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Original Research

Handling Nutrition in Stunted Children Through Education and Family Education in Madura, Indonesia

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ABSTRACT

Background: Stunting is a public health problem that is associated with an increased risk of morbidity, death and obstacles to both motor and mental growth. This research aims to determine the effect of family education on maternal nutritional behavior for toddlers who experience stunting in Madura, Indonesia. **Method:** The type of research was quantitative analytical observational, the research design used in this research is Quasi Experimental with a Two Groups Pre-test Post-test with Control Group Design. The population is all stunted toddlers who were registered at the Community Health Center in Madura Indonesia, totaling 78 children and their mothers. The sample was 65 people using simple random sampling technique consisting of 33 control groups and 32 treatment groups. Data collection uses a questionnaire. The variables studied are the incidence of stunting in toddlers as the dependent variable and the independent variable is the mother's nutritional behavior. **Result:** The research results of the Wilcoxon test analysis showed that there was a significant influence on the average score of maternal nutritional behavior before and after being given family education, with a p-value of 0.001, namely $p<0.05$. **Conclusion:** There is an influence of family education on maternal nutritional behavior for toddlers who experience stunting in Madura Indonesia.

Keywords: Toddlers; nutrition; mothers; behavior; stunting

1. INTRODUCTION

In the last 10 years (2013-2023), stunting has increasingly occurred in Indonesia.(1) Stunting is formed by growth faltering and non-optimal catch-up growth, reflecting the inability to achieve optimal growth, toddlers born with normal weight can experience stunting if their subsequent needs are not met properly.(2) Stunting is one of the Sustainable Development Goals (SDGs) targets, including other ongoing sustainable development goals, namely minimizing hunger and all forms of malnutrition by 2030 and achieving food security. The goal setting is to reduce the stunting rate by 40% by 2025.(3)

Based on the 2018 East Java Riskesdas, the prevalence of stunting decreased from 2013 to 2018 by 2.99%. In 2013 around 35.8% of toddlers were stunted and there was a decrease in 2018, namely 32.81% of toddlers were stunted. However, this figure. bigger of the national prevalence, namely .30.8%. Based on East Java Riskesdas, in 2022 stunting in toddlers in Madura will still be high, namely the highest, Madura is included in the category that requires quick treatment to reduce the number of children experiencing stunting.(3)

The above problems can be minimized, one of the ways is by using the nutritional awareness family strategy (KADARZI)[4] which is a simple explanation of the message of balanced nutrition.[5] A Nutrition Aware Family (KADARZI) is a family that knows about nutritional problems and is able to prevent and overcome nutritional problems for each member of its family.[6] The independent nutrition awareness family program is a form of effort to improve nutrition as an alternative to solving nutritional problems.[7]

2. METHODS

This type of research is observational analytical quantitative research. The research design used in this research is Quasi Experimental with a Two Groups Pre-test Post-test with Control Group Design. In the two groups pre-test post-test with control group design, there is a comparison group where the first group, namely the treatment group, is given Kadarzi education and the control group is not given education. The research design structure contains 3 components, namely initial conditions, treatment, and conditions resulting from treatment. This type of research was used to determine the effect of Kadzi education on maternal behavior regarding nutrition in stunted toddlers in Madura before and after being given Kadzi education.

The population in this study was all 178 children under five who experienced stunting in Madura Indonesia, with a population that met the sampling criteria of 65 children.

3. RESULTS

3.1 Age, last education and mother work

Table 1 shows that the characteristics of mothers with stunting toddlers according to age in Madura, Indonesia, most of which are mothers under five are 51 people (78.5%) aged 20-35 years and aged >35 years as many as 14 people (21.5%).

Table 1 shows the distribution of mothers under five according to the latest education in Madura, Indonesia, where most mothers under five are 42 people (64.6%) with secondary education (SMP/MTS/SMA/MA) and 6 people in higher education (9.2%) and 17 elementary schools (26.2%).

Table 1 shows the distribution of mothers under five by occupation in Madura, Indonesia, where most mothers under five are 1 person (1.5%) working as a teacher and as many as 64 people (98.5%) working as IRT.

Table 1 Distribution of mothers with child support according to age, education and employment in Madura Indonesia

Characteristics of Respondent	Treatment	
	F	%
Age		
1. 20 - 35 Years	51	78.5%
2. > 35 Years	14	21.5%
Mother's Last Education		
1. Elementary School	17	26.2%
2. SMP/MTs/SMA/MA	42	64.6%
3. University	6	9.2%
Mother's Work		
1. IRT	64	98.5%
2. Teacher	1	1.5%

3.2 Maternal nutrition behavior before and after KADARZI education in the treatment group

Based on Table 2, the frequency distribution of maternal nutritional behavior before the Nutrition Aware Family Education (KADARZI) was carried out in the treatment group of stunted toddlers had less nutritional behavior as many as 10 respondents (31%), had adequate nutritional behavior as many as 13 respondents (41%) and 9 respondents (28%) who had good nutritional behavior. Table 2 shows that the nutritional behavior of mothers after being given Nutrition Aware Family Education (KADARZI) in the treatment group with lecture and media methods after being given education who had less nutritional behavior as much as 3 (9%), who had adequate nutritional behavior with a value of 6 (19%) and who had good nutritional behavior as much as 23 (72%).

Table 2 nutritional behavior of mothers before KADARZI education in the treatment group

Maternal Nutritional Behavior	Pre-Education		Post Education	
	F	%	F	%
Not enough	10	31	3	9
Enough	13	41	6	19
Good	9	28	23	72

3.3 Maternal nutrition behavior before and after KADARZI education was given to the control group

Based on Table 3, the frequency distribution of maternal nutritional behavior before the Nutrition Aware Family Education (KADARZI) was carried out in the control group in stunting toddlers had less nutritional behavior as many as 7 respondents (21%), had adequate nutritional behavior as many as 13 respondents (39%) and 13 respondents (39%) who had good nutritional behavior. Based on table 3 shows that maternal nutritional behavior after being given Nutrition Aware Family Education (KADARZI) in the control group with lecture and media methods after being given education who have malnutrition behavior as much as 6 (18%), who have adequate nutritional behavior with a value of 15 (45%) and who have good nutritional behavior as much as 12 (36%).

Table 3 Nutritional behavior of mothers before KADARZI education

Maternal Nutritional Behavior	Pre-Education		Post Education	
	F	%	F	%
Not enough	7	21	6	18
Enough	13	39	15	45
Good	13	39	12	36

3.4 The effect of KADARZI education on maternal nutrition behavior among stunted toddlers

Based on the Table 4, the results of the Wilcoxon test show that the average score of nutritional behavior before and after the Nutrition Aware Family Education (KADARZI) is 9.19 for the results of the analysis obtained a p-value of 0.001 so that $p<0.05$ (α) then H1 is accepted and H0 is rejected, which means that there is a significant influence on the average score of maternal nutritional behavior before and after being given Nutrition Aware Family Education (KADARZI).

Based on the Table 5, the results of Man-Whitney showed that the average score of nutritional behavior after nutrition awareness family education (KADARZI) in the control and treatment groups was 25.80 and 40.42. For the results of the analysis obtained a p-value of 0.002, so that $p<0.05$ (α), it means that there is a significant difference between maternal nutritional behavior in toddlers who are stunted after being given Nutrition Aware Family Education (KADARZI) in the control and treatment groups.

Table 4. Results of difference analysis before and after KADARZI education on nutritional behavior among stunted toddlers

Variable	Group	Measurement	N	Mean	p-value
Nutrition Awareness Family Education regarding maternal nutritional behavior	Treatment	Before After	32	9.19	0.001
Nutrition Awareness Family Education regarding maternal nutritional behavior	Control	Before After	33	1.50	1,000

Table 5. Differences in maternal nutritional behavior among toddlers who are stunted after being given nutrition awareness family education (KADARZI) in the control and treatment groups

Variable	Group	N	Mean	Sum Of Ranks	p-value
Nutrition Awareness Family Education regarding maternal nutritional behavior	Treatment	32	40.42	1293.50	0.002
Nutrition Awareness Family Education regarding maternal nutritional behavior	Control	33	25.80	851.50	
Total		65			

4. DISCUSSION

4.1 nutritional behavior of mothers of stunting toddlers before and after being given nutrition awareness family education (KADARZI) in the treatment groupn

The results of research on nutritional behavior of mothers of toddlers who experience stunting before and after being given education on Family Awareness of Nutrition (KADARZI) in the treatment group, most of the mothers of toddlers who experience stunting have adequate/medium nutritional behavior before being given education and have good nutritional behavior after being given education. The impact of inadequate nutritional intake on stunted toddlers results in toddlers having a high risk of experiencing stunting and having a negative impact on the toddler's development. According to Al et al.,[8] previous behavior is behavior that has often been carried out in the past directly or indirectly which has an impact on the possibility of behavior that improves health status. Behavior during pregnancy is supported by the mother's attitudes and knowledge about her pregnancy. Mothers who have insufficient knowledge and attitudes regarding nutritional requirements, sanitation factors and environmental cleanliness can affect the health of pregnant women and the growth and development of the fetus during pregnancy.

Stunting is caused by multi-factors, maternal factors including poor nutritional status of the mother during pregnancy, short stature of the mother, and poor parenting patterns, especially regarding the behavior and practices of feeding children.[9, 10] The cause of stunting is not only due to insufficient food but also due to disease. Children who receive good food but often suffer from infectious diseases can suffer from stunting, so it is important to empower family behavior in nutritional and health intake.[11]

Toddlers who experience stunting will increase the risk and hamper the child's growth and development. One of the direct causes of stunting is inadequate nutritional intake and a history of infectious diseases, while the indirect factors are parental knowledge about nutrition, parental education, parental income and number of family members. Stunting can be prevented by several things such as providing exclusive breastfeeding, consuming a variety of foods, getting used to PHBS, doing physical activity, giving supplements to toddlers and monitoring children's growth and development regularly.[12]

Stunting (Short Toddlers) is a toddler with nutritional status based on length or height according to age when compared with WHO standard standards, the Z-score value is less than -2SD and is categorized as very short if the Z-score value is less than -3SD.[13] Stunting incidents have impacts that are divided into two, namely, long-term and short-term impacts. To reduce the impact of stunting incidents, stunting prevention is carried out, one of which is for pregnant women to prevent a lack of stunting prevention behavior by providing Nutrition Aware Family education (KADARZI) so that after education, mothers' behavior towards stunting prevention can be improved.[13]

Mothers who have toddlers who experience stunting in Madura, Indonesia have inadequate behavior before being given Nutrition Aware Family Education (KADARZI), where they have no knowledge and lack of behavior regarding stunting prevention and do not realize that at the time of the research the village was becoming a special location for stunting so not implementing Family Awareness of Nutrition (KADARZI) towards stunting nutritional behavior is still lacking. The frequency of respondents based on age showed that more than half were mothers aged 20-35 years.

The results of the research show that maternal nutritional behavior before the Family Awareness of Nutrition (KADARZI) education tends to be adequate or even inadequate, becoming a factor that can hinder the prevention of stunting so that it cannot prevent the incidence of stunting which is still increasing. This also needs to be paid attention to by health workers, especially midwives and village nurses who are closer to the community, especially mothers who have stunted toddlers in villages, to try to improve maternal nutritional behavior in preventing stunting.

4.2 Nutritional behavior of stunted mothers of toddlers before and after being given nutrition awareness family education (KADARZI) in the control group.

The results of research on the nutritional behavior of mothers of toddlers who experienced stunting before and after being given the Family Awareness of Nutrition (KADARZI) education in the control group, most of the mothers of toddlers who experienced stunting before being given the education had adequate nutritional

behavior, whereas after being given the education had adequate nutritional behavior or no changes.

Health behavior is an activity carried out by someone that will have a positive or negative impact on their health status.[14] Decreased productivity and work capacity can be detrimental to the sustainability of a country. Therefore, real interventions are needed that can stop the increase in the incidence of stunting. The government implements the Nutrition Aware Family Program (Kadarzi) to resolve nutritional problems in Indonesia. If the Kadarzi program runs well and covers all levels of society, it will have a big impact in reducing the incidence of stunting. This research is in accordance with research conducted by Khasanah et al.,[15] because this program aims to ensure that each family member has balanced nutritional behavior, can identify health and nutritional problems, and carry out strategies for handling the problems they face. According to this research, stunting can be caused by very diverse factors, from the condition of the mother or mother-to-be, fetal period and infancy/toddler period or in line with the period of the first 1000 days of life (1000 HPK). The 1000 HPK period is a golden period as well as a critical period for a person. The health and nutritional conditions of the mother before and during pregnancy, the mother's body posture, the distance between pregnancies which tend to be close together, the mother being a teenager and inadequate nutritional intake during pregnancy affect fetal growth and the risk of stunting.[16]

Mother's behavior after providing Nutrition Aware Family education (KADARZI) shows that mother's behavior continues to improve with increasing knowledge and attitudes of mothers towards stunting toddlers. It can be seen from the research results that it reaches the good category, with the implementation of Nutrition Aware Family education (KADARZI). The frequency of respondents based on mother's education shows that more than half are middle school and high school students.

4.3 Differences in mother's nutritional behavior among toddlers who experience stunting after being given family awareness of nutrition education (KADARZI) in the control and treatment groups

The results of the research from the Wilcoxon test analysis of the influence of Nutrition Aware Family Education (KADARZI) on the nutritional behavior of mothers of toddlers who experience stunting show significant changes, which means that there is an influence of the average score of KADARZI education on the nutritional behavior of mothers of toddlers who experience stunting before and after being given Nutrition Awareness Family Education (KADARZI). This shows that after being given education, Family Awareness of Nutrition (KADARZI) can increase knowledge and behavior regarding maternal nutritional behavior.

Based on the Man-Whitney results, it shows that the average score of nutritional behavior after the Family Aware of Nutrition (KADARZI) education was carried out in the control and treatment groups, namely the results of the analysis found that there was a significant difference between the nutritional behavior of mothers of toddlers who experienced stunting after being given the Family Aware education. Nutrition (KADARZI) in the control and treatment groups.

Behavior can be said to be a form of social action carried out by individuals in carrying out social processes and social interactions regarding the social environment that occurs in society. Where the implementation itself can occur in the form of closed (covert behavior) or open (overt behavior).[16] The results of a research journal by Waliulu et al.,[17] show that there is a difference in the mean knowledge and efforts to prevent stunting before and after education.

After this good knowledge is formed, the community will know, be willing and able to carry out stunting prevention behavior. The form of health promotion that can be carried out is through health education about stunting using effective health promotion media so that targets can increase their knowledge which ultimately is expected to change their behavior in a positive direction towards health.[16]

The results of the research from the Wilcoxon test analysis of the influence of Nutrition Aware Family Education (KADARZI) on the nutritional behavior of mothers of toddlers who experience stunting show significant changes, which means that there is an influence of the average score of KADARZI education on the nutritional behavior of mothers of toddlers who experience stunting before and after being given Nutrition Awareness Family Education (KADARZI). This shows that after being given education, Family Awareness of Nutrition (KADARZI) can increase knowledge and behavior regarding maternal nutritional behavior.

Stunting can have an impact on disrupting the process of brain growth and development, which will

affect children's cognitive abilities in the short term and in the long term will reduce the capacity for better education and lose job opportunities with better income.[3] Various other studies confirm that the impacts that can result from stunting are divided into two. Short-term impacts that can occur are an increase in the incidence of illness and even death, non-optimal development of verbal abilities, cognitive and motor skills which also cannot develop optimally, as well as an impact on the family economy because stunting can cause an increase in health costs. Long-term impacts that will occur include children's body posture not being optimal as an adult and tending to be shorter compared to other children with adequate nutrition, the risk of obesity and other diseases will also increase in children who experience stunting, the health of the reproductive system will decrease, capacity learning and performance are not optimal during school, and work capacity and productivity are not optimal.[15]

The research results of Rita Kirana, Aprianti,[15] of Independent Sample T Test statistical analysis show that the average value of mothers' knowledge before being given health education, both using PPT and using leaflet media, shows that there is no significant difference in the average knowledge of stunting in PPT group and leaflet group. Thus, these two groups meet the requirements for health education interventions. The results of this research can contribute to the development of midwifery science, especially in child care related to stunting and nutritional status.

Mothers who have stunted toddlers in Madura, Indonesia before providing the Family Awareness of Nutrition (KADARZI) education, have adequate behavior for stunted toddlers, such as not giving exclusive breast milk to babies, not weighing them regularly, not consuming iodized salt, and mothers not giving a variety of foods, not consuming FE tablets given by health workers or village midwives.[18] After providing Family Aware Nutrition education (KADARZI) regarding maternal nutritional behavior for toddlers who were stunted, there was an increase.

The research was conducted in Madura Indonesia with the help of midwives and village nurses by attending posyandu which was held every month and presenting mothers with stunting toddlers in each hamlet. The mother was given education with the previous guidance from the midwife to take part in the Family Awareness of Nutrition (KADARZI) education which will be provided by the researcher. The education provided uses lecture and leaflet methods. The mother and one of the families listened and asked the researcher actively. Before the education was carried out, mothers were given a questionnaire first to measure their knowledge and behavior. Before and after the education, they were given another questionnaire to review the education that had been given by researchers to determine the increase in maternal knowledge and behavior regarding maternal nutritional behavior in stunted toddlers.

The respondent mothers showed good changes in behavior after providing the Family Awareness of Nutrition (KADARZI) education. This confirms research that before providing education, mothers who had behavior tended to be moderate or even less able to influence the incidence of stunting or even increase the incidence of stunting. The frequency of respondents based on occupation shows that the majority are housewives (housewives). Providing Nutrition Aware Family education (KADARZI) by involving one family member helps improve the mother's behavior towards stunting prevention. So that mothers are more aware of stunting prevention and can help reduce the stunting rate in Madura Indonesia which will be the locus (special location) for stunting in 2023, apart from the role of the family, the role of health workers is also very necessary to continue to provide appropriate education and direction on preventing stunting so that it can reduce the incidence of stunting.

5. CONCLUSION

Based on the results of research conducted regarding the influence of Nutrition Aware Family Education (KADARZI) on the nutritional behavior of mothers of toddlers who experience stunting in Madura, Indonesia, it is in the good category after receiving education. Education is one of the efforts to reduce stunting. The more families know the importance of nutrition for babies, the smaller the spread of stunting.

Conflict of Interest

There is no conflict of interest in this research, this research is for education for families (mothers) in minimizing the occurrence of stunting.

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