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Original Article

Development of a family empowerment model to enhance the parental monitoring of child development and reduce stunting through filial values

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ABSTRACT

Introduction: The monitoring of child development by parents plays an important role in reducing the incidence of stunting. This research aimed to develop a family empowerment model regarding the ability to monitor child development through the role of filial value.

Methods: The research design used was an explanatory survey method. The study population was all families with children living in the working area of the Health Center in Surabaya. Sampling was carried out using simple random sampling of 275 families from April to September 2024. A questionnaire was used and the secondary data was related to the nutritional status of toddlers. The data analysis involved the use of the smart PLS (Partial Least Squares) statistical test with a significance level of T > 1.96.

Results: Core values have a big impact on the commitment to monitoring toddler development (t = 14.375). Core values cannot directly influence monitoring toddler development (t = .664; *P*-value= .507) but must go through commitment (t = 2.521; *P*-value = .012) and empowerment (t = 3.781; *P*-value = < .001).

Conclusion: The role of filial value through commitment can shape family empowerment regarding the ability to monitor the development of children. These findings can be applied to families with children to accelerate the reduction in stunting rates. Further research is needed regarding the implementation of this model.

Keywords: children; empowerment; family; filial value; monitoring ability; stunting

INTRODUCTION

Stunting remains a global public health issue, marked by impaired growth and development in children under five due to chronic malnutrition and suboptimal living conditions (Hastuti et al., 2024; Lameky, 2024). In Indonesia, efforts have been made to reduce stunting through nutritional improvements and interventions targeting the root causes (Supadmi et al., 2024). However, these initiatives have not fully addressed the importance of parental involvement in monitoring child development, a critical factor in the early detection of growth and developmental delays (Hijrawati et al., 2021). Therefore, filial values, which include parental responsibility, respect, and care, need greater attention as the key factors supporting the effective parental monitoring of child development.

Based on data World Health Organization (WHO) (2021), there are 149.2 million children globally experiencing stunting. According to the World Bank, the prevalence of stunting in toddlers decreased from 37.2% in 2013 to 27.7% in 2018 (Purwita, 2022). The stunting prevalence in the city of Surabaya based on the 2021 SSGI was 28.9%. Although this is an encouraging decrease, it is still far from the government's target to reduce the stunting rate to 14% by 2024 (Siswati et al., 2022). Reducing the prevalence of stunting is also the goal of the 2025 Global Nutrition Target (WHO, 2014) and the main indicator number 2.2 of the Sustainable Development Goals (Komarulzaman et al., 2023). To accelerate progress towards this goal, efforts to reduce stunting need to be continued.

Various sectors have made concerted efforts to reduce the incidence of stunting; however, it is essential to recognize that nutritional status and physical growth are intrinsically linked to broader aspects of child development. Toddler development, in particular, represents a crucial period that significantly influences long-term developmental outcomes (Soetjiningsih, 2013). In Indonesia, approximately 21.6% of children aged 0.5–5.9 years old experience developmental delays, including delays in gross motor skills (11.5%), fine motor skills (11.8%), personal-social development (14.5%), and language development (15.8%) (Indonesian Ministry of Health, 2022).

Importantly, evidence suggests that stunted children are at a significantly higher risk of experiencing developmental delays across multiple domains. Studies have shown that stunting is associated with impaired cognitive, motor, and socio-emotional development due to chronic undernutrition during critical periods of brain growth (Zhang et al., 2018).

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Despite these well-documented risks, recent data (from 2020 onward) specifically detailing the developmental status of stunted toddlers in East Java Province and Surabaya City is currently unavailable in official Health Profile reports for these regions. This lack of localized, up-to-date information hinders the formulation of targeted interventions addressing the full spectrum of challenges faced by stunted children.

The monitoring of child growth and development must be carried out routinely. Routine and regular early detection often means that it is not too late to handle any problems that are found regarding their growth and development (Indonesian Ministry of Health, 2022). The role of the family in monitoring child development is very important. However, the problem is that not all mothers can monitor and optimize their child's development. The monitoring of child development by families can be done by utilizing the Maternal and Child Health Handbook. Efforts to empower families are very important so then parents can monitor their child's development properly in the first 1000 days (Tengkawan et al., 2020). Basic parental values such as responsibility, respect, and caring for children play an important role in nutritional monitoring (Gandini et al., 2024). The monitoring and fulfillment of child growth and development has an impact on their nutritional status (Wiliyanarti et al., 2022).

Community empowerment in the health sector according to the Regulation of the Minister of Health of the Republic of Indonesia Number 8 of 2019 is a process used to increase the knowledge, awareness, and ability of individuals, families, and communities to allow them to play an active role in the health efforts carried out by facilitating the problem-solving process through an educational and participatory approach. This is done while paying attention to the local needs, potential and socio-culture (Indonesian Ministry of Health, 2022). This study aims to develop a family empowerment model based on filial values to enhance the parental monitoring of child development. Strengthening this monitoring process through value-based family empowerment is expected to contribute significantly to stunting prevention and the broader goal of improving child health outcomes.

METHODS

Study Design

The research design used was a cross-sectional method. This type of research was used because the research aimed to find an explanation for a phenomenon or event that occurred to produce a picture of the causal relationship between the independent variable and the dependent variable. This research aims to describe the phenomenon of child development monitoring based on the Caregiver Empowerment Model (CEM) theory, so it was very appropriate to use an explanatory research design.

Population

The population in this study was families with toddlers who lived in the working area of the Health Center in Surabaya.

Samples and Sampling

The sample used was families with toddlers who lived in the working area of the Health Center in Surabaya. Simple random sampling was used, and the sample size was calculated using the Rule of Thumb formula, with a sample size of 5 x 28 predicted parameters. The sample size used in this study was 275 families according to the April - September 2024 period. The participants were selected based on specified inclusion and exclusion criteria in order to ensure that the data gathered from them was meaningful and valid. The families were eligible for the study if they had children who were aged 12-59 months old, and if both the child and their primary caregiver had been a resident of the study area for at least six months. The primary caregiver was the mother, father, or legal guardian, and had to be accessible and willing to participate in the study. Caregivers also had to be Bahasa Indonesia speakers and willing to provide informed consent prior to the data gathering.

Families were not included in the analysis if the toddler had a diagnosis of a congenital abnormality or chronic illness affecting growth or development outcomes. Caregivers who, after repeated efforts, were not reached during the data collection time were also excluded. Any response that was labeled as incomplete or inconsistent in important sections of the questionnaire was ruled as invalid for the final analysis.

Variables

The independent variables in this study were the factors that influence family empowerment. The dependent variables were commitment, family empowerment, and the family ability to monitor child development.

The independent variables in this study were the factors that influence family empowerment. Personal factors consist of knowledge, self-esteem, self-motivation, and experience. Resources consist of family connectedness, community resources, and competing role demand. Behavioral factors consist of benefits, barriers, self-efficacy, and developmental affect. Interpersonal factors consist of family support, and health worker roles. Core values consist of responsibility, respect, and care.

Meanwhile, the dependent variables were commitment, family empowerment, and the family ability to monitor child development. Commitment consists of affective, continuance, and normative. Empowerment consists of motivation, self esteem, self-control, and perceived threat. Development Monitoring consists of development monitoring.

Instruments

The instrument used for the data collection at this stage was a questionnaire created by the researcher based on predictors according to the CEM theory through the development of theories and previous related research results. Before the analysis was carried out to test the hypothesis, validity and reliability tests were carried out on the questionnaire using data from 30 respondents. The results of the validity test were carried out on the knowledge variable through to the monitoring ability variable. The validity test was carried out using the Pearson correlation test while the reliability test was carried out using the Cronbach's alpha test. The results of the validity test all had a significance of less than .05, so all indicators of all variables were found to be valid. The results of the reliability test obtained a Cronbach's alpha value of .7, meaning that all variables were reliable.

Data Collection

The data collection for this study was obtained through a systematic series of thought-out and ethically guided steps. The researchers obtained formal research authorization from the Surabaya City Health Office and several Community Health Centers (*Puskesmas*) within the city. These

authorizations were key to institutional approval and access to the study population.

Following administrative clearance, the participants were sampled using simple random sampling. The sampling frame was drawn from the mothers' registration records for their toddlers aged 12–59 months registered in the sampled Puskesmas. To preclude selection bias and ensure representativeness, random numbers were applied to choose who among the selected should be approached to participate. Only those mothers who fit the inclusion criteria—being the main caregiver and being in the area for a period of at least six months—were deemed eligible for selection.

The data collection involved the completion of a structured questionnaire with closed- and open-ended questions to elicit information regarding the child's nutritional status, developmental progress, and related sociodemographic factors. Face-to-face interviews were conducted by interviewers who were trained to visit the selected respondents either at home or in the Puskesmas, depending on participant convenience and preference. Enumerators were provided with standardized training to provide uniformity while administering the questionnaire and to minimize interviewer-related bias when collecting data.

Prior to each interview, informed consent was obtained in line with ethical standards of research. The respondents were properly informed about the purpose of the study, procedures, potential risks and benefits, and their rights as participants, including withdrawal at any time without penalty. Written informed consent was obtained from all participants. For individuals with limited literacy, the consent form was read out loud, and verbal consent was requested and documented under the observation of an independent witness. This was a measure to ensure voluntariness and informed participation.

Data Analysis

The collected data was analyzed using SmartPLS software for statistical tests with t > 1.96. SmartPLS allows for the testing of relatively complex relationships between the variables simultaneously. The path analysis model for all variables in PLS consisted of three sets of relationships, namely: 1) the inner model that specializes in the relationship between the latent variables (structural model), and 2) the outer model that specializes in the relationship between the latent variables and indicators. Indicators are considered valid if they have an outer loading value above .5 and a t-statistic value above 1.96. Hypothesis testing was carried out using the t-test.

Ethical Clearance

This research was conducted by upholding human rights and applying ethical principles to all interactions with the human subjects. The researcher explained the objectives, benefits, risks, withdrawal rights, and rewards and compensation given to the respondents via form at the very beginning before they filled out the questionnaire. If the respondent agreed, the respondent clicked the agree button and continued filling out the questionnaire. For the respondents who did not agree, there was no need to continue filling out the questions. This research obtained ethical eligibility and approval from the Health Research Ethics Commission (KEPK) of the Surabaya Ministry of Health Polytechnic with number No.EA/2125/KEPK-Poltekkes_Sby/V/2024.

Table 1. Description of the Respondents' General Data (n=275)

Demographics	n	%
Child		
1	106	38.5
2	102	37.1
3	45	16.4
4	16	5.8
5	5	1.8
7	1	.4
Maternal and Childhealth Handbook		
Yes	271	98.5
No	4	1.5
Posyandu History		
1	232	84.4
2	28	10.2
3	11	4
4	1	.4
5	3	1.1
Education		
Uneducated	7	2.5
Basic Education (Elementary-Junior High School)	53	19.3

RESULTS

Based on the general data of the respondents in Table 1, most were mothers, and it can be seen that the number of first and second children in the family made up the highest percentage. Ownership of Maternal and Childhealth Handbook is almost universal, with 98.5% (271 respondents) reporting they have one. The history of utilizing the integrated health service post (posyandu) shows that most respondents (84.4%) had used it at least once. Regarding education, the majority (52%) of mothers have completed high school. In terms of employment, 64% of mothers were not working.

Table 2 shows that the majority of families have high basic values, commitment, empowerment, and monitoring capabilities. Basic values is evidenced by 74.2% having high responsibility, 73.8% having high respect, and 70.6% having high care. Commitment is proven by 70.9% having high affective, 70.5% having high continuance, and 66.9% having high normative. Empowerment is proven by 70.5% having motivation 56.7% having high perceived threat, 63.3% having self-esteem and 56.7% having moderate self-control. Monitoring ability is proven by 88.7% having high monitoring ability.

The PLS statistical test states that if the T value > 1.96, then there is an influence between the dependent variable and the independent variable. In addition, the influence is meaningful if *P*-value ≤ .05. The results of the hypothesis test using PLS show that the Personal factor consisting of Knowledge, Self-esteem, Self-motivation, and Experience influences the Behavioral factor variable consisting of Benefits, Barriers, Self-efficacy, and Developmental Affect (t = 2.320; *P*-value = .020). The Personal factor consisting of Knowledge, Self-esteem, Self-motivation, and Experience does not affect the Interpersonal factor variable consisting of Family Support and the Role of Health Workers (t = .804; *P*-value = .442).

Table 2. Description of the Research Variables (n=275)

Variables	n	%
Core Values		
Responsibility		
Low	1	.4
Medium	70	25.5
High	204	74.2
Respect		
Low	2	.7
Medium	70	25.5
High	203	73.8
Care		
Medium	81	29.5
High	194	70.5
Commitment		
Affective		
Medium	80	29.1
High	195	70.9
Continuance		
Medium	81	29.5
High	194	70.5
Normative		
Low	1	0.4
Medium	90	32.7
High	184	66.9
Empowerment		
Motivation		
Medium	81	29.5
High	194	70.5
Self-esteem		
Low	1	.4
Medium	174	63.3
High	100	36.4
Self-control		
Low	12	4.4
Medium	156	56.7
High	107	38.9
Perceived Threat		
Medium	119	43.3
High	156	56.7
Monitoring Ability		
Monitoring Capabilities		
Low	22	8.0
Medium	9	3.3
High	244	88.7

Resources consisting of Family Connectedness, Community Resources, and Competing Role Demand affect the Behavioral Factor variable consisting of Benefits, Barriers, Self-efficacy, and Developmental Affect (t = 8.932; *P*-value = < .001). Resources consisting of Family Connectedness, Community Resources, and Competing Role Demand affect the Interpersonal factor variable consisting of Family Support and Health Worker Role (t = 3.456; *P*-value = .001). Behavioral Factors consisting of Benefits, Barriers, Self-efficacy, and Developmental Affect affect the Basic Value variable consisting of Responsibility, Respect, and Care (t = 11.669; *P*-value = < .001).

Behavioral Factors consisting of Benefits, Barriers, Self-efficacy, and Developmental Affects affect the Commitment variable consisting of Affective, Continuance, and Normative (t = 2.344; *P*-value = .019). Interpersonal Factors consisting of Family Support and Health Worker Roles affect the Basic Values variable consisting of Responsibility, Respect, and Care (t = 2.751; *P*-value = .006). Interpersonal Factors consisting of Family Support and Health Worker Roles do not affect the Commitment variable consisting of Affective, Continuance, and Normative (t = 1.251; *P*-value = .211).

Basic Values consisting of Responsibility, Respect, and Care affect the Commitment variable consisting of Affective, Continuance, and Normative (t = 14.375; *P*-value = < .001). Basic Values consisting of Responsibility, Respect, and Care affect the Empowerment variable consisting of Motivation, Self-esteem, Self-control, and Perceive Threat (t = 5.425; *P*-value = < .001). Basic Values consisting of Responsibility, Respect, and Care do not affect the Development Monitoring variable consisting of Development Monitoring (t = .664; *P*-value = .507).

Commitment consists of Affective, Continuance, and Normative effects, while the Empowerment variable consists of Motivation, Self-esteem, Self-control, and Perceive Threat (t = 3.216; *P*-value = .001). Commitment consists of Affective, Continuance, and Normative influencing of the Development Monitoring variable, which consists of development monitoring (t = 2.521; *P*-value = .012). Empowerment consists of Motivation, Self-esteem, Self-control, and Perceive Threat, influencing the Development Monitoring variable that consists of development monitoring (t = 3.781; *P*-value = < .001).

These results indicate that self-value towards commitment is an important point in family empowerment in the monitoring of child development (t = 14.375). Personal factors cannot directly form interpersonal ones but must go through behavioral channels to form commitment. Interpersonal does not affect commitment, but commitment affects empowerment and monitoring ability. Basic values cannot directly affect monitoring ability but must go through commitment and empowerment. These results show that to form monitoring capabilities, commitment, and empowerment must be achieved (Table 3 and Figure 1).

DISCUSSION

Basic values, or filial values, are very important in the monitoring of child development by parents. Basic values have a significant impact on parenting style (de Meneses et al., 2022). In addition, filial values provide insights for the parents as part of them paying attention to and overseeing the growth and development of their children until adolescence (Leung et al., 2017). In this study, filial values are a significant factor influencing the parents' ability and willingness to monitor their toddlers' development. The statement item with the highest percentage is parental responsibility. This finding underscores that parents view themselves as the primary agents in ensuring their children's developmental well-being. This aligns with the prior research asserting that parents are the closest and most influential figures in early education and care (Gandini et al., 2024).

Moreover, filial values were shown to enhance parental commitment, with many respondents agreeing that caring

Table 3. Final Model Results for Family Empowerment Development and the Child Development Monitoring Ability

Relationship between variables	Coefficient	t statistics	*P*-values	Description
Personal Factors - Behavioral Factors	.152	2.230	.026	Significant
Personal Factors - Interpersonal Factors	.062	.804	.422	Not Significant
Resources - Behavioral Factors	.539	8.932	< .001	Significant
Resources - Interpersonal Factors	.301	3.456	.001	Significant
Behavioral Factors - Core Values	.493	11.669	< .001	Significant
Behavioral Factors - Commitment	.118	2.344	.019	Significant
Interpersonal Factors - Core Values	.158	2.751	.006	Significant
Interpersonal Factors - Commitment	-.042	1.251	.211	Not Significant
Core Values - Commitment	.705	14.375	< .001	Significant
Core Values - Empowerment	.450	5.425	< .001	Significant
Core Values - Monitoring Ability	-.084	.664	.507	Not Significant
Commitment - Empowerment	.277	3.216	.001	Significant
Commitment - Monitoring Ability	.300	2.521	.012	Significant
Empowerment - Monitoring Ability	.317	3.781	< .001	Significant

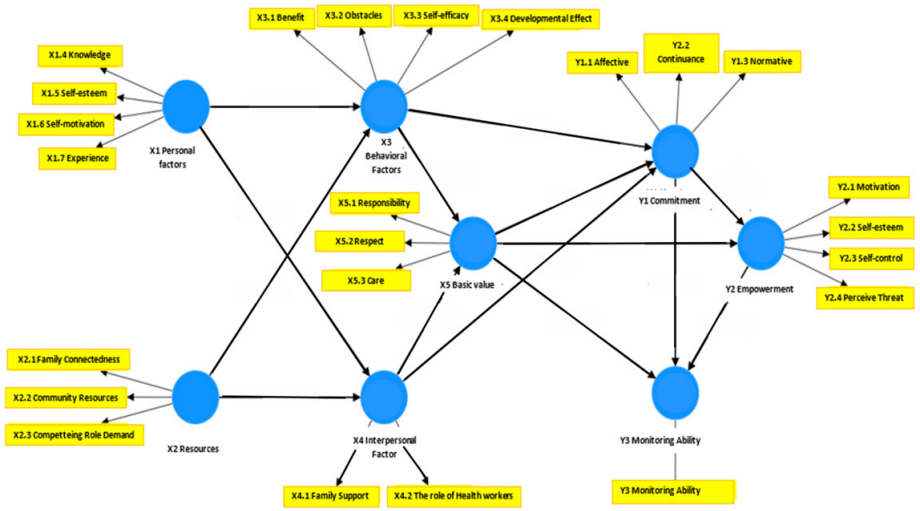

Figure 1. Final Model of Family Empowerment Development related to the Child Development Monitoring Ability

for and supporting children is a moral duty rooted in family culture. These values emphasize responsibility, respect, and care for family members. Filial piety significantly increases the parents' commitment to supporting their children's well-being through sacrifice and decisions (Leung et al., 2017). Family values encourage parents to see that they have a moral responsibility to take care of their children including their growth, as well as how they are developing physically, emotionally, and psychologically (Edwards et al., 2024). The filial value factor functions as an important mediator supporting individual factors that are responsible for increasing cognitive behavior. This increase the family commitment to monitoring child development. In such situations, filial values internalize and strengthen the relationship between parental bonds and beliefs in the way they care for children. Parents who are knowledgeable and motivated encourage better cognitive behavior, such as understanding the importance of monitoring child development. However, knowledge and motivation may not be fully translated into sustainable actions and strong commitments without strong filial values. Our findings suggest that strong filial values bridge this gap, turning cognitive understanding into consistent behavior. For example, respondents who strongly agreed with statements about family responsibility and care were also more likely to report the routine use of health services and regular completion of the Maternal and Child Health Handbook. A previous study mentions that cultural norms help develop both the children's self-regulation and parental regulation strategies (Mata & Pauen, 2023).

Additionally, access to resources and support systems, such as health services and community information, was another facilitating factor but the study suggests that the effectiveness of these resources depends heavily on the presence of strong filial values. For instance, among respondents with similar access to health services, those with higher filial value scores reported more frequent and consistent engagement with said services. This confirms the prior work indicating that values influence how families interpret and act upon the available support (Chang et al., 2015; Kehm et al., 2015).

Filial values also appeared to influence the interpersonal communication with healthcare workers. Respondents who scored higher for filial value items were more likely to report positive experiences when interacting with midwives, pediatricians, and community health workers. This

supports the theory that virtue-based family values improve interpersonal skills, facilitating better collaboration with health professionals (Mampane, 2020; Zimmerman, 2019; White & Pulla, 2023). Furthermore, the study found that families with strong filial values tend to seek out information more actively and are more proactive about using tools like the Maternal and Child Health Handbook. This aligns with the findings, where families with stronger cultural and moral commitments showed greater involvement in child health programs (Li & Guo, 2022; Nurhayati, 2021).

Family values help family members interact better with each other and it additionally helps them make decisions about child development and health (Elsayed, 2024). Families with strong virtue values are also more likely to use the Maternal and Child Health Handbook and receive better health services, enabling them to identify developmental problems at an early age. Families with strong family principles also tend to care more about their children's health, including tracking the development of their toddlers. Our findings are also consistent with research in low- and middle-income countries where strong family values compensate for the limited systemic support by driving parental engagement in cognitive, language, and motor development activities (Jeong et al., 2021). This suggests that cultural values can act as a buffer against systemic challenges in child development monitoring.

CONCLUSION

The formation of family commitment and empowerment can strengthen parents' ability to monitor the development of toddlers. Basic filial values are an important aspect in the formation of family commitment and empowerment. Filial values in the form of responsibility, respect, and care are necessary in the process of monitoring the development of toddlers as part of stunting prevention efforts. The personal and interpersonal resources of parents, children, health workers, and communities have an impact on parental commitment and empowerment. The model of developing family empowerment is related to the ability to monitor child development through basic filial values. Empowering parents improve the monitoring of child development not only in the non-academic realm also in the academic realm of adolescent health.

Declaration of Interest

Author declare that competing of interest.

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Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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