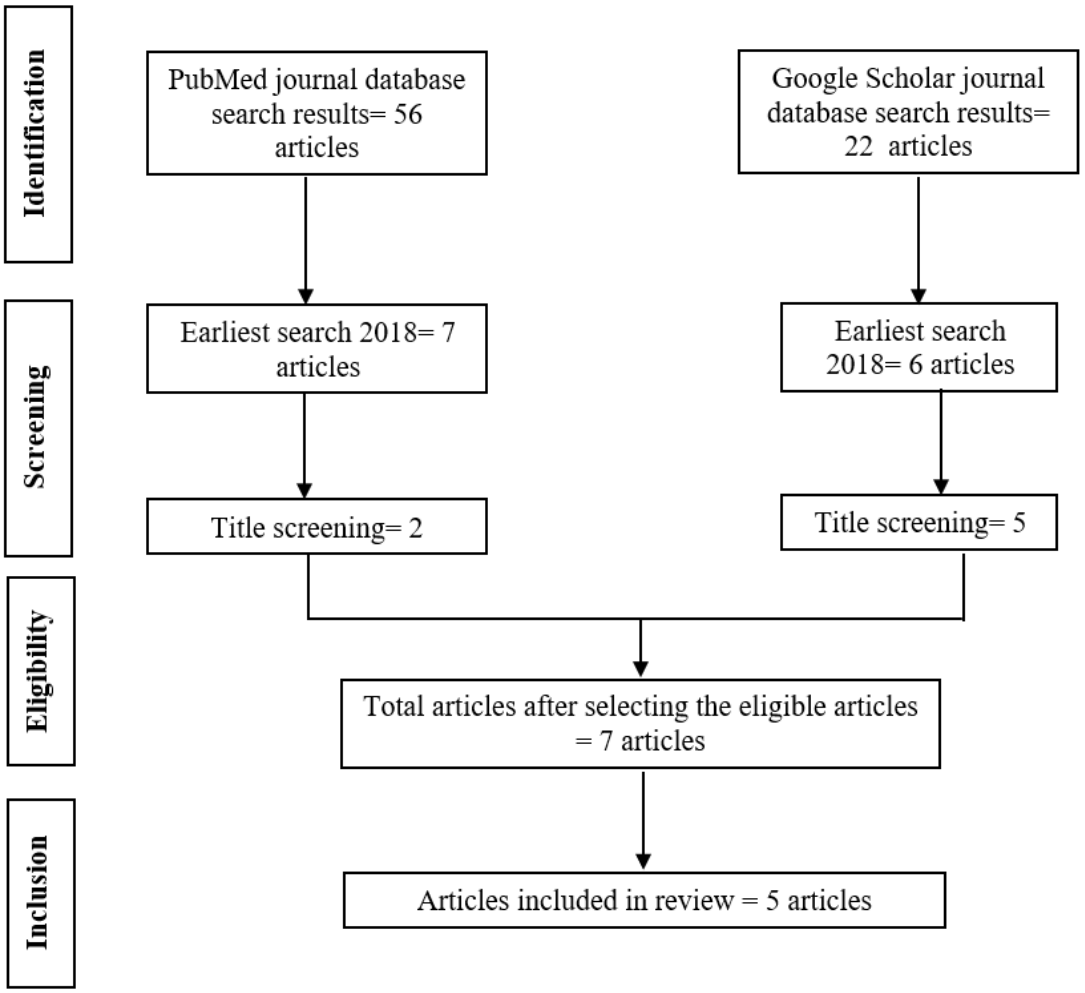

Figure 1. Article search flowchart

Inclusion and exclusion criteria

Studies that have met the following criteria were included: (1) original research that evaluate or investigate early detection and stimulation interventions of growth and development in children character forming; (2) RCTs or observational studies (cohort, case–control studies) or qualitative studies; (3) relevant data reported. Exclusion criteria were as followed: (1) ongoing studies or with unavailable data; (2) duplicate reports. The latest article will be included / selected if there were duplicate publications (3) The language was not English.

Data retrieval

The authors conducted a rigorous review of relevant studies, selecting those meeting specific criteria for inclusion. They focused on English-language, original, and unpublished papers, ensuring a narrowed, high-quality selection. The findings were analysed for key information, including study details, authors, dates, locations, and methodologies, aligning with the study's objectives.

Author	Origin	Method	Sample Size	Result
Sagun et al.,[3] 2020.	Metro Manilla, Phillipines	a descriptive qualitative research.	Three focus group discussions participated in by 21 public school teachers and three key informant interviews of four school administrators from three cities in Metro Manila.	Results suggest the need to have concrete strategic action to address system bottlenecks in EDI, imperative for successful IE. The importance of the environment where CWD partake in should be addressed for inclusion, equally important with addressing the capabilities of the CWD. Healthcare practitioners should take the initiative in advocating for coordination of medical and educational professionals to facilitate meaningful participation of CWD in education.
Dulal et al.,[6] 2023.	Nepal	qualitative study in Dhanusha district, lowland Nepal (Terai), from February-124 April 2021	Study on caregivers (n=18), health service providers (n=4), district (n=1) and national stakeholders (n=4), as well as policymakers	Respondents were 37 positive about introducing stimulation interventions into maternal and child health and nutrition 38 services. They thought that using health system structures would help in the implementation of 39 integrated interventions. Respondents also

			(n=3). We also carried out focus group discussions with Female Community Health Volunteers (FCHVs) (n=2) and health facility operation and management committee members (n=2)	highlighted that local governments play a lead role in 40 decision-making but must be supported by provincial and national governments and external 41 agencies. Key factors impeding the integration of stimulation into national programmes included 42 a lack of intersectoral collaboration, poor health worker competency, increased workload for 43 FCHVs, financial constraints, a lack of prioritisation of ECD and inadequate capacity in local 44 governments.
Tarnoto et al.,[7] 2018.	Yogyakarta	Quasi-experimental of one-group pretest-posttest design.	Subjects in this study are the parents who have early children in child care, the children were born normal and subjects are parents whose children attend child care of Ar Royyan Yogyakarta.	The difference level of early child parents' stimulation skill indicates the pre-test and posttest results of Z=-3.082 and p=0.001 (1-tailed) so that p<0.01, which is very significant. It means there is a very significant difference of the early child parents' stimulation skill level between before training (pre-test) and after the training of intervention (post-test). The average of level of early child parents' stimulation skill after the training of child growing and developing intervention is higher than before the training.
Budiati et al.,[8] 2022.	Indonesia	descriptive qualitative research.	9 toddlers aged 1-5 years old and their mothers as the sample.	From the data, it is obtained that 88.89% of the total respondents have appropriate development and only 11.11% of respondents have developmental deviations, where the deviation is not in language development, so it can be concluded that all respondents have language development that is in accordance with their age and can be optimized for development.
Rakotomanana, et al.,[9] 2023.	Madagaskar	Qualitative study	subsample of all children 11–13 months of age.	Almost all mothers reported that parent–child interaction with talk and play was very important. Alarmingly high stunting rates (> 69%) were observed in this subsample. Limited time and tiredness were the major barriers to home stimulation mentioned by parents and confirmed by key informants. Children had a very limited variety of play materials, and most of the mothers used household objects (75%) and materials from outside the house (71%) as children's toys. Composite cognitive [mean (SD): 60 (10.3)], motor [61.9 (13.4)], language [62 (13.2)], and socioemotional [85.1 (17.9)] scores were low. Fine motor, cognitive, and receptive and expressive language scores were correlated [$0.4 < r < 0.7$, $p < 0.05$].

RESULT

The search strategy produced a total of 7 results. Upon reviewing the titles and abstracts, we identified 7 papers that met the criteria for inclusion. After a thorough evaluation of the full-text papers, we ultimately included five papers in the final analysis, consisting of four retrospective analysis and studies.

Early detection and intervention (EDI) play a vital role in facilitating the development of children with disabilities (CWD) to ensure their successful participation in the educational system. In the context of inclusive education (IE), the outcomes of EDI were identified by 21 teachers and 4 school administrators in public schools. These outcomes can be categorized into two main areas: child outcomes, which focus on the development of learners with disabilities, and system outcomes, which pertain to the broader context in which these children are educated.[3]

Several factors that influence these outcomes were also recognized, including healthcare accessibility, the integration of services, and parents' motivation. The findings of this study have significant implications for upholding the educational rights of CWD. A Rights-Based Approach (RBA) is instrumental in addressing the educational needs of CWD. It involves strategies aimed at building the capacities of both "duty bearers" (such as governments, teachers, and parents) and "right-holders" (the children themselves). The ultimate goal is for duty bearers to fulfill their human rights obligations, while right-holders claim their rights. In the context of IE, the key actors include the government as the duty bearer and the child as the rights-holder. Parents and teachers can also play dual roles as duty bearers, responsible for protecting the child's interests, and as rights-holders, requiring support from the government to carry out their responsibilities effectively. [3]

The data analysis underscores the consistency of the results with the principles of the RBA. The professionals' focus on addressing systemic barriers outside the individual aligns with the essence of this approach. Of the major themes identified, systemic outcomes were deemed the most significant. The fulfillment of the duty bearers' roles in providing

inclusive education can be achieved through effective policy implementation, improved service accessibility, and collaborative efforts between healthcare and education systems. [3]

The survey participants in Dulal[4] studyexpressed a favorable attitude toward the incorporation of stimulation interventions within maternal and child health and nutrition services. They believed that leveraging existing health system infrastructures would facilitate the seamless integration of these interventions. Furthermore, respondents emphasized the pivotal role of local governments in decision-making, underscored the need for backing from provincial and national governmental bodies, as well as external agencies. Several significant factors acted as obstacles to the integration of stimulation programs into national initiatives. These hurdles encompassed limited intersectoral collaboration, deficiencies in the competence of healthcare personnel, an increased workload for Female Community Health Volunteers (FCHVs), financial constraints, a lack of prioritization of Early Childhood Development (ECD), and insufficient capacity at the local government level.

The Quasi-experimental of one-group pretest-posttest study conducted by Tarnoto et al[7] evaluated the mean scores of early child parents' stimulation skills using a scale that had previously demonstrated validity and reliability. This scale was organized by the researcher, following the guidelines for early child stimulation, detection, and intervention for growth and development within basic health services (2006). The pre-test mean score was 124.88, and the post-test mean score increased to 128.38, indicating a significant improvement in early child parents' stimulation skills following the child growth and development intervention. Statistical analysis using the Wilcoxon test confirmed a highly significant difference between the pre-test and post-test results ($Z = -3.082$, $p = 0.001$, one-tailed), with $p < 0.01$, supporting the effectiveness of the intervention in enhancing early child parents' stimulation skills.

Early detection of early childhood development aims to identify developmental disorders in children. The Developmental Pre-Screening Questionnaire (KPSP) is used for this purpose, assessing language development, fine and gross motor skills, socialization, and independence in toddlers. Scores on the KPSP range from 1 to 10, with three categories: 9-10 (appropriate), 7-8 (doubt), and 6-1 (deviation). The majority of respondents (88.89%) showed appropriate development, while only 11.11% exhibited developmental deviations. Notably, these deviations were not related to language development, suggesting that all respondents were developing language skills in accordance with their age. [8]

Rakotomanana et al[9] study aimed to evaluate the development and stimulation practices of children aged 11–13 months and assess parental attitudes in the Vakinankaratra region of Madagascar. The study's objectives included (1) examining home stimulation practices for infants and young children, (2) assessing parental perceptions and barriers to home stimulation, (3) describing the development of 11–13-month-old children, and (4) determining associations among developmental domains in the sample. Data for this study were drawn from a larger study involving 391 children aged 6–23 months in rural districts of the Vakinankaratra region. Child development assessments were conducted on a subsample of children aged 11–13 months.

The study employed the Family Care Indicators (FCI) survey to assess home stimulation practices and collected data on family care practices related to child stimulation. Child development was assessed using the Bayley Scales of Infant and Toddler Development, focusing on cognitive, language, motor, and socioemotional development. Anthropometric measurements were also taken to assess the children's growth status. Descriptive statistics were used to present the characteristics of the study population, FCI indicators, child development scores, and growth outcomes. Qualitative data on parental perceptions and barriers to home stimulation were collected through focus group discussions and key informant interviews. Thematic analysis was used to identify patterns and themes in the qualitative data.

The results showed that a significant portion of the children were stunted and underweight, indicating potential growth issues. Additionally, a substantial proportion of households did not use iodized salt, suggesting possible nutritional challenges. The study provides valuable insights into child development, stimulation practices, and barriers to home stimulation in the Vakinankaratra region of Madagascar.TData for children assessed for social–emotional development ($n = 76$) and for the subsample tested for cognitive, language, and motor development ($n = 36$) were similar (Table 2). Essentially, half of the children were females, and low birthweight was > 20% in both subgroups. Among the 76 children evaluated for socioemotional development, 72% were stunted, 21% were underweight, and three suffered from wasting (4%). Two-thirds of the children evaluated for cognitive, language, and motor development were stunted and 11% were underweight. Mean maternal age was similar, and almost all mothers (97.4%) had at least some primary education. Mean (SD) household size was 4.3 (1.3), and almost half of the households did not use iodized salt.

DISCUSSION

In a study examined the relationship between attitudes and the implementation of early detection and pre-screening for toddler growth and development. The study found a significant relationship between attitudes and the implementation of early detection, with respondents who had positive attitudes more likely to carry out early screening. However, various factors, such as the nature of the respondents' jobs and other personal factors, influenced the level of early detection. The study also referred to theories emphasizing the impact of parents' attitudes on child development and the importance of early detection. It concluded that respondents' attitudes directly influenced the implementation of early detection for toddler development.

Early detection and intervention (EDI) play a vital role in facilitating the development of children with disabilities (CWD) to ensure their successful participation in the educational system. In the context of inclusive education (IE), the outcomes of EDI were identified by 21 teachers and 4 school administrators in public schools. These outcomes can be categorized into two main areas: child outcomes, which focus on the development of learners with disabilities, and system outcomes, which pertain to the broader context in which these children are educated. Several factors that influence these outcomes

were also recognized, including healthcare accessibility, the integration of services, and parents' motivation. The findings of this study have significant implications for upholding the educational rights of CWD.[3]

A Rights-Based Approach (RBA) is instrumental in addressing the educational needs of CWD. It involves strategies aimed at building the capacities of both "duty bearers" (such as governments, teachers, and parents) and "right-holders" (the children themselves). The ultimate goal is for duty bearers to fulfill their human rights obligations, while right-holders claim their rights. In the context of IE, the key actors include the government as the duty bearer and the child as the rights-holder. Parents and teachers can also play dual roles as duty bearers, responsible for protecting the child's interests, and as rights-holders, requiring support from the government to carry out their responsibilities effectively. The data analysis underscores the consistency of the results with the principles of the RBA.[3]

The professionals' focus on addressing systemic barriers outside the individual aligns with the essence of this approach. Of the major themes identified, systemic outcomes were deemed the most significant. The fulfillment of the duty bearers' roles in providing inclusive education can be achieved through effective policy implementation, improved service accessibility, and collaborative efforts between healthcare and education systems. In summary, this study sheds light on the critical role of early detection and intervention in the context of inclusive education for children with disabilities. By considering the outcomes and influencing factors, it emphasizes the importance of adopting a Rights-Based Approach to education, with a focus on the collaborative responsibilities of duty bearers and the rights of children, ultimately aiming to eliminate barriers and create an inclusive and equitable educational environment.[3]

In Nepal, a study explored the integration of stimulation for early learning into maternal and child health and nutrition services. It emphasized the need to empower families and provide spaces for play in the community to promote stimulation and early learning. Furthermore, the study highlighted the importance of involving fathers and grandparents in childcare and early learning to support mothers. To address these challenges, strengthening the health system, training healthcare workers, and ensuring intersectoral coordination were considered essential. Overall, these studies shed light on the importance of early detection, intervention, and integrated approaches in addressing developmental disabilities in children and promoting their holistic development. They also emphasize the need for collaborative efforts and a rights-based approach to ensure equal access to services and opportunities for all children.[6]

Based on the research result, it is known that the child growth and development intervention affects significantly to the early child parents' stimulation skill. This is because the parents have no prior knowledge and skill of how to stimulate early children. Most of the trainees think that the stimulation can only be done by the schools with complete facilities. They tend to focus on the cognitive aspects of the child development without paying attention to other developmental aspects.[9]

Our study found that the children in our sample had significantly low scores in cognitive, motor, and language development, falling more than 2 standard deviations below the mean of standardized scores for children of the same age. These scores were even lower than those reported in other low- and middle-income countries. The absence of validated standards for the Bailey-III test in Madagascar makes it challenging to convert these scores to age-appropriate values. Furthermore, our sample might not fully represent the entire Vakinankaratra region, given its nature as a subset of a larger study and our focus on children aged 11-13 months. Nonetheless, these results shed light on the extent of child development challenges in rural Madagascar. [9]

Stunting was prevalent in 72% of the children in our study, with 21% being underweight. Although our study wasn't primarily designed to analyze child development based on nutritional status, we observed a trend of lower cognitive and language scores in stunted and underweight children compared to those with optimal growth. Stunting, indicating chronic malnutrition, has consistently been linked to reduced cognitive performance and lower educational achievements in later childhood. It is also notable that a strong association exists between length/height and development in Tanzanian children, implying that shorter children face a higher risk of developmental setbacks, regardless of stunting. Given the very low mean length-for-age Z-scores (LAZ) among children aged 6-23 months in the Vakinankaratra region, it is evident that most infants are shorter than expected for their age, putting them at considerable risk for impaired development. [9]

Research has shown that a wide variety of toys is closely linked to improved child development. Enhancing access to diverse play materials that promote child stimulation, such as picture books, educational toys, and pretend play items, could greatly benefit these children.[9]

Parents in our study exhibited a positive attitude toward child stimulation, offering an opportunity to foster child development. While fathers and mothers had different motivations, they recognized the importance of spending quality time with their young children. Mothers, in particular, appeared more aware of the connection between parent-child interaction and child development. Encouraging fathers to appreciate this link and reinforcing the same message among mothers can be beneficial. In most households, adults reported engaging in play activities with their children frequently, which has been associated with better child stimulation practices and improved developmental outcomes.[13]

To promote home stimulation for children successfully, we must address certain barriers. In rural areas of the highlands of Madagascar, both parents typically work and have limited time for extended child-parent interactions, making it important to provide them with quick, practical, and easy-to-implement activities that promote child development. These activities should be culturally relevant and appropriate for the child's developmental stage. Furthermore, involving other family members, such as grandmothers, in stimulating young children can be helpful, as this has been associated with improved child fine motor and cognitive skills. [9]

Findings reveal a positive correlation between cognition, fine motor skills, and language scores, suggesting that improving one of these developmental domains could have a positive impact on the others. Given the high prevalence of stunting in the Vakinankaratra region, coupled with low child development scores and limited resources for stimulation, addressing these issues is an urgent priority. Interventions that combine efforts to prevent undernutrition and developmental delays

in the first two years of a child's life have garnered significant attention. However, it's crucial to recognize that improving growth does not necessarily lead to better developmental outcomes, especially in scaled-up projects. Therefore, interventions should adopt a holistic approach that integrates maternal and child health, nutrition, child protection, safety, and early learning opportunities.[9]

CONCLUSIONS

In conclusion, the data illustrated a significant relationship between respondents' knowledge levels and their engagement in early detection pre-screening of child development. Those with higher knowledge were more likely to conduct pre-screening, while those with lower knowledge more frequently implemented early detection. Similarly, a significant correlation was found between respondents' attitudes and the implementation of early child detection, emphasizing the influence of attitudes on these practices. Furthermore, the study revealed that multilingual stimulation, aimed at exposing children to multiple languages simultaneously, exhibited variations in code-switching and code-mixing among toddlers, reflecting the bilingual context of Indonesia. This underscores the potential for children to master multiple languages, particularly within such diverse linguistic environments. The research also highlighted the challenges and opportunities within the realm of child development.

Despite significant developmental disparities and a high prevalence of stunting and underweight children, there is a positive attitude among parents toward child stimulation. Parents expressed an eagerness to engage in play activities with their children, which is known to enhance child development. Addressing these challenges necessitates interventions that are culturally relevant, sensitive to the limited time parents can dedicate to child-parent interactions, and that involve other family members, such as grandparents, in stimulating young children. In light of these findings, it is clear that fostering early child development requires a holistic approach that integrates maternal and child health, nutrition, child protection, safety, and early learning opportunities. Moreover, while this study provides valuable insights, it acknowledges its limitations, such as the need for validated assessment tools and a more representative sample. In conclusion, this research underscores the importance of early child development and the complex interplay of knowledge, attitudes, and environmental factors in shaping the developmental trajectories of children. It calls for collaborative efforts to support children's growth and development, particularly in underprivileged regions.

REFERENCES

[1]. Dulal S, Prost A, Karki S, Saville N, Merom D. Characteristics and effects of integrated nutrition and stimulation interventions to improve the nutritional status and development of children under 5 years of age: a systematic review and meta-analysis. BMJ Glob Health. 2021 Jul;6(7):e003872. doi: 10.1136/bmjgh-2020-003872. PMID: 34321232; PMCID: PMC8319976.

[2]. Shi H, Ren Y, Jia Y. Effects of nutritional interventions on the physical development of preschool children: a systematic review and meta-analysis. Transl Pediatr. 2023 May 30;12(5):991-1003. doi: 10.21037/tp-23-205. Epub 2023 May 22. PMID: 37305721; PMCID: PMC10248937.

[3]. Sagun, K., Albarillo, A., Amancio, J. K., Bulanadi, J., De Guzman, I., Jugueta, V. P., & Santos, K. E. (2020). *Outcomes of Early Detection and Intervention of Children with Disability: Perspectives from Philippine Public School Teachers and Administrators. International Journal of Disability, Development and Education, 1–17.*doi:10.1080/1034912x.2020.1761539

[4]. Sadoo S, Nalugya R, Lassman R, Kohli-Lynch M, Chariot G, Davies HG, Katuutu E, Clee M, Seeley J, Webb EL, Mutoni Vedastine R, Beckerlegge F, Tann CJ. Early detection and intervention for young children with early developmental disabilities in Western Uganda: a mixed-methods evaluation. BMC Pediatr. 2022 Mar 26;22(1):158. doi: 10.1186/s12887-022-03184-7. PMID: 35346133; PMCID: PMC8962031.

[5]. Orazio Attanasio, Helen Baker-Henningham, Raquel Bernal, Costas Meghir, Diana Pineda, Marta Rubio-Codina, Early Stimulation and Nutrition: The Impacts of a Scalable Intervention, Journal of the European Economic Association, Volume 20, Issue 4, August 2022, Pages 1395–1432, https://doi.org/10.1093/jeea/jvac005

[6]. Dulal, Sophiya & Saville, Naomi & Merom, Dafna & Giri, Kalpana & Prost, Audrey. (2022). Exploring the feasibility of integrating health, nutrition and stimulation interventions for children under three years in Nepal's health system: a qualitative study. 10.1101/2022.11.25.22282757.

[7]. Nissa Tarnoto, Fatwa Tentama, Dessy Pranungsari. 2018. Intervention Model of Children Growth and Development to Improve Stimulation Skills of Parents With Early Child. Proceedings of the 3rd ASEAN Conference on Psychology, Counselling, and Humanities (ACPCH 2017). © 2018, the Authors. Published by Atlantis Press. https://doi.org/10.2991/acpch-17.2018.47

[8]. Budiati, Budiati, Dewi Rosnita Hardiany, and Siti Haryani. "Optimizing Golden Period Through Early Detection of Language Skills And Multilanguage Stimulation." Philosophica: Jurnal Bahasa, Sastra, dan Budaya 4.2 (2021): 98-104. https://doi.org/10.35473/po.v4i2.1425

[9]. Rakotomanana, H., Hildebrand, D., Gates, G.E. *et al.* Home stimulation, development, and nutritional status of children under 2 years of age in the highlands of Madagascar. *J Health Popul Nutr* **42**, 59 (2023). https://doi.org/10.1186/s41043-023-00399-x

[10]. Tracey Smythe, Maria Zuurmond, Cally J Tann, Melissa Gladstone, Hannah Kuper, Early intervention for children with developmental disabilities in low and middle-income countries – the case for action, *International Health*, Volume 13, Issue 3, May 2021, Pages 222–231, https://doi.org/10.1093/inthealth/ihaa044

[11]. Ho LY. Current status of the early childhood developmental intervention ecosystem in Singapore. Singapore Med J. 2021 Jul;62(1 Suppl):S43–52. doi: 10.11622/smedj.2021076. PMCID: PMC9053325. 2.

[12]. Daryanti, E. 2022. Factors Associated With The Application Of Early Detection Of The Development Of Children Aged 0-72 Months By Community Health Volunteers. International Conference on Health, Education and Technology (ICHET).
[13]. Chung EO, Fernald LCH, Galasso E, Ratsifandrihamanana L, Weber AM. Caregiver perceptions of child development in rural Madagascar: a crosssectional study. BMC Public Health. 2019;19(1):1256