SYSTEMATIC REVIEW

Effectiveness Psychosocial Stimulation Through Interprofessional Collaborative Approach to Early Childhood's Mental and Cognitif Development in Stunting Prevention : A Systematic Review

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ABSTRACT

Introduction: The prevalence of stunting in Indonesia is still high, reaching 30.8%. Stunting has impacts on growth and development disorders. Psychosocial stimulation is needed to support growth and development in children. **Aims:** To identify the effect of psychosocial stimulation through Interprofessional Collaborative approach on the mental and cognitif development of early childhood before they are stunting diagnosed. **Methods:** The systematic review uses electronic database PubMed, Google Scholar, ScienceDirect, and ProQuest. The search terms psychosocial stimulation, early childhood, growth and development, interprofessional collaboration. Inclusion criteria are psychosocial stimulation, early childhood, and Randomized Control Trial research design, published in the period of 2011 - 2021. The review obtained 3515 articles and processing obtained 12 articles to analyse. Review was conducted based on the Preferred Reporting Item for Systematic Reviews (PRISMA) and RevMan 5.4 program. **Results:** 1) Psychosocial stimulation was not explained in details; 2) There has not been specific type of game intervention yet; 3) Intervention has not been done with Interprofessional Collaboration; 4) The therapeutic effects found were mostly on the development and growth. **Conclusion:** Psychosocial stimulation has effects on the development of early childhood, but it is necessary to prove that it has effects on the growth of children's so can be detected stunting and prevented early.
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Keywords: Psychosocial stimulation, Early childhood, Growth and development, Prevention stunting, Interprofessional collaboration

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INTRODUCTION

The number of cases or prevalence of stunting in Indonesia until 2018 was still relatively high. The results of the 2018 Riskesdas (Basic Health Research of 2018) showed that the prevalence of stunting in Indonesia had decreased although it still reached 30.8%, which was still far from the WHO tolerance limit of 20% (1). The 2016 Global Nutrition Report also noted that the prevalence of stunting in Indonesia was still very high and was ranked 108 out of 132 countries (2). The UNICEF report based on the results of the 2018 basic health research showed that Indonesia had 7 million children who experienced stunting, and more than 2 million children were underweight children under five years old whose weight were not proportional to their height (3). The challenge of accelerating stunting reduction is still quite big because the proportion of Low Birth Weight (< 2500 grams LBW) was still 6.2% and birth length less than 48 cm rose to 22.7% in 2018 (4). The research shows the same thing of which the complementary factor regarding providing poor quality food in Indonesia is the main factor that contributes to the case of stunting (5). The problem in the program of increasing nutritional intake for the first 1000 days of life is whether the amount of food can enter babies' bodies or not, because no matter how much and how good the quality of baby food is, if babies or children do not want to eat, the results are also not effective. One of the methods to increase appetite in children is psychosocial stimulation (play). Psychosocial stimulation (play) is an effective means of communication to communicate with children. Through programmed and planned play, it can

increase independence, cope with feelings of anxiety and fear, help children express feelings and thoughts of anxiety, fear, sadness, tension, and pain, and improve children's ability to have positive behaviors (6)(7). The right type of game will be able to help development of children because playing is beneficial to build cognitive abilities and physical and emotional development of children (8). Psychosocial stimulation conceptually has a positive effect on the development of infants or children, but the results of the research still show much difference regarding the interventions carried out. Research evidence specifically explaining that the form of play intervention and its effect on growth (weight and height) as an indicator for determining stunting also still needs to be added with supporting evidence. This systematic review was conducted to determine the appropriate and effective form of psychosocial stimulation intervention (play) in improving growth and development so that it can be used as an effort to prevent stunting and control negative effects that arise.

MATERIALS AND METHODS

Table I: Search Strategy

Category	Search Parameter
Population / Problem (P)	"Psychosocial (MeSH) Stimulation Early Childhood" OR "Children under 2 years old"
Issue (I)	"Interprofessional Collaboration" OR "Interprofessional Relation" (MeSH)
Outcome (O)	"Growth and Development" (MeSH) OR "Nutritional Status" (MeSH)

A systematic review was conducted based on the Preferred Reporting Item for Systematic Reviews (PRISMA) of 2020 and RevMan 5.4 program (9)(10). The data search used electronic databases from Google Scholar, PubMed, ScienceDirect, and ProQuest, published in the last 10 years in the period of 2011 - 2021. The search terms include psychosocial stimulation, early childhood, growth and development, nutritional status, and interprofessional collaboration.

RESULTS

Table II: Summary of Literature Review

No	First Author and Journal	Country	Study design & Subject of the Study	Intervention	Result & Conclusion
1	Adriana Weisleder, et al. 2019 Journal of Pediatric. October ; 213: 187–195. e1.doi:10.1016/j.jpeds.2019.06.037. Q1 (1999-2020) H-Indeks 205 (1932-2020)		Randomized controlled trial (RCT) 362 low-income mothers and children aged 6-36 months	Psychosocial Stimulation combined with Parental Cognitive Stimulation (reading and playing together using Video Interaction Project/VIP)	The intervention group showed better behavior improvement (β = 0.140, p = .013) Conclusion: there is a direct effect of VIP intervention on children's behavior, which can help prevent behavior problems
2	Fahmida Tofail, et al. 2013 American Society for Nutrition doi:10.3945/jn.112.160473. Q1 (1999-2020), H-Indeks 336 (1952-2020)	Bangladesh	RCT. Children with NANI/Neither Anemic Nor Ironic deficiency (n = 209) and IDA/Iron Deficiency Anemia (n = 225) aged 6-24 months	Combination of Psychosocial Stimulation with Iron (Fe) Supplementation	The random effect of stratified regression of the final Bayley scores of the IDA and NANI groups showed that stimulation increased the children's MDI (Mental Development Index) [B ± SE = 5.7 ± 1.9 (95% CI: 2.0, 9.4), P = 0.003], and the interaction between iron status and stimulation showed a suggestive tendency (P = 0.10). The NANI group improved more than the IDA group.
3	Alison Andrew, et al. 2018 PLOS Medicine l https://doi.org/10.1371/journal.pmed.1002556. Q1 (2007-2020) H-Indeks 228 (2004-2020).	Colombia	RCT 1,419 children aged 12-24 months.	Psychosocial stimulation combined with micronutrient supplementation	After 2 years of evaluation, there was no effect of psychosocial stimulation on cognitive development (PS: 0.031 SD, 95% CI 0.229-0.167; MN: 0.042 SD, 95% CI 0.249-0.164; PS and MN: 0.111 SD , 95% CI 0.311 –0.089) and behavioral development (PS: 0.013 SD, 95% CI 0.172–0.198; MN: 0.071 SD, 95% CI 0.115–0.258; PS and MN: 0.062 SD, 95% CI 0.115-0.239). Conclusion: There is no significant evidence that the PS (Psychosocial Stimulation) intervention is beneficial for the development of 2-year-olds.
4	Baitun Nahar, et al. 2012 BMC Public Health 12:622. Q1 (2004-2020), H-Indeks 243 (2001-2020)	Bangladesh	RCT Very underweight children (n = 507), aged 6-24 months,	Psychosocial stimulation (PS) combined with community based food supplementation (FS)	After six months of intervention, the PS + FS and PS groups showed an increase in HOME (Home Observation for Measurement of the Environment) scores with effect size varying from 0.66 to 0.33 SD, in maternal involvement (effect size: 0.8 to 0.55 SD), in mastery of play materials (effect size: 0.46 to 0.6 SD), and in parenting practice scores (effect size: 1.5 to 1.1 SD).

CONTINUE

Table II: Summary of Literature Review. (CONT.)

No	First Author and Journal	Country	Study design & Subject of the Study	Intervention	Result & Conclusion
5	Helen O. Pitchik, et al. 2018 Child Care Health Development. 44(6): 841–849. doi:10.1111/cch.12605. Q1 (2018-2020). H-Indeks 82 (1975-2020)	Tanzania	RCT 198 children aged 20-39 months	Psychosocial Stimulation and Zinc Supplementation.	Children born to mothers receiving vitamin A prenatally had significantly lower motor scores (0.29 SD, 95% CI [−0.54, 0.04], p = 0.03) compared to children of mothers who did not receive vitamin A. There was no significant effect of prenatal zinc tablet administration on developmental domains. The stimulation provided by caregivers had a greater effect (0.38 SD, 95% CI [0.14, 0.63], p < 0.01) on the cognitive/language component, whereas children who received verbal and physical abuse showed lower socioemotional development (0.29 SD, 95% CI [−0.52, 0.05], p = 0.02) Conclusion: intervention of environment, education, parenting, and integrated stimulation had a large positive effect on the whole developmental domains
6	Jena D Hamadani, et al. 2019 Lancet Global Health; 7: e366–75, Q1 (2014-2020) H-Indeks 88 (2013-2020)	Bangladesh	1,737 underweight children (weight-for-age z score is -2 SD from WHO standard) aged 5-24 months	Psychosocial Stimulation	The main results of psychosocial stimulation is that it can increase anthropometric size (weight, length or height, and head circumference), increase children's cognition (1·3 SD, 95% CI 1·1 to 1·5; p=0.006), improve language (1·1 SD, 0.9 to 1·2; p=0·01), improve motor (1·2 SD, 1·0 to 1·3; p=0.006) and improve behavior (ranging from 0.7 SD, 0.5 to 0.9; p=0.02; up to 1·1 SD, 1·0 to 1·2; p=0.007), but the intervention had no significant effect on growth (p values ranged from 0.05 to 0.74).
7	Orazio P Attanasio, et al.2014 BMJ;349:g5785 doi:10.1136/bmj.g5785 Q1 (2019-2020), H-Indeks 32 (2016-2020)	Colombia	RCT 1,420 children aged 12-24 months and their main caregivers	Psychosocial Stimulation and Micronutrient Supplementation	Psychosocial stimulation increased cognitive scores (P=0.002) and receptive language (P=0.032). Micronutrient supplementation had no significant effect on any outcomes and there were no interactions between the interventions. None of the interventions affected height, weight, or hemoglobin levels.
8	Paul Gertler, et al. 2014 Science. 344(6187): 998–1001. doi:10.1126/science.1251178 Q1 (1999-2020) H-indexs 1186 (1883-2020),	Jamaica	RCT 129 children aged 9-24 months with stunted growth	Psychosocial Stimulation dan Nutritional Intervention	In the long term, children who received psychosocial stimulation from an early age will get jobs and higher incomes compared to the stunting group who did not receive stimulation.
9	Renfu Luo, et al. Sci Med. 239: 112545. doi:10.1016/j.socscimed. 2019.112545. Q1 (1999-2020), H-Indeks 243 (1967-2020)	China	RCT. 43 clusters getting treatment (21 villages, 222 caregiver-and-child pairs)	Psychosocial Stimulation	Psychosocial stimulation intervention by integrated parenting pattern can increase index of child's skill by 0.24 from standard deviation (SD) [95% CI 0.04 SD-0.44 SD], and cognitive development by 1/8 SD [95% CI 3.8–12.4] . The conclusion is that integrated psychosocial stimulation can improve the development and physical health of children aged 6-30 months.
10	Sylvia Fernandez Rao, et al. Maternal & Child Nutrition. 2020;16(S3):e13066 https://doi.org/10.1111/mcn.13066. Q1 (2014-2020) H-Indeks 63 (2005-2020)	India	Children aged 3–15 months (n=600)	Responsive Complementary Feeding and Play group (RCF&P group)	The HOME scores at 15 months differed by groups, F(2, 38) = 6.41, P = 0.004; the CF and RCF&P groups had higher scores than the C group. The score on Caregiver Promotion of Child Development (CPCD) was higher for the RCF&P group than for the C and CF groups. Mental development index (MDI) scores differed by group, F(2, 37) = 3.31, P = 0.04, with the RCF&P group showing higher scores than the C group (P < 0.04); There was no difference in psychomotor development index (PDI) scores (P = 0.48). Conclusion: Responsive Complementary Feeding and Play groups (RCF&P groups) are effective for improving the development and parenting environment of children aged 3 – 15 months

CONTINUE

Table II: Summary of Literature Review. (CONT.)

No	First Author and Journal	Country	Study design & Subject of the Study	Intervention	Result & Conclusion
11	Teklu Gemechu Abessa, et al. 2019 BMC Pediatrics 19, Article number: 336, Q1 (2018-2020), H-Indeks 75 (2001 -2020)	Ethiopia	RCT Children with Severe Acute Malnutrition (SAM) (N = 339)	Play-based psychomotor/ psychosocial stimulation	Play-based psychomotor or psychosocial stimulation can improve fine and gross motor development in children with SAM aged 6 months to 6 years.
12	Helmizar, et al. Asia Pacific Journal of Clinical Nutrition 2017;26(1):97-103. Q3 (2018-2019), H-Index 78 (1996-2020) Australia	Indonesia	RCT 355 children aged 6 – 9 months were grouped into 4 groups randomly.	Combination of food supplementation and psychosocial stimulation/FS+PS	There were improvements in the linear growth, cognitive and motor development of children in the FS ($p<0.05$) and FS+PS ($p<0.01$) groups compared to the CG. After six months of intervention, the mean length increased to 6.86±2.08 cm and 6.66±2.41 cm for FS and FS+PS, respectively ($p<0.05$). With the combination of food supplementation and psychosocial stimulation (FS+PS), cognitive development increased to 21.4±12.2 points (effect size: 0.56) ($p<0.01$) and motor development increased to 20.7±18.4 points (effect size: 0.50) ($p<0.001$)

Total articles obtained from Pubmed, Google Scholar, Science Direct, and ProQuest as many as 3515. Author tried searching from EBSCO, JAMMA, and NEJM but did not find suitable articles. Entire articles then filtered based on the publisher, journal rank, author, duplication 3436 articles were obtained and after analyzing the content according to the research objectives, 79 articles remained. The final selection was according to the inclusion criteria which include psychosocial stimulation, early childhood, and Randomized Control Trial research design, as a result 12 articles were obtained. Then, qualitative analysis arranged in a narrative was carried out. This article is then reviewed based on important variables: intervention methods (e.g. teaching methods, intervention time intervals, assessment time), study design, and outcome measure. The specific result of the data search process is depicted in Figure 1 bellow.

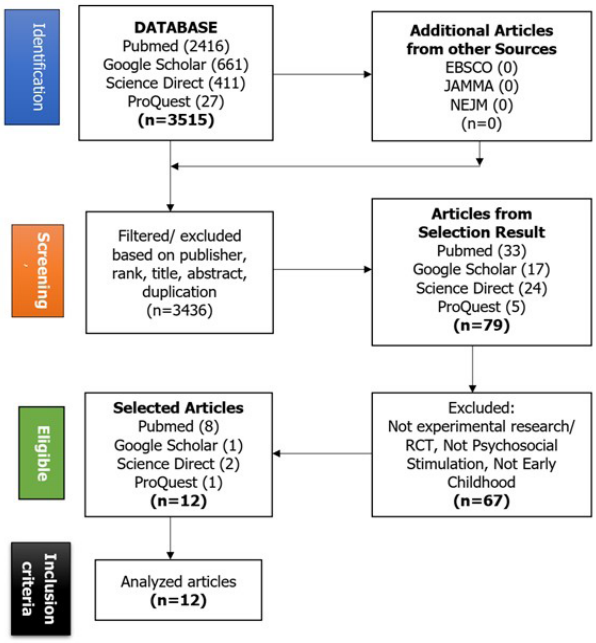

Figure 1: Research Process

DISCUSSION

Many countries have made a lot of efforts to prevent stunting by various policies. The policies were established because stunting indeed has a negative impact on the growth and development of infants or children both in short term and long term. Indonesia has begun to develop methods for preventing and overcoming stunting, not only with a single method but also with a combined method made up of several programs (11) (12). One program that has begun to be developed is the psychosocial stimulation program. The review result of the twelve articles that the authors obtained provides an overview of the effectiveness of psychosocial stimulation on the growth, nutritional status, and development of children under two years of age. Psychosocial stimulation interventions were carried out individually or in group or by involving the family, by reading and playing activities (13)(14). The results of other journals show the combination of psychosocial stimulation with supplementation of iron, micronutrient, vitamin A and zinc during prenatal period (15), education on growth and development, and parenting practices (16)(17). There are also other journals that carry out psychosocial stimulation integrated with cash assistance program from the government for families (18). The program is in accordance with the recommendations of the World Health Organization (WHO) regarding complementary efforts to prevent stunting, which include psychosocial stimulation, stimulation of mother and child bond (attachment), and early feeding (19). The psychosocial stimulation effort along with cash assistance carried out by the government needs to be linked to families' economic background, occupation, knowledge related to nutrition, and other things that underlie the distribution of cash assistance to the family (20). The articles do not mention the characteristics of the family. The program can promote child development by strengthening the bond of mother and infant (or caregiver and infant) carried out with psychosocial stimulation which is essential for positive child development (21)(22). Such

condition needs to be clearly proven, because it does not necessarily mean that children's development is positive only because of the cash assistance along with psychosocial stimulation given. The formation of the bond in the early period of life is an important step that sets the scene for cognitive, emotional, and social development at a later time of life (23). Feeding and other care practices provide opportunities for psychosocial stimulation and help build a positive bond between caregiver and child. The effort also helps improve the mental and social development of children (24). Micronutrient supplementation is also very important in supporting the growth and development of children. Adequate amount of nutrients needed during child growth period will be able to build and enhance healthy body cells so that cell growth can be optimal as indicated by the increase in weight-and-height-for-age of children (25). This condition is very relevant because one of the determinants of stunting in the world and in Indonesia is the adequacy of macro and micro nutrient intake for the first 1000 days of life (26). Psychosocial stimulation can also be done with structured or programmed play methods. Playing is essential for the social, emotional, cognitive and physical well-beings of children which start in early childhood (27). It is a natural means for children to develop resilience skill as they learn to cooperate, overcome challenges, and negotiate with others. Playing also allows children to be more creative. Playing provides time for parents to fully engage with their children, to bond with their children, and to see the world from their children's perspective (28). However, children living in poverty often face socioeconomic barriers that impede their rights to play, thereby affecting their healthy socio-emotional development. The previously mentioned articles also provide evidence that psychosocial stimulation programs given to children are generally carried out in an integrated manner by involving various parties including health workers, health cadres, parents or child caregivers. Programs that are carried out collaboratively will give better results. Collaborating or cooperating generally will provide means for organizations or professions to achieve more goals than what they can do on their own (29). Many professions have used collaboration over the years to share costs, share possible risks, and reduce uncertainty in resource availability or inputs while establishing strategic partnerships that also serve as excellent media for innovation and for problem solving. Collaboration potentially reduces individual authority which demands a lot of flexibility and innovation(30). Regarding benefits of collaboration in health care, it is generally believed that collaboration is an effort that can produce better health services and outcomes for the served communities. Collaboration leads to increase in efficiency, increase in skill combinations, higher level of response, more holistic services, innovation and creativity, and more user-centered practices. The World Health Organization (WHO) has linked the Interprofessional Collaboration (IPC) to better outcomes in family health, contagious diseases, humanitarian efforts, response to epidemics, and non-contagious diseases. Although the analyzed articles explicitly do not mention or use the term 'interprofessional collaboration', from several articles, it is clear that each intervention involves more than one personnel such as health workers, health cadres, parents, and caregivers. Interprofessional collaboration occurs when two or more professions work together to achieve a common goal and it is often used as a means to solve complex problems. Some articles provide overviews of interprofessional collaboration in the areas of clinical practice, education, and research (31).

The analysis of selected articles provides evidence that psychosocial stimulation has benefits for stimulating and supporting growth and development of children. One of the effects of psychosocial stimulation on children under two years old is the increase in children's cognitive development (24). Psychosocial stimulation is a stimulation from outside or from the environment and it is important in children's growth and development. Children who get directed and regular stimulation will develop faster than children who get less or do not get stimulation. So, the stimulation for children under two years old needs to be done (13). The findings from the previously mentioned research articles prove that psychosocial stimulation is beneficial for children's growth and development. Psychosocial stimulation can be in the form of verbal, written, touch/tactile stimuli, or images arranged in such a way that they are able to stimulate children. The provided stimuli will trigger a child to develop a mindset and will slowly improve the child's mental, cognitive, and social development. Stimulation can be done by applying a play program that is adapted to a child's age (32) (33). However, based on the reviewed journals, the most common effect of the measured psychosocial stimulation is the benefit on behavioral development, cognitive development, social development and mental development(18)(34) (35). The research results that directly measured the effect of psychosocial stimulation on weight growth showed that psychosocial stimulation did not have a direct effect on weight growth, which was possible because the involved respondents were children who were already underweight and tended to be stunted. Home visits carried out by health workers required quite large/expensive costs and did not maximally involve the role of the mother group or the closest health cadres, so that psychosocial stimulation has not had a direct impact on changes in nutritional status including hemoglobin levels (20). Respondents used or involved in the study were also very varied. Some explicitly stated the criteria, which were early childhood with SAM or Severe Acute Malnutrition (36) , infants with anemia and iron deficiency, infants with Z Score < -2 (18), while the others only stated that their infants were 1 – 3 years old. The interventions carried out were also still varied. Some respondents clearly explained the intervention in the form of a Video Interaction Project (37) and individual

play(38), while the others only mentioned psychosocial stimulation. These findings indicate that there are still many variations and differences regarding the effect of psychosocial stimulation interventions on children's growth and development. So, further research regarding the benefits of psychosocial stimulation on the growth and development of children under 2 years of age (early childhood) as an effort to prevent stunting is needed.

Limitations

The obstacle faced by the author while conducting the journal analysis related to this systematic review was the large variety of psychosocial stimulation efforts. Each journal differs in providing interventions. There are journals that complement each other, but there are also those that are less supportive.

CONCLUSION

1. The provided psychosocial stimulation is not a single intervention, but is combined with play programs, reading, nutritional supplementation, and Video Interaction Project (VIP).
2. Psychosocial stimulation has an effect on the development of children under 2 years of age (early childhood), but it is necessary to prove that psychosocial stimulation has effect on the growth of children's weight and height by applying a comprehensive approach from the team of health workers, mothers' groups, and health cadres, in an integrated manner, and by the Interprofessional Collaboration (IPC) approach so that stunting events can be detected and prevented early.
3. Psychosocial stimulation will be more effective with the cooperation or collaboration of all components in the community.

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