



Empowerment of Parents with Stunting Children

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ABSTRACT

Stunting is a chronic nutritional problem facing the world. Parental empowerment is necessary for stunting prevention. The main goal of this paper is to systematically review the literature to identify parental empowerment interventions and interventions to improve nutritional status in children, especially stunted children. This Systematic Review uses the PRISMA method, identifies articles published in English, in the last 5 years (2017 to 2022) through data based on ClinicalKey, ProQuest, SAGE Journal, Scopus, Science Direct, JSTOR, and EBSCO Host, and produces 8 relevant literature. The results show a significant relationship between parental empowerment and the nutritional status of children. Parental empowerment is an effort to improve knowledge and skills as well as parents' self-confidence about the care, upbringing, and development of children. Indicators of parental empowerment are assessed based on education, employment, income, and parent's ability to make decisions. Interventions to improve the ability of mothers in the care of stunted children can be carried out through the assistance of health workers in the parenting process. Interventions to improve children's nutritional status through education to mothers about nutrition and nutrition delivery strategies, independently and across sectors. Z score from WHO is the most relevant nutritional status assessment indicator used

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ABSTRAK

Stunting merupakan permasalahan gizi kronik yang dihadapi dunia. Pemberdayaan orangtua diperlukan untuk pencegahan stunting. Penulisan artikel bertujuan menganalisis dengan systematic review untuk mengidentifikasi intervensi pemberdayaan orangtua dan intervensi untuk memperbaiki status nutrisi pada anak, terutama anak stunting. Systematic Review ini menggunakan metode PRISMA, mengidentifikasi artikel yang diterbitkan dalam bahasa Inggris, kurun waktu 5 tahun terakhir (2017 sd 2022) melalui data based ClinicalKey, ProQuest, SAGE Journal, Scopus, Science Direct, JSTOR dan EBSCO Host, dan menghasilkan 8 literatur yang relevan. Hasil dari analisis yang dilakukan mengidentifikasi ada hubungan yang signifikan antara pemberdayaan orangtua dengan status gizi anak. Pemberdayaan orangtua merupakan upaya untuk meningkatkan pengetahuan dan ketrampilan serta rasa percaya diri orangtua tentang perawatan, pengasuhan dan perkembangan anak. Indikator pemberdayaan orangtua dinilai berdasarkan pendidikan, pekerjaan, penghasilan dan kemampuan orangtua dalam pengambilan keputusan. Intervensi untuk meningkatkan kemampuan ibu dalam pengasuhan anak stunting dapat dilakukan melalui pendampingan petugas kesehatan dalam proses pengasuhan. Intervensi untuk memperbaiki status nutrisi anak melalui pendidikan pada ibu tentang nutrisi dan strategi pemberian nutrisi, secara mandiri maupun lintas sektoral. Z score dari WHO merupakan indikator penilaian status gizi yang paling relevan digunakan.

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INTRODUCTION

Stunting is a chronic condition of stunted growth due to long-term malnutrition and is a form of failure to grow and develop early in life. Stunting is characterized by an index of body length compared to age (PB/U) or height compared to age (TB/U) with a *z-score* less than -2 SD (WHO, 2018) (Kemenkes RI, 2018b). *Stunting* is defined as a chronic undernutrition status during growth and development since early life as a result of the accumulation of nutritional inadequacy that lasts for a long time starting from pregnancy to 24 months of age (Kemenkes RI, 2018b).

The problem of *stunting* is one of the problems nutrition in the world. Stunting contributes to 14% of deaths among children under five in developing countries and is a major health problem in many developing countries. (Danaei et al., 2016), (Hanieh et al., 2019). Stunting *is related* to problems of occurrence and death (Martorell & Young, 2012). Delayed *failure* of suboptimal brain development results in delayed development and stunted mental growth (Prevention, 2019). *Stunting* is a focus of health problems in Indonesia and has long-term effects on individuals and society, including decreased cognitive and physical development, decreased productivity and poor health, and increased risk of degenerative diseases.

Many factors cause *stunting*. These factors can be internal factors and external factors. Internal factors that influence the incidence of *stunting* are growth factors that are directly related to the development of infants and toddlers, including parenting, exclusive breastfeeding, complementary feeding, providing complete materials, diet, infection factors, and genetic factors. External factors that affect stunting include family socioeconomic factors, mother's education level, employment status, and family income (Matema et al., 2021); (Beal et al., 2018). The causes of stunting factors of malnutrition experienced by pregnant women and children under five, lack of knowledge about health and nutrition before and during pregnancy, as well as after the mother gives birth, still limited health services including *Ante Natal Care* (ANC), *Post Natal Care*, and quality early learning and lack of access to nutritious food (Khosravani et al., 2017).

The process of *stunting* is chronic. In overcoming stunting, the role of all sectors and community structures is needed. In the first 1000 days of life, both nutrition and other factors that influence stunting must be taken care of. Stunting is also a behavioral aspect, especially in poor parenting practices in feeding infants and toddlers (Khosravani et al., 2017). Nutritional interventions that are specific and sensitive are carried out to overcome stunting problems (Sekwapres RI & Coordinating Ministry for Human Development and Culture, 2018). Sensitive nutrition interventions require cross-sectoral collaborative efforts. Sensitive nutrition interventions consist of activities; Provision of Community-based Clean Water and Sanitation (PAMSIMAS), performing food fortification, providing Family Planning (KB) services, providing National Health Insurance (JKN), providing Universal Childbirth Insurance (Jampersal), Providing parenting education for parents, provide child education universal early childhood education (PAUD), providing public nutrition education, providing health and reproductive education, as well as nutrition for adolescents, providing assistance and social security for poor families, increasing food and nutrition security (Dorsey, et al., 2017). Specific and sensitive nutrition efforts aim to determine the handling of *stunting* (Kemenkes RI, 2018a).

The main focus in reducing the prevalence of *stunting* is the prevention *of stunting*. Parents play a role in controlling the growth and development of their respective children by paying attention to their nutritional status. Prevention efforts must be carried out early (Putri & Rong, 2021). Efforts to prevent and treat *stunting* must be focused on the family. One of the efforts that can be done to increase the role and awareness of parents in preventing *stunting* is by empowering parents. Mother's parents are the closest and most understand the health status of children. The empowerment of families, especially mothers, is a major factor in efforts to improve health. (Soharwandi & Ahmad, 2020).

Parental empowerment is a process for parents to improve and control their abilities for decisions and actions that affect children's health (Ashcraft et al., 2019). Parental empowerment can increase parental involvement in day-to-day care, care decisions, symptom management of children, increase parents' ability to advocate for children and families, and increase involvement in empowering activities. (Ashcraft et al., 2019); (Rabaoarisoa et al., 2017). Empowering parents to identify problems, plan, and make decisions to solve *stunting* independently.

Parents who have stunted children are responsible for the care and prevention of stunting. Parents can be involved in the care and prevention of stunting children. Including the prevention of various factors that cause stunting. Parents have a complex ability to know and fulfill their needs in preventing and treating stunting from various factors (Na'imah & Suwanti, 2016). The realization of stunting prevention behavior by parents is the main goal in *stunting handling*. The main purpose of writing this paper is to describe a *systematic review of research* on parental empowerment in preventing stunting in children.

METHODS

This article was compiled based on a *systematic review* according to the purpose of writing using the PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis protocol) method which focuses on seeking parental empowerment in stunting prevention. In the search process, using inclusion criteria: empowering parents including mothers/women, children up to 5 years old, and focusing on nutrition. The focus of the search with a systematic review was carried out by compiling important literature based on electronic data. Electronic databases (until May 2020) from ClinicalKey, ProQuest, SAGE Journal, Scopus, Science Direct, JSTOR, and EBSCO Host. Search process using keywords "*Stunting*" OR "*Pediatric Undernutrition*" OR "*malnutrition*" OR "*Faltering linear growth*" OR "*Growth failure*" OR "*Chronic Malnutrition*" AND "*Parental Empowerment*" OR "*Motherhood Empowerment*" AND "*Z Score*" OR "*Nutritional status*".

The analysis includes original articles and review articles published in the last 5 years, from 2017 to 2022 in English. the results based on an online search engine produced 503,561 articles from ProQuest, with a total of 373,812 articles. Titles and summaries of publications obtained based on searches are then analyzed in detail. The analysis includes an analysis that includes the empowerment of parents, including the empowerment of mothers, and the empowerment of women who have children with an age range of fewer than 5 years. Empowerment of parents in children older than 5 years is the exclusion criteria from this

article search. Article Search in writing this paper only includes articles that can be accessed in full and not only abstracts.

All articles obtained were then analyzed in depth. An assessment of the quality of the paper was carried out by 2 authors (I & DW). Of the 503,561 total articles, then based on the search for titles and abstracts with keywords, 431,124

were excluded because they did not meet the inclusion criteria. After being carried out based on the outcome and intervention criteria, 12 articles met the criteria. Of the 10 articles, there are 2 similar articles so the total number of articles used as the basis for the analysis is 8 articles. The article selection process is described in Figure 1.

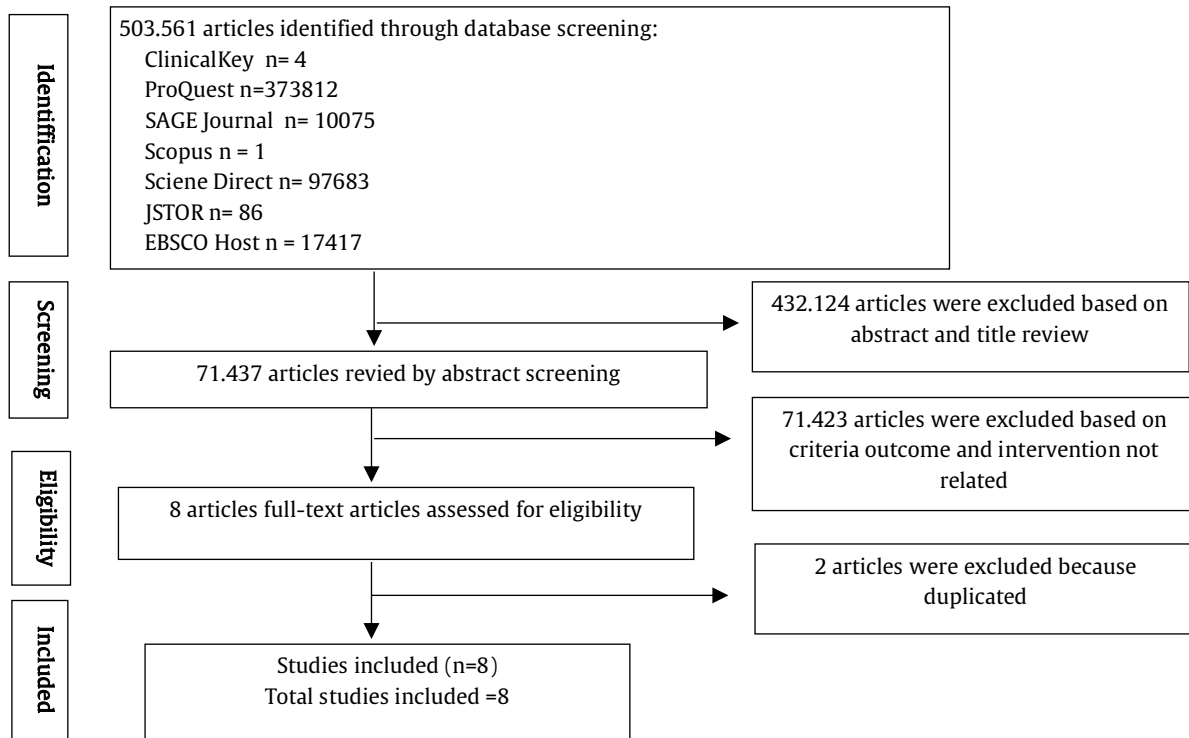


Figure 1: PRISMA Diagram

Table 1. Characteristics of Articles Conducted Analysis

No	Reference	Journal Country	Study Design	Objectives	Sample	Variables & Instruments	Results	Conclusion
1	et al., 2021)	Indonesia/ Electronic Journal of General Medicine 2021, 18(6), em324 e-ISSN: 2516-3507 A	two-sample quasi-experiment with control to	determine the effect	of parenting with children aged 6-60 months. (39 as the control group and 38 mothers as the treatment group)	With independent variables: the assistance of health workers is carried out through a tutorial module on malnutrition risk factors (parenting patterns, growth monitoring, measurement of weight and height, nutrition patterns, breastfeeding, nutrition patterns, recognizing early signs of child health problems, and maintain personal and environmental hygiene) Bound Variables: Empowerment of mothers (knowledge and skills) of mothers in 8 aspects of parenting willingness, namely: parenting patterns, monitoring growth, measuring weight and height, feeding patterns, breastfeeding, nutrition patterns, recognizing early signs of child health problems, and maintaining personal and environmental hygiene.	Parenting assistance was very effective in increasing the mother's ability to care for her child's nutrition (p = 0.005). It took six months to empower 13.2% of mothers with a minimum knowledge score of 2.5 and practice 3.1 times each, much higher than counseling.	Mentoring can be used as a new effort in solving child nutrition problems.
2	(Sánchez-Encalada et al., 2019)	Mexico/ Global Pediatric Health Volume 6:1-9	A quasi-experimental no comparative group	describes the effect of educational interventions (Nutritional Club, Educational Program on Nutrition and Nutrition Delivery Strategies) on the nutritional status of children in Children's Hospital in Mexico City	mothers with children aged 1 to 5 who experience mild to moderate malnutrition. A sample of 13 mothers and 15 children underwent intervention.	Independent Variable: Educational Intervention Program : <ul style="list-style-type: none"> o Nutritional Club o Nutritional Club Nutritional o Education Program o Nutrition Strategy Variable Children's nutritional status: Anthropometric index using the z score of children from WHO	The average weight/initial age in the Z score was 1.49 ± 0.65 , which increased to 1.19 ± 0.60 (P = 0.001; per-protocol analysis). Linear regression analysis showed P 0.006 of maternal adherence to weight gain.	Educational interventions reduced weight deficits and maternal adherence to educational interventions that were relevant to improving the nutritional status of their children.
3	(Castro Prieto et al., 2021)	Bogota Colombia/ BMC Public Health (2021) 21:690 https://doi.org/10.1186/s12889-021-	the pre-experimental study, with analysis before and after intervention	determine the magnitude of changes in nutritional status, after being given cross-sectoral public health	1126 children aged less than 10 months with anthropometric nutrition classification (PB/U) 2 to < 1) and/or chronic malnutrition (boundary point <	Independent Variables cross-sectoral public health interventions in the form <ul style="list-style-type: none"> o of health care, o caregiver education, o social care, o community empowerment: o Caregiver, mother & father) Nutritional Status Variables according to WHO:	Of the 1126 children who had the intervention : 43.3% of children were stunted and 56.7% indicate the risk of stunting. In the final measurement, data were obtained from	of children classified as at-risk or stunting at the beginning of the intervention showed an increase in approaching or being in growth trajectories

		10620-3		interventions for 10 months	2)			686 children. Identification that 17% of children who were originally stunted became at risk of stunting and 4.5% experienced changes in the body according to the long curve according to the age	corresponding to the post-intervention length-for-age indicators.
4	(Shafiq et al., 2019)	Pakistan/Int. J. Environm ent. res. Public Health 2019, 16, 4499; doi:10.339 0/ijerph16 224499	Cross-sectional	(KAMI): on the nutritional status of children	. Demographic survey data on Health Pakitas in 2012 – 2013.	Bound Variable : Nutritional Status with the instrument The composite index of anthropometric failure (CIAF) Independent Variable : Empowerment of women (KAMI) consists of from indicators: o MEDU (Mother's Education), o MEMPL (Women's Employment), o WI (Wealth Index), o HMS (Household Size), o DM (Household decision-making regarding visits to family or relatives)	There is a significant relationship between women's empowerment and nutritional status Girls	are the primary caregivers of children in the household, and their intra-household dynamics affect individual well-being.	
5	(Soharwardi & Ahmad, 2020)	Bahawalpur Pakistan/ Review of Economics and Development Studies, Vol. 6 (1) 2020,	Cross-sectional	Assessing the role of maternal empowerment in reducing malnutrition	Health demographic survey data from 22 Sug Sharan African countries from 2011 to 2016 Sampling method: cluster sampling method by multi-stages	Variable use: child malnutrition using z score Independent variable: significant empowerment Women using the Women Empowerment Index from the Kobeers Framework (199) 3 dimensions (occupational status and interests, decision making, and self-esteem)	Maternal empowerment is a statistical predictor of reducing malnutrition.	The maternal empowerment index significantly associated with malnutrition indicators	
6	(Dadzie et al., 2021)	Ghana/ BMC Public Health (2021) 21:1700 https://doi.org/10.118 6/s12889- 021- 11753-1	Cross-sectional	Know the relationship between women's empowerment and minimum daily feeding frequency	Population: Mother couple (15–49 years) and children (6–23 months) Sample: study (1640 children) selected from all (1740) children aged 6-23 months	Bound: total minimum food Nutrition Landscape Information System (Nils) Infant And Young Child Feeding 2021 Independent Variable: empowerment of women using a questionnaire with indicators: economic empowerment, socio-economic empowerment and empowerment in legal aspect	There is a significant positive relationship between o large household spending ($\beta = 0.351$, $p < 0.01$), o family visits ($\beta = 0.743$, $p < 0.01$), o home ownership ($\beta = 0.245$, $p < 0, 10$), o the child's age ($\beta = 1.387$, $p < 0.01$), o mother's education	Minimum daily meal frequency is strongly influenced by family economic and social factors that contribute to women's empowerment. as purchasing decision-makers in households o	

							level ($\beta = 0.496$, ○ $p < 0.10$) ○ where she lived ($\beta = 0.298$, $p < 0.10$) with the daily minimum eating frequency at Ghana	
7	(Prasetyo et al., 2021)	Indonesia/ Journal of Public Health Research 2021; volume 10:1964	cross-sectional	analysis analyzes the influence of environmental factors, child factors, parenting behavior systems, and beliefs. on the ability of families to care for children with <i>avoidant restrictive food intake disorder (ARFID)</i>	<i>The population</i> in this study were families with children suffering from ARFID in the working area of the Malang District Health Office. <i>sample</i> research uses rules of thumb in structural equation modeling (SEM), the sample size used is 245	Bound Variables: the ability of families to care for children with <i>avoidant restrictive food intake disorders (ARFID)</i> Independent Variables: environmental factors, child factors, systems of parenting behavior, and beliefs. Instrument: a questionnaire that integrates the theory of the parent-child interaction model (PCIM), Johnson's behavioral system model (JBSM), and the Health Belief Model (HBM) ○ The child factor Questionnaire was developed based on CF (child factor), Child factor (CF) consists of the Temperament Rating Scale for Children / Temperament, Rating Scale for Children (8 items), and adaptability of children, 16b items adopted from the Child Behavior Checklist (Child Behavior Checklist; 16 items) ○ Likert scale ○ CBScaregiving behavior system), Parenting behavior system questionnaire: Sexual indicators developed from the Female Sexual Function Index (FSFI), ○ IB (individual belief), using a questionnaire with five indicators, ○ Family's ability (FA) refers to the ability of families to care for children with AFRID.	○ EF has a significant effect on SKB ($t = 8.002$; $= 0.516$), ○ CF has no significant effect on SKB ($t = 0.285$; $= -0.019$), ○ CBS , CF has a significant effect on IB ○ EF has no significant effect on IB ($t = 0.401$; $= 0.027$), ○ IB had a significant effect on FA ($t = 21.796$; $= 0.713$), and ○ FA had a significant effect on CN ($t = 1.693$; $= 0.127$).	belief is a major factor in increasing the ability of families to care for children with ARFID. Behavior has an important role in influencing his belief in providing care for children suffering from ARFID.
8	(Akintunde et al., 2021)	Nigeria/ Journal of Primary Care & Community Health Volume 12: 1-11	Cross-sectional	Assessing the influence of maternal self-rated ability status (SCS) on under-five morbidity in the Northern Ibadan Regional Government Area (LGA),	population with children < 5 years old Sample: 683 mothers with children aged < 5 Sampling method: convenience sampling approach.	Bound Variable: Infant Morbidity Episode morbidity was assessed from the most recent episode of morbidity among the youngest children of the respondents. measured based on maternal reports of common illnesses (eg, cough/cold, acute respiratory infections, malaria, and measles) among the focus group of children 30 days before the interview. Free maternal self-rated capability status (SCS) is a questionnaire consisting of 4 dimensions with a Likert scale with 5 alternative	Children under five from mothers who have less knowledge of t are more likely to be at risk of having children who have experienced compared to children born to mothers with t status. good ..the	importance of maternal self-assessment status as an important pathway for understanding and reducing toddler morbidity.

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Nigeria

answers.

RESULTS AND DISCUSSION

Based on the keywords that have been determined, there are 503,561 that have been determined. Of these articles, 432,124 were excluded from the analysis by title and abstract, leaving 71437 articles. After further investigation, there were only 10 articles that matched, and there were 2 similar articles, leaving 8 articles that will be analyzed and included in this systematic review (figure 1).

The eight articles analyzed were articles published from 2019 to 2021 in the online databases of SCOPUS, ProQuest, EBSCO, and SAGE. Two articles were published in 2019 and 6 articles were published in 2021. The articles analyzed were articles with *Quasy Experimental* (37.5%) and *Cross-sectional* (62.5%) articles using a *Quasi-experimental* consisting of 1 article published in 2019 with a *quasi-experimental no comparative group*, and 2 articles published in 2021 with a *two-sample Quasi-experimental design with control and pre-experimental study, with before and after intervention analysis*. Based on the country of origin of the analyzed articles, 2 articles came from Indonesia, 2 articles came from Pakistan, and 1 article, each from India, Ghana, Mexico, and Colombia.

Table 1 describes the characteristics of the articles included in the final analysis. The table describes the design, objectives, samples, variables, careful instruments, and the results and conclusions of the research conducted. The purpose of writing this article is to analyze the empowerment of parents in preventing stunting under five. Greetings from the analysis resulted in several findings including indicators of parental empowerment, interventions to increase parental empowerment, assessment of children's nutritional status, and interventions to improve children's nutritional status.

Indicators of Parental

Empowerment Family empowerment is a family's perception of their skills, confidence, and knowledge about child care and development (Rosa Fernández Valero, Ana Maria Serrano, Robert Alexander McWilliam, 2020). Table 1 explains that family empowerment, especially for mothers, is carried out by measuring the knowledge and abilities of mothers on 8 aspects of parenting. Aspects of caregivers in question are parenting patterns, monitoring growth, measuring weight and height, feeding patterns, breastfeeding, patterns, recognizing early signs of child health problems, and mother's efforts to maintain personal and environmental hygiene (Umijati et al., 2021). Indicators of women's empowerment are assessed based on the mother's education and occupation, wealth index, household size, and ability in decision making (Shafiq et al., 2019). Meanwhile, according to (Dadzie et al., 2021), women's empowerment is based on indicators of work and income. This was also explained by Soharwardi and Ahmad (2020) who added that maternal empowerment was identified based on the Women Empowerment Index from the Kobeers Framework (1999) which consisted of 3 dimensions, namely Resources (occupational status and interests), Agency dimensions (Decision Making) and Dimensions of Appreciation (Self-Esteem) (Soharwardi & Ahmad, 2020).

The empowerment of families in the care of children who experience problems is also identified based on the ability of families to care for children, especially children who have problems fulfilling nutrition (Prasetyo et al., 2021). This ability is based on the ability to manage problems faced by children and the ability to make promotive efforts to prevent

problems in fulfilling children's nutrition (Prasetyo et al., 2021). Child health problems are mainly related to the status of self-rated maternal capability (SCS) which consists of knowledge of child morbidity, actions based on experience, exposure to child morbidity, and vulnerability to child care (Akintunde et al., 2021).

Based on the analysis in table 1, it can be defined that parental empowerment is an effort to increase knowledge and skills (Rosa Fernández Valero, Ana Maria Serrano, Robert Alexander McWilliam, 2020); (Umijati et al., 2021) (Akintunde et al., 2021) and parental self-confidence (Rosa Fernández Valero, Ana Maria Serrano, Robert Alexander McWilliam, 2020); (Soharwardi & Ahmad, 2020) on care, parenting (Umijati et al., 2021) (Prasetyo et al., 2021) and child development. Indicators of parental empowerment are assessed based on education, work (Shafiq et al., 2019); (Dadzie et al., 2021); (Soharwardi & Ahmad, 2020), income, and ability in decision making (Shafiq et al., 2019); (Soharwardi & Ahmad, 2020).

Interventions to increase Parental Empowerment

Of the 8 articles conducted, only 1 article mentions the form of intervention to increase parental empowerment. The intervention is intended to improve the ability of mothers as one the parents of children. The ability of mothers to care for children who experience problems, one of which is stunting, is carried out with several interventions. Interventions carried out to increase parental empowerment include assisting health workers in the parenting process (Umijati et al., 2021). Assistance by health workers is carried out in the form of providing tutorial modules on bad risk factors which consist of 8 aspects of parenting, namely parenting patterns, monitoring growth, measuring weight and height, feeding patterns, breastfeeding, nutritional patterns, recognizing early signs of child health problems and mother's efforts. to maintain personal and environmental hygiene (Umijati et al., 2021).

Assessment of Child Nutritional Status

Assessment of the nutritional status of children mostly uses the z score classification from the World Health Organization (WHO) (Sánchez-Encalada et al., 2019), (Castro Prieto et al., 2021), (Soharwardi & Ahmad, 2020) and The composite index of anthropometric failure (CIAF): with malnutrition (stunting, underweight, and wasting) and non-malnutrition categories. (Shafiq et al., 2019). The assessment of the minimum amount of food consumed in a day uses guidelines from the WHO in the form of the Nutrition Landscape Information System (NLS) for feeding infants and young children 2021 (Dadzie et al., 2021).

Interventions to Improve Children's Nutritional Status

Interventions to improve nutritional status are carried out in the form of educational interventions for mothers consisting of the Nutritional Club, Educational Programs on Nutrition, and Nutrition Giving Strategies (Sánchez-Encalada et al., 2019). Cross-sectoral public health interventions for 10 months in the form of health care, caregiver education, social care, and community empowerment: Caregivers, mothers & fathers, are carried out to improve the nutritional status of children under 1 year of age (Castro Prieto et al., 2021).

LIMITATIONS OF THE STUDY

The main objective of this systematic review is to analyze parental empowerment for stunting prevention, but the number of articles specifically mentioning stunting is very small, thus increasing the context of searching for children with nutritional status problems which include stunting. More searches through search engines are expected to increase the findings, especially regarding the empowerment of parents with stunting children. There are not many articles that explain in detail the form of intervention to increase parental empowerment. Parental empowerment is mostly seen based on existing indicators such as education, employment, income, and household conditions.

CONCLUSIONS AND RECOMMENDATIONS

Research shows that there is a significant relationship between parental empowerment and children's nutritional status. Parental empowerment is an effort to increase knowledge and skills as well as parents' self-confidence about child care, upbringing, and development. Indicators of parental empowerment are assessed based on education, occupation, income, and parent's ability to make decisions.

Interventions to improve the ability of mothers to care for children who experience nutritional problems, one of which is stunting, can be done through the assistance of health workers in the parenting process which includes parenting patterns, growth monitoring, weight measurement, and body monitoring, nutrition patterns, breastfeeding, nutritional patterns, recognizing early signs child health problems and mother's efforts to maintain personal and environmental hygiene.

Meanwhile, interventions to improve the nutritional status of stunting children can be carried out through education to mothers about nutrition and nutrition strategies, both independently and across sectors. Z score from WHO is the most relevant indicator of nutritional status used.

ETHICAL CONSIDERATIONS

Statement of Financing

This study is supported by the University of Muhammadiyah Kudus. The entire content of this article is the full responsibility of the author and does not always represent the funder. Funders had no role in the study design, data collection, analysis, decision to publish, or manuscript preparation.

Conflict of Interest Statement

I am a doctoral student, and DW and NN are supervisors for the course at the time this article was written. There is no conflict of interest in connection with the preparation of this article.

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