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Mother Empowerment Model in Stunting Prevention and Intervention through Stunting Early Detection Training

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Abstract

BACKGROUND: Stunting is a condition of failure to thrive under 5-year-old due to chronic malnutrition causing the children become too short for their age. The contribution of this research is to prevent and reduce stunting through Stunting Early Detection training.

AIM: The objective of the current research is to develop a model for mother empowerment in preventing and intervention stunting in children through stunting early detection training.

METHODS: Phase I is the development of a mother empowerment model in the prevention and intervention of stunting in children using a survey with a cross sectional design. Phase II is the implementation of the model using Quasi Experimental Nonrandomized Prepost Control Group Design.

RESULTS: The results of the study obtained that mothers who had good characteristics increased their knowledge 0.423 (p = 0.000). Mothers who have good knowledge increase their mother commitment 0.230 (p = 0.004), mothers who have a good commitment reduce stunting in children 0.448 (p = 0.000), mothers who have good knowledge increase family support 0.236 (p = 0.040), and good family support reduces stunting 0.257 (p = 0.011).

CONCLUSION: A new finding is the formation of a Mother Empowerment Model in the Prevention and Intervention of Stunting through Stunting Early Detection Training where mother commitment is the most influential factor.

Introduction

Stunting is a condition of failure to thrive under 5-year-old due to chronic malnutrition in the first 1000 days of life causing the child becomes too short for his age. Malnutrition occurs when the baby is in the womb and in the early days after the baby is born. Furthermore, stunting condition only appears after the child is 2-year-old [1]. Toddlers are considered short if the z-score value for body length for age (PB/U) or height for age (TB/U) is less than -2SD/standard deviation (stunted) and less than -3SD (severely stunted) [2]. Community empowerment is involving the community in solving health problems in the community so that people can be independent. The current research objective is to develop a model for mother empowerment in preventing and intervention stunting through stunting early detection training. This research employed 2 stages.

Study that was conducted by Laksono revealed that mother age was a significant predictor of stunting risk for children under 5-year-old. Toddlers of mothers with primary school education have a 2.248 times higher risk of experiencing severe stunting than toddlers from mothers with college education. Toddlers from non-working mothers have 0.951 times higher risk of experiencing severe stunting than toddlers from working mothers. Based on the employment status, the current results show two different things. Mothers who do not work have a lower risk of having children with severe stunting, as well as a higher risk of stunting, while mothers who do not work tend to have more time to take care for their children compared to working mothers, thereby reducing the risk of stunting [3].

This is different from research carried out Vollmer using the Demographic and Health Survey using linear probability 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 be taken into account because father's education has an indirect contribution to the incidence of child stunting [4].

Study conducted by Rahayu (2020) further explained that in addition to exclusive breastfeeding, the nutritional status of pregnant women also affects the incidence of stunting [5]. The decline in the stunting rate in Indonesia was only 4% from 1992–2013, so the 1000 days HPK movement was established in an effort to improve the nutritional status of children under 5-year-old [6].

Furthermore, another study done by Viridula using a case–control design involved a sample size of 150 children under 5-year-old from 50 stunted children

and 100 normal children, showing that mother education had an indirect, negative and statistically significant effect on stunting. Mother's height, education, and family income, had a direct, negative, significant, and statistical effect on stunting [7].

Stunting has a short-term impact causing an increase in the incidence of morbidity and mortality, sub optimal cognitive, motor and verbal growth and development in children, and an increase in health costs. Meanwhile, the long-term impacts include not optimal body posture as an adult (shorter than in general), increased risk of obesity and other diseases, decreased reproductive health, learning capacity and less than optimal 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. In addition, stunting children also had poor motor skills (P = 0.006 for fine motor; P < 0 001 for gross motor skills) compared to non-stunted peers. Early Detection Intervention of stunting is one of the efforts to improve the quality of growth and development of children by empowering the mothers. This study aimed to develop a model for mother empowerment in preventing and intervention stunting in children through stunting early detection training.

Methods

This research used 2 stages. Phase I of this study used a survey with the aim of developing a model of mother empowerment in the prevention and intervention of stunting in toddlers based on the Health Promotion Model theory, stunting theory, commitment theory, empowerment theory with a cross sectional approach. Data collection by distributing questionnaires that are compiled based on the variables to be measured that have been tested for validity and reliability. Phase II is the implementation of the model which was developed using a Quasi-Experimental research design with the Nonrandomized Control Group Pretest Posttest Design.

The population of this study were all mothers who had children under 5-year-old at the Integrated Health Post (Posyandu) of PL, C and NG. The research samples were some mothers who have toddlers at Posyandu and Public Health Center (Puskesmas) of PL, C, and NG who met the inclusion and exclusion criteria, namely, mothers aged 20 years – 45-year-old having toddlers, staying for at least 1 year in 2020, but if they are new comers, they will be categorized into exclusion criteria. Sampling technique used is multistage random sampling beginning with grouping samples based on the region or population location, then stratification and sampling using simple random sampling technique with a sample size of 150.

The instruments used are questionnaires model of mother empowerment in the prevention and intervention of stunting and Z-Score sheets. The questionnaire was used to measure the variables of mother's knowledge, family support, nutritional status, mother's commitment, children's physical health, the environment outside the house, and the house environment, while the Z-Score sheet was used to measure the stunting variable (8). Toddlers are said to be short if the Z-Score value for body length for age or height for age is <−2 SD/Standard Deviation (stunted) and <−3SD (severely stunting). To see the difference between the intervention group and the control group, an independent *t*-test was performed. In the intervention group, pre and post tests were carried out and the results were compared. In the control group, pre and post tests were carried out and then the results were compared from the intervention group and the control group.

Results

The majority of mothers were 20–35-year-old and have senior high school education level. Furthermore, the socio-economic and occupation of mothers are mostly house wives (Table 1). The majority of mothers have good knowledge, have children with good nutritional status, have good prevention and intervention of stunting, have children with good physical health, as well as good house and outside environment. In addition, the mother's commitment is very high, the family support is high, and the majority of children are not stunted.

The results showed that mother commitment was the most influential factor in reducing stunting, in addition to mother characteristics and family support.

Convergent validity test

Based on the measurement model with reflective indicators, it can be seen from the correlation between the item/indicator scores and the structural scores. Individual indicators are considered reliable if they have a correlation value above 0.70. The picture below explains the loading factor value of each indicator (Figure 1).

Research findings

The new findings are the formation of a Mother Empowerment Model in the Prevention and Intervention of Stunting through Stunting Early Detection Training, where mother commitment is the most influential factor,

followed by mother characteristics and family support (Figure 2).

The new research finding is the production of the Lailis Model, namely the Mother Empowerment model on Early Detection, Prevention and Intervention of Stunting, which was developed through various channels, either directly or indirectly from all existing factors. In this case, the factors which affect the intervention of stunting are mother commitment (Commitment to a Plan of Action) as the most important factor, followed by mother characteristics factors (Personal Factors) and family support factors (Interpersonal Influences).

Discussion

Effect of mother characteristics (age, mother's education, socioeconomic, and mother's occupation) on stunting in children

The results of this study stated that most of the mothers aged 20–35 years, which were categorized as early adults. Mother characteristics have a significant direct effect on the stunting factor. Mother's characteristic also indirect effect on stunting through mother's knowledge, child's physical health, child's nutritional status, house environment, outside environment, mother's commitment/role and family support regarding early detection, prevention, and intervention of stunting. The results of this study explain that there is a strong influence between mother commitment/role and the incidence of stunting. This is in line with research conducted by Roba *et al.*, (2021) that mother education, mother occupation, and mother age have a significant effect on stunting.

This research is also supported by research done by Mistry *et al.* (2019) that mother education was identified as an important predictor of stunting. Meanwhile, the research conducted Fadare *et al.*, (2019) emphasized that higher mother education significantly reduces stunting in children and a person's age affects knowledge, in which the older a person is, the more likely his knowledge and experience will increase. Study carried out 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 rational and motor productivity. Mothers aged 19–35 years are mothers of the productive age group, where they already have maturity in terms of rational and motor skills so that they have the ability and good skills in overcoming the problems experienced by their children.

Study conducted by Barir *et al.* (2019) stated that stunting is directly affected by birth length of 48 cm, birth weight of 2500 g, exclusive breastfeeding, and timely complementary feeding [13]. In addition, this is also indirectly influenced by family income, mother age, attitude, mother height of >150 cm, occupation, education, and knowledge. Thus, there are factors that directly or indirectly affect stunting.

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 ($P = 0.01$ for fine motor skills; $P < 0.00$ for gross motor skills) than their non-stunted peers. Early Detection Intervention of stunting is one of the efforts to improve the quality of growth and development of children by empowering mothers, according to the purpose of this study, namely, empowering mothers in preventing and dealing with stunting. The maturity of the mother causes the ability to care for and care for her child to be good, so it is hoped that the growth and development of her child is also good [14].

Effect of mother's knowledge on early detection, prevention and intervention of stunting in children

The results of the study stated that the mother's knowledge about early detection, prevention and intervention of stunting in children was mostly high. Some mothers are reluctant to do things they already know, so it is necessary to motivate health workers so that mothers can carry out early detection, prevention, and intervention of stunting in children. Thus, health promotion is very necessary for mothers so that mothers are motivated to carry out stunting prevention and intervention. The results of this study are in accordance with the research conducted by Suleman *et al.*, (2021) which explained that there was a significant effect of health promotion on knowledge and attitudes with stunting prevention [15]. This is in line with Sewa's research that there is a significant effect of health promotion on knowledge and attitudes with stunting prevention by posyandu cadres in experimental group a and experimental group b [25].

Effect of children's physical health as factors affecting stunting in children

The results of the study were that the majority of children were never sick but that does not mean that the child was never sick at all. The child had been sick but was mild, such as fever instead of malaria and diarrhea without dehydration and treated immediately so that it did not interfere with the child's growth and development. The child's physical health factor has a significant indirect effect on the stunting factor.

Study conducted by Borji *et al.* (2018) stated that infectious diseases can reduce food intake, interfere with nutrient absorption, cause direct loss of nutrients, increase metabolic needs, so that it affects

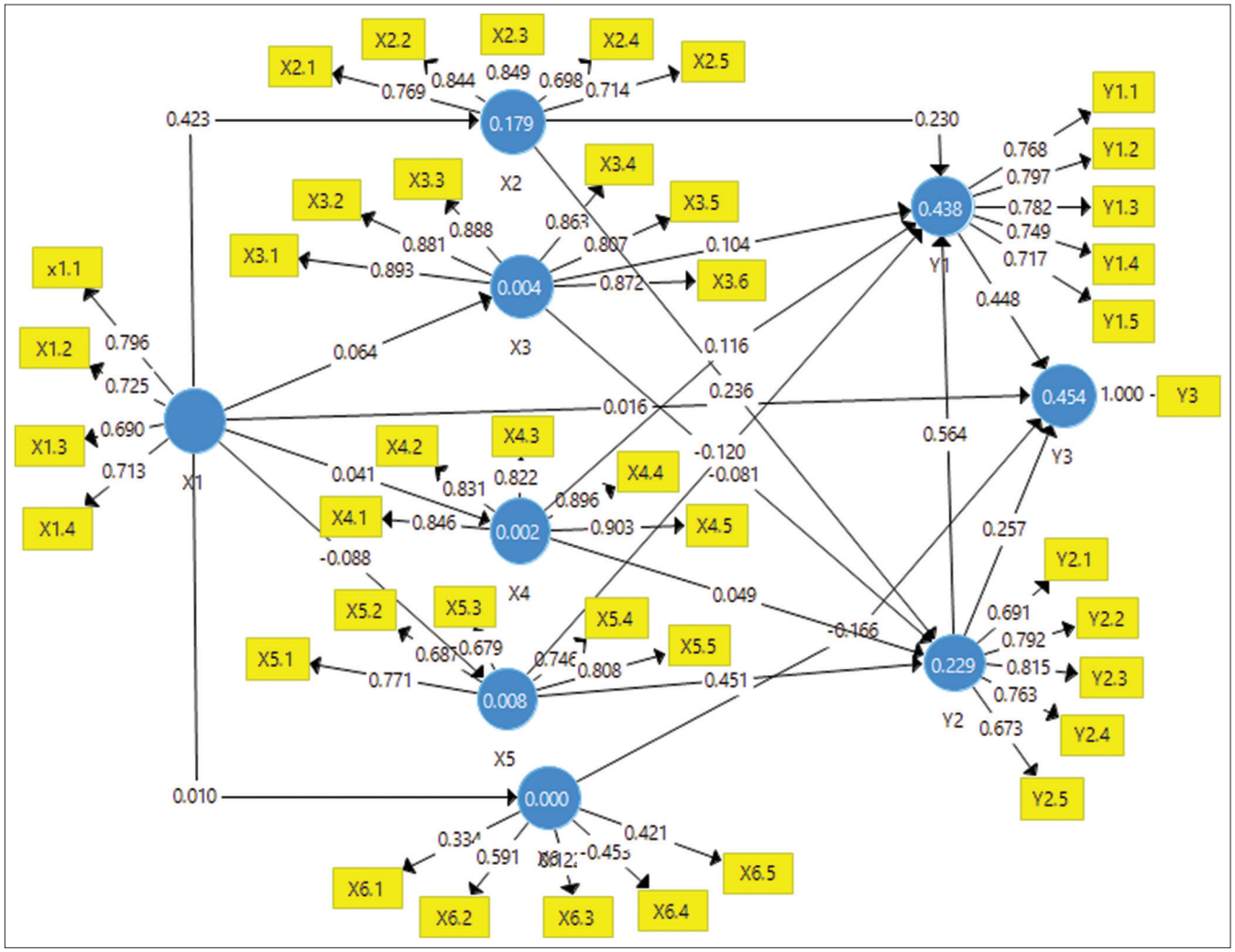

Figure 1: t-test results of the influence of indicators on the constructs for the measurement model

Child Development. This is different from the research results performed by Rah *et al.* (2020) who explained that there is no relationship between anemia in children and the incidence of child stunting because nutritional status is also influenced by the child's diet and exclusive breastfeeding. This difference is caused by other factors, among others, children's diet, nutritional intake, nutritional status of children, mother parenting and exclusive breastfeeding because exclusive breastfeeding for the first 6 months is a very important determinant of child stunting [18].

Effect of children's nutritional status as factors affecting stunting in children

The results of this study explain that the nutritional status of the majority of children is normal. The comparison between normal and underweight nutritional status is almost balanced. The nutritional status of children has a significant indirect effect on the stunting factor. The level of education has an influence on health, one of which is nutritional status. Individuals who have a high level of education are more likely to know a healthy life style and how to keep the body in shape, which is reflected in the application of a healthy life style such as consuming nutritious food [19].

The previous study Debela stated 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 food with more nutritious bargaining power than mothers who do not have their own income [20]. Meanwhile, another study Sarker also supports the results of this study which explains that an increase in economic activity will improve the nutritional status of children and reduce inequality [21].

Effect of the home environment as a factor that affects stunting in children

The results of this study explain that most children live with their parents but this does not guarantee that children always receive 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 performed by Orth (2018) that the house environment affects children in various ways, including influencing

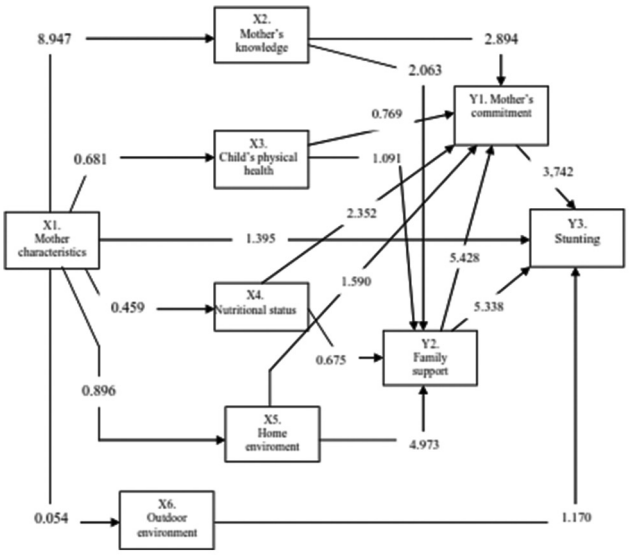

Figure 2: New Findings of a Model of Mother Empowerment in Prevention and Intervention of Stunting in Children (Lailis Model)

how a child develops and learns from his environment [22]. This research is in line with Nguyen *et al.*, (2018) research that providing a house environment that stimulates the growth and development of children is very important to ensure that children's development runs optimally [23].

Effect of the outdoor environment as a factor that affects stunting in children

The results of this study stated that most of the children had received nutritious food, but if the quality and quantity were assessed according to the child's age, it was still lacking because children followed and imitated their friends. This supports research which states that outdoor environmental factors related to stunting are eating habits with peers. Environmental factors outside the house are not significant to the incidence of stunting [24].

Effect of mother's commitment/role to perform early detection, prevention, and intervention of stunting in children

The results of this study stated that the mother's commitment to make efforts so that her child does not experience stunting was largely a role but the motivation to implement it was still not optimal. The mother 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's research (2018) which stated that the commitment/role of parents in general includes the commitment of the father and the commitment of the mother. The mother's commitment is as a house keeper, caregiver, child educator, family protector as well as a family bread winner and as a member of certain social groups, while the father's role is as a family leader, bread winner, educator, protector, giving a sense of security to family members and as a guardian member of a particular social group.

Table 1: Description of the characteristics of the mother

Characteristic	Frequency	Percentage
X11. mother's age (years)		
< 20	0	0
20–35	109	73.3
> 35	41	26.7
X12. mother's education		
SD (elementary school)	7	5.2
SLTP (first high school)	61	40.4
SLTA (senior high school)	64	42.2
Perguruan tinggi (college)	18	12.4
X13. socioeconomic		
Total expenditure	52	35.3
Family food production	98	64.7
X14. mother's job		
Civil servant	4	2.5
Swasta	61	41
Farmer	38	24.8
Housewife	47	31.7

Effect of family/husband support on early detection, prevention, and intervention of stunting in children

The results of this study indicate that there is strong family support for mothers in carrying out early detection, prevention and intervention of stunting in children. Family support has a direct significant effect on the stunting factor. This research supports the research of Kang and Kim (2019) which states that family support/husband support is very meaningful for mothers in carrying out early detection, prevention and intervention of stunting, family support can be in the form of moral and material support.

Conclusion

A new finding is the formation of a Model for Early Detection, Prevention and Intervention of Stunting in Children, where mother commitment is the most influential factor in reducing stunting, in addition to mother characteristics and family support.

Mother's characteristics (Personal Factors) significantly contribute and affect mothers in taking attitudes and actions for Early Detection, Prevention and Intervention of Stunting. Mother's knowledge is an important factor and makes a big contribution and needs strong family support to carry out Early Detection, Prevention and Intervention of Stunting. Child physical health and family support understand the importance of early detection, prevention, and intervention of stunting in children which further encourage mothers to have a high commitment to implement it. Nutritional status of

children and family support understand the importance of early detection, prevention, and intervention of stunting in children and further encourage mothers to have a high commitment to implement it. The house environment and family support understand the importance of early detection, prevention, and intervention of stunting in children, thus 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. Furthermore, mother's commitment (Commitment to a Plan of Action) is strong due to the self-advancement factor felt by the mother (Self Efficacy) so that the mother takes action (Activity Related Affect) regarding Early Detection, Prevention, and Intervention of Stunting. Since the mother feels the benefits of her actions, family support is needed by the mother in realizing the mother's commitment to carry out Early Detection, Prevention, and Intervention of Stunting.

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

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