Empowering Mother on Prevention and Intervention of Stunting on Magetan Regency

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ABSTRACT

The condition of failure to grow babies, toddlers due to chronic malnutrition so that children are too short for their age is called stunting. The aim of research is to Empower Mothers in Preventing and Intervening Stunting. The first phase developed a model of maternal empowerment in preventing and intervening stunting using a cross sectional design. Phase II, implementation model uses a Quasi Experimental Non Randomized Pre Post Control Group Design. The population of this study were all mothers of children under five in Posyandu A, B, C. The sample of the study was some mothers of children who met the inclusion and exclusion criteria. The sampling technique uses multistage random sampling, which starts with grouping samples based on the area or population location, then stratification and sampling using simple random sampling technique. The analyzed by SEM with PLS. The results of the study of mothers who had good characteristics increased mother's knowledge of preventing and intervening with stunting 0.423 times (p=0.000). Mothers who have good knowledge increase maternal commitment by 0.230 (p=0.004), mothers who have good commitment reduce stunting by 0.448 (p=0.000). Mothers who have good knowledge increase family support 0.236 (p=0.040). Families that have good family support reduce stunting by 0.257 (p=0.011). New findings of the Model of Empowerment of Mothers in Factors and intervening Stunting where the most influential on maternal commitment, maternal characteristics and family support. The benefit of the research is to provide understanding of mothers in preventing and intervening with stunting.

Keywords: Mother Empowerment, Prevention, Intervention, Stunting

INTRODUCTION

The condition of failure to thrive in infants, toddlers due to chronic malnutrition in the first 1000 days of life so that children are too short for their age is called stunting. Malnutrition occurs since the baby is in the womb and after the baby is born, but only appears after the child is 2 years old (de Onis & Branca, 2016). Toddlers are stunted if their z-score (PB/U) or (TB/U) <-2SD and <-3SD (Nahar et al., 2020). The aim of research is to Empower Mothers in Preventing and Intervening Stunting.

Phase I research aims to develop a model of maternal empowerment in the prevention and treatment of stunting using a survey and a cross sectional approach. Phase II, Implementation of the model that has been compiled using a Quasi Experimental research design. The result of this research is that mother's commitment is the most influential factor besides the mother's characteristics and family support.

Different from research Vollmer et al., (2017) by using the Demographic and Health Survey using linear probabilities results that father's education is as important as mother's education to reduce stunting in children. In addition to mother's education, father's education must also be taken into account because father's education also has an indirect contribution to stunting in children.

Study Beal (2018) stated that exclusive breastfeeding for the first 6 months is a very important determinant of child stunting. Meanwhile, the results of the 2016 Saadah study explain that apart from the mother's commitment, the mother's income factor has an important impact on the child's growth and development(Saadah & Yulianto, 2017).

The decline in the stunting rate in Indonesia was only 4% from 1992-2013, so the 1000 day HPK movement was established in an effort to improve the nutritional status of children under five (Mairo & Jeniawaty, 2020) Mother's ability (social support, psychological health, decision making, and empowerment) with child feeding practices affect the child's nutritional status (Ickes et al., 2018).

The results of this study are also in line with research Barir et al., (2019) carried out using the method An analytical observational study with a case control design with a sample of 200 children aged 2-3 years showed that stunting

was directly and negatively affected by birth length 48 cm, birth weight 2500 g, exclusive breastfeeding, and timely complementary feeding. Indirectly influenced by family income, maternal age, attitude, maternal height >150 cm, occupation, education, and knowledge.

The short-term impact of stunting causes an increase in the incidence of morbidity and mortality, suboptimal cognitive, motor, and verbal growth and development in children, and an increase in health costs, the long-term impact of suboptimal posture in adulthood, increased risk of obesity and other diseases, decreased reproductive health, less than optimal learning capacity and performance at school, suboptimal productivity and work capacity. Stunting children tend to be susceptible to infectious diseases so that they are at risk of experiencing a decrease in the quality of learning at school and are at risk of often not attending school. Stunting children had poor motor skills ($P = 0.006$ for fine motor; $P < 0.001$ for gross motor) compared to their non-skinny peers in accordance with the purpose of our research, namely Empowering Mothers in Preventing and Intervening Stunting.

METHODS

Phase I of this study used a survey or observational study with the aim of developing a model of maternal empowerment in the prevention and treatment of stunting with a cross sectional approach. The second stage of the research is the implementation of the model using a Quasi Experimental research design with the Nonrandomized Control Group Pretest Posttest Design. The result of this research is that mother's commitment is the most influential factor besides the mother's characteristics and family support.

The population of this study were all mothers of children under five in Posyandu A, B and C. The sample of the study was some mothers of children under five in Posyandu A, B and C who met the inclusion and exclusion criteria. The sampling technique uses multistage random sampling, which starts with grouping samples based on the area or population location, then stratification and sampling using simple random sampling technique.

The instruments used were questionnaires and Z-Score sheets. Questionnaire to measure mother's knowledge variable, family support, nutritional status, mother's commitment, child's physical health, outdoor environment and home environment and Z-Score sheet to measure stunting variable (Supariasa et al., 2014). Independent t test was used to see the difference between the intervention group and the control group.

RESULTS

Characteristics of Research Subjects

The table below describes the variables of age, education, socio-economic, occupation and knowledge of the mother, nutritional status of children, physical health of children, home environment, environment outside the home, mother's commitment and family support that contribute to preventing and handling with stunting.

Table 1. Distribution of maternal age, mother's education, socio-economic, maternal work, maternal knowledge, children's physical health, children's nutritional status, home environment, outside environment, mother's commitment, and family support

Variable	Indicator	Frequency	Percentage
X11. Mother's age	< 20 Years	0	0%
	20 - 35 Years	109	73.3%
	> 35 Years	41	26, 7%
X12. Mother's Education	Primary School	7	5.2%
	Junior High School	61	40.4%
	Senior High School	64	42.2%
	College	18	12.4%
X13. Socio-Economic	Total expenses	52	35.3%
	Family food expenses	98	64.7%
X14. Mother's Job	Civil servant	4	2.5%
	Private	61	41%
	Farmer	38	24.8%
	Housewife	47	31.7%
X21. Mother's knowledge about early detection of stunting	Low	25	16.8%
	High	125	83.2%
X22. Mother's knowledge about stunting prevention	Low	22	14.9%
	High	128	85.1%

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	College	18	12.4%
X23. Mother's knowledge about stunting	Low	24	16.1%
	High	126	83.9%
X31. Children's physical health	Once	50	33.3%
	Never	100	66.7%
X41. Child nutritional status	Sufficient	72	48%
	Insufficient	78	52%
X51. Live with both parents	Living with both parents	107	71.3%
X52. Live with one parent	Living with mom	43	28.7%
	Living with dad	0	0
	Living with grandma	0	0
X51. Eating habits of friends in the neighborhood	Less nutritious	41	27.3%
	Nutritious	109	72.7%
Y11. Mother's role	Weak	37	24.7%
	Strong	113	75.3%
Y21. Husband's support	Weak	19	12.7%
	Strong	131	87.3%
Y31. Child body size	Normal	131	87.3%
	Stunting	19	12.7%

Based on Table 1, the majority of mothers were20-35 years old, were senior high school graduates, were housewives, have good knowledge, the nutritional status of children is also good, the prevention and treatment of stunting is good, the children's physical health is good, the environment is good, having healthy/good home, having good outdoor environment, having very high maternal commitment, having high family support and the having children who are not stunted.

a. Convergent Validity Test

Based on the measurement model using reflective indicators, it can be seen from the correlation between the item/indicator scores and the structural scores, theindividual indicators are considered reliable if they have a correlation value above 0.70.

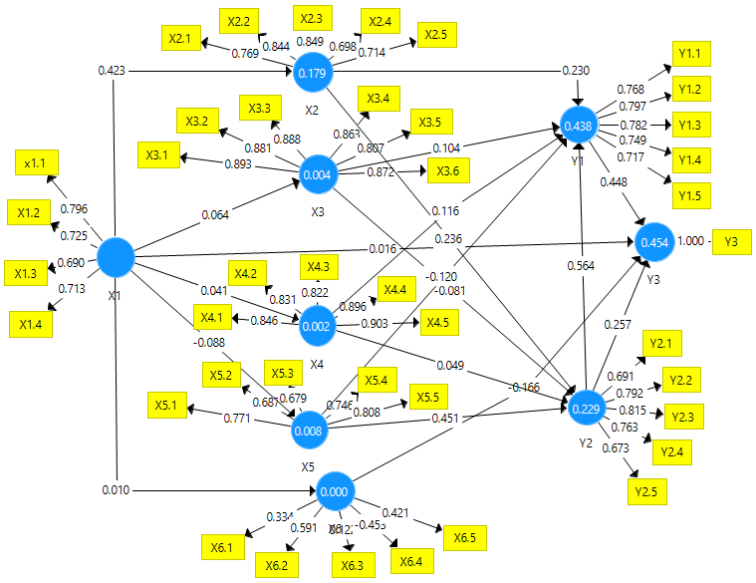

Figure 1.T-test results of the influence of indicators on the constructs for the measurement model

Based on Figure 1 above, the loading factor of each item can be seen in table 1 below:
Based on the table below, it is explained that amongall indicators and variables, only 1 has an invalid value, namely the environmental variable outside the home.

Table 2. The factor loading value of the mother's empowerment model in the prevention and intervening of stunting in children

No	Construct	Indicator	Construct Loading Value	Convergent validity test results
1	X1. Mother Characteristics	X.1.1 Maternal age	0.796	Valid
		X.1.2 Mother's education	0.725	Valid
		X.1.3 Socio-Economic	0.690	Valid
		X.1.4 Mother's Work	0.713	Valid
2	X2. Mother's knowledge about early detection, prevention, and handling of stunting	X.2.1 Early detection of stunting	0.769	Valid
		X.2.2 Prevention of stunting	0.844	Valid
		X.2.3 Handling stunting	0.849	Valid
3	X3. Children's Physical Health	X.3.1 Children Physical Health	0.893	Valid
4	X4. Nutritional status	X.4.1 Children Nutritional Status	0.846	Valid
5	X5. Houseenvironment	X.5.1 Living with both parents	0.771	Valid
		X.5.2 Living with one parent	0.687	Valid
6	X6. Outdoor environment	X.6.1 His friend's environmental habits	0	Invalid
7	Y1. Mother's commitment	Y.1.1 Mother's role	0.768	Valid
8	Y2. Family support	Y.2.1 Husband's support	0.691	Valid
9	Y3. Stunting	Y.3. Stunting	1,000	Valid

Based on Table 2, the mother's age, education, socioeconomic and occupation, knowledge, child's nutritional status, prevention and treatment of stunting, child's physical health, home environment, mother's commitment, and family support have valid values, while the house environment had an invalid value.

Value of Effect of Exogenous Constructs to Endogenous Constructs

In the table below, it is explained that the influence of family support variable on children's nutritional status is indirectly influenced by maternal characteristics.

Table 3. Direct, indirect, total effects in the path diagram

Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Information
X1 -> X2	0.423	0.426	0.047	8.947	0.000	Significant
X1 -> X3	0.064	0.07	0.094	0.681	0.496	Not Significant
X1 -> X4	0.041	0.044	0.089	0.459	0.647	Not Significant
X1 -> X5	-0.088	-0.091	0.098	0.896	0.370	Not Significant
X1 -> X6	0.010	0.008	0.189	0.054	0.957	Not Significant
X1 -> Y1	0.151	0.151	0.063	2.406	0.016	Significant
X1 -> Y2	0.057	0.060	0.070	0.815	0.416	Not Significant
X1 -> Y3	0.097	0.099	0.069	1.395	0.164	Not Significant
X2 -> Y1	0.363	0.360	0.125	2,894	0.004	Significant
X2 -> Y2	0.236	0.241	0.114	2,063	0.040	Significant
X2 -> Y3	0.223	0.219	0.087	2,564	0.011	Significant
X3 -> Y1	0.058	0.055	0.075	0.769	0.442	Not Significant
X3 -> Y2	-0.081	-0.077	0.074	1.091	0.276	Not Significant
X3 -> Y3	0.005	0.000	0.052	0.098	0.922	Not Significant
X4 -> Y1	0.144	0.154	0.061	2,352	0.019	Significant
X4 -> Y2	0.049	0.060	0.072	0.675	0.500	Not Significant
X4 -> Y3	0.077	0.085	0.046	1,689	0.092	Not Significant
X5 -> Y1	0.135	0.150	0.085	1,590	0.112	Not Significant
X5 -> Y2	0.451	0.455	0.091	4.973	0.000	Significant
X5 -> Y3	0.176	0.193	0.068	2,578	0.010	Significant
X6 -> Y3	-0.166	-0.018	0.142	1.170	0.243	Not Significant
Y1 -> Y3	0.448	0.422	0.120	3,742	0.000	Significant
Y2 -> Y1	0.564	0.583	0.104	5.428	0.000	Significant
Y2 -> Y3	0.510	0.535	0.095	5.338	0.000	Significant

The results from table 3 show that the magnitude of the direct influence coefficient of X1 on Y2 (0.057) is smaller than the indirect effect of Y2 on Y1 (0.564) with a statistical t value of> 1.96, meaning that the mediating variable can have an indirect effect between the independent variables and the dependent variable (Willi, 2015). This shows that Y1 variable mediates or becomes an intervening variable in the effect of Y2 on Y3.

Research Findings

The new findings of this study are the establishment of a Model for Early Detection, Prevention and Intervening of Stunting in Children, where maternal commitment is the most influential factor in reducing stunting, followed by maternal characteristics and family support.

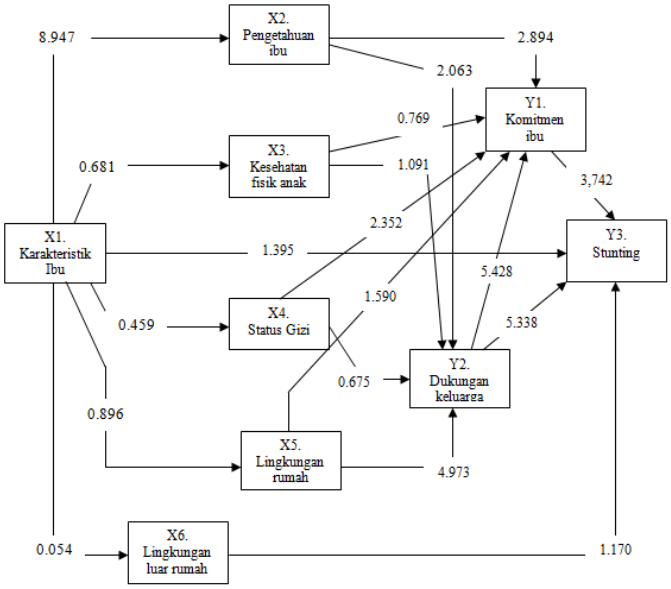

Figure 2 New Findings in the form of a Model of Mother Empowerment in Prevention and Intervening of Stunting in Children Based on the HPM Theory (Lailis Model)

The new finding in this study is the production of a Lailis Model for Stunting Prevention and Intervention based on HPM Theory, which is a MaternalEmpowerment Model on Early Detection, Prevention and Intervention of Stunting which was built through various channels, both direct and indirect from all existing factors. In this case, maternal commitment factor (Commitment to a Plan of Action) is the most influential factor in the intervention of stunting, followed by maternal characteristics (Personal Factors) and family support factors (Interpersonal Influences).

DISCUSSION

Effect of Mother's Characteristics (age, mother's education, socioeconomic, and mother's occupation) on Stunting in Children.

The results of this study stated that the majority of mothers aged between 20-35 years old which is categorized as early adulthood. Maternal characteristic factor has a significant direct effect on the stunting factor.

In addition, maternal characteristics also have a significant indirect effect on stunting, which isthrough mother's knowledge, children physical health, children nutritional status, home environment, outside environment, mother's commitment and family support regarding early detection, prevention and intervening of stunting. The results of this study found that there was a strong influence between maternal commitment and the incidence of stunting t-statistic (3.742) > t-table 1.96. This is in line with research conducted byRoba et al., (2021) stating that maternal education, mother occupation and maternal age have a significant effect on stunting. This research is also supported by research(Mistry et al., 2019) which stated that maternal education was identified as an important predictor of stunting. In addition, research conducted by Fadare et al., (2019)also emphasized that higher maternal education significantly reduced child stunting, and a person's age affects knowledge, in this case, the older a person is, the more likely his knowledge and experience will increase.

Study conducted by Dompas et al. (2019) further explained that productive age is the age at which a person reaches a level of maturity in terms of productivity in the form of rational and motor. Mothers aged 19-35 years old are mothers in the productive age group, where they already have maturity in terms of rational and motor skills so that they have sufficient maturity. The maturity of the mother causes the ability to take care of their child well, so it is expected that the growth and development of her child is also good.

This research was actually planned to be conducted offline, however, due to pandemic, it was carried out offline and online. Therefore, it took time to change the questionnaire using the Google form which affected on the increased time for conducting research.

The Effect of Mother's Knowledge on Early Detection, Prevention and Handling of Stunting in Children

The results of this study stated that most of themother's knowledge about early detection, prevention and intervention of stunting in children was high. However, after being given in-depth questions, some mothers were still reluctant to carry out the things they already know, so they need motivation/trigger from health workers/cadres to carry out early detection, prevention and treatment of stunting in children. The results of the study are also in accordance with the research carried out by Suleman et al., (2021) which explained that there was a significant effect of health promotion on knowledge and attitudes with stunting prevention measures.

The Influence of Children's Physical Health as Factors Affecting Stunting in Children

The results of this study obtained that the majority of children have never been sick. This does not mean that the child has never been sick at all. The child might have been sick but it was mild and treated immediately so that it didnot interfere with the child's growth and development. The child's physical health factor had a significant indirect effect on the stunting factor.

This is in line with research done by Borji et al., (2018) which claimed that infectious diseases can reduce food intake, interfere with nutrient absorption, cause direct loss of nutrients, and increase metabolic needs so that it affects Child Development. It is different from the research conducted by Rah et al., (2020) which obtained that there was no relationship between anemia in children and the incidence of stunting in children.

The Influence of Children's Nutritional Status as Factors Affecting Stunting in Children

The results of this study explained that the nutritional status of the majority of children is sufficient which is between adequate and less nutritional status, the comparison is almost balanced. The nutritional status of children had a significant indirect effect on the stunting factor. The level of education had an influence on health, one of which is nutritional status. Individuals who have a higher education level are more likely to know a healthy lifestyle and how to keep the body in shape as reflected in the application of a healthy lifestyle such as consuming nutritious food.

This study supports the results of research on feeding patterns in children influenced by physiological, psychological, social and cultural factors. These factors determine what food choices will be consumed, how much and who will consume and when the food may or may not be consumed(Singh et al., 2019). This is in line with the previous research (Debela et al., 2021)which explained that improving child nutrition and empowering women are two important and closely related development goals. If the mother works and has an income, the mother will provide more nutritious food than mothers who do not have their own income. In addition, research conducted by (Sarker et al., 2020) also supports the results of this study where it was explained that an increase in economic activity improved the nutritional status of children which then lead to decreased inequality.

The Influence of the Home Environment as a Factor That Affects Stunting in Children

The results of this study explained that most children live with both parents but this does not guarantee that children always get full attention from both parents because of the business of both parents. The house environment factor is significant to the stunting factor. This research is supported by research previously done by Orth (2018)which explains that the houseenvironment affects children in various ways, including affecting onhow a child develops and learns from his environment. This research is also in line with Nguyen et al., (2018) that providinga house environment that stimulates the growth and development of children is very important to ensure that children's development runs optimally.

The Influence of the Outdoor Environment as a Factor that Affects Stunting in Children

The results of this study stated that most children had received nutritious food but if judged from the quality and quantity according to the age of the child, it was still lacking because children followed and imitated their friends. This supports research which stated that environmental factors outside the houserelated to stunting are eating habits with peers. Environmental factor outside the house is not significant to the incidence of stunting (Bueno et al., 2018).

The Effect of Mother's Commitment to Early Detection, Prevention, and Handling of Stunting in Children

The results of this study indicated that the mother's commitment to make effortsso that her child does not experience stunting is mostly very strong but the motivation to implement is still not optimal. The maternal commitment factor has a significant direct effect on the stunting factor. It is proven that most of the mothers have a strong commitment to be able to carry out early detection, prevention and intervention of stunting in children.

The results of this study are in line with Setiadi et al., (2020) which states that the role of parents in general includes the role of the father and the role of the mother. The role of the mother is as a housekeeper, caregiver and educator of children, protector of the family as well as the breadwinner of the family and as a member of the community of certain social groups, while the role of the father is as the head of the family, has a role as breadwinner, educator, protector or protector, giving a sense of security for each family member and also as a member of a particular social group community.

Effect of Family Support on Early Detection, Prevention, and Handling of Stunting in Children

The results of this study stated that strong family support for mothers in carrying out early detection, prevention and treatment of stunting in children had a direct significant effect on the stunting factor. This is in line with Kang & Kim's research (2019) which stated that family support/husband support is very meaningful for mothers in

carrying out early detection, prevention and handling of stunting. In this case, family support can be in the form of moral and material support.

CONCLUSION

The aim of the research was to develop a model for maternal empowerment in preventing and intervening stunting in children through stunting early detection training. The new findings are the formation of a Model for Early Detection, Prevention and Intervention of Stunting in Children, where maternal commitment is the most influential factor in reducing stunting, followed by maternal characteristics and family support.

Mother's characteristics (Personal Factors) make important contributions and influence mothers in taking attitudes and actions for Early Detection, Prevention and Intervention of Stunting. Furthermore, mother's knowledge is an important factor and makes a big contribution in addition to the strong family support to carry out Early Detection, Prevention and Intervention Stunting. Physical health of children and family support who understand the importance of early detection, prevention and treatment of stunting in children encourage mothers to have a high commitment to implement it. The nutritional status of children and family support who understand the importance of early detection, prevention and intervention of stunting in children encourage mothers to have a high commitment to implement it. In addition, house environment and family support who understand the importance of early detection, Prevention and Intervention of Stunting in children encourages mothers to have a high commitment to implement it. Although the outside environment (Perceived Barrier) is a factor that does not contribute to the incidence of stunting in children, this factor should not be ignored because children tend to follow the habits of their friends. Mother's commitment (Commitment to a Plan of Action) is also strong due to the self-advancement factor felt by the mother (Self Efficacy) so that the mother takes action (Activity Related Affect) on Early Detection, Prevention and Intervention of Stunting because the mother feels the benefits of her actions. On the other hand, family support is also very needed by mothers in realizing their commitment to carry out Early Detection, Prevention and Intervention of Stunting.

Based onthe results of this study, it is expectedthat in the future, the Health Office can facilitate in making policies related to Early Detection, Prevention and Intervention of Stunting at the Magetan District Health Center by using the existing models and using modules that have been recommended to be used as a reference for midwives in carrying out Early Detection, Stunting Prevention and Intervention.

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