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Path Analysis Model of the Influence of Mother's Education and Employment on Stunting through Family Health Behavior as a Mediation Variable

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ABSTRACT

Stunting is one of the health problems that is still a serious concern that has an impact on the growth and development and quality of life of children in the long term. WHO states that this condition is characterized by disturbances in the growth and development of children's physical, cognitive, and productivity. The condition of stunting in toddlers can be influenced by various factors, both direct and indirect factors. Maternal characteristics such as education and employment levels are important factors that can affect family health parenting patterns and behaviors which ultimately impact the nutritional status of children. This study aims to analyze the influence of maternal education and employment levels on the incidence of stunting in toddlers through family health behavior as a mediating variable. This study uses a quantitative approach with an observational analytical research design. The research sample was mothers who had toddlers who were selected using sampling techniques that were in accordance with the research criteria. Data collection was carried out through the distribution of questionnaires in a structured manner. Data analysis was carried out using path analysis to determine the direct and indirect influence between the variables studied. The results of the study show that maternal education and maternal work have a significant influence on family health behavior and the incidence of stunting in toddlers. The amount of direct influence of maternal education on stunting was 0.227, while the indirect influence mediated by family health behavior on stunting was 0.049. The magnitude of the direct influence of maternal work on stunting was 0.556, while the indirect influence mediated by family health behavior on stunting was 0.071. So that the total influence of maternal education and maternal work on the incidence of stunting was 0.376 and 0.627 respectively.

Keywords: Family Health Behavior, Mother's Education, Mother's Employment, Path Analysis Model, Stunting.

1. Introduction

Stunting is one of the chronic nutritional problems that is still a big challenge in health development, especially in developing countries [1], [2]. Stunting is defined as a condition of failure to grow in children under five due to chronic malnutrition that lasts for a long time, especially in the period of the First 1,000 Days of Life (DoL) [3]. This condition is characterized by the length or height of the child who is below the age standard. The impact of stunting is not only physical, but also affects cognitive development, productivity in adulthood, and increases the risk of non-communicable diseases [4].

In Indonesia, the prevalence of stunting is still relatively high compared to the standards set by the World Health Organization. Various efforts have been made by the government through specific and sensitive nutrition intervention programs, but the reduction of stunting rates still faces various obstacles.

This shows that stunting is a complex and multidimensional problem, which is not only influenced by nutritional intake factors alone, but also by social, economic, and behavioral health factors in the family.

One of the important factors that affect a child's nutritional status is the characteristics of the mother, especially education level and employment status. Maternal education has a very crucial role in determining childcare patterns, including in terms of food selection, breastfeeding practices, and the use of health services [5]. Mothers with higher levels of education tend to have better knowledge about nutrition and health, so they are able to make more informed decisions in maintaining the health of their children. On the other hand, low maternal education is often associated with limited knowledge and access to information, which ultimately has an impact on increasing the risk of stunting in children.

In addition to education, the employment status of mothers is also an equally important factor. Working mothers have the potential to increase family income, which can have a positive impact on meeting children's nutritional needs [6]. However, on the other hand, the mother's involvement in work can also reduce the time available for direct childcare, including in feeding practices and attention to the child's health. This condition indicates a complex relationship between maternal employment status and stunting events, which can be positive or negative depending on the social context and environmental support that exists.

In this context, family health behavior is a very important mediating factor to study. Family health behaviors include various aspects, such as diet, environmental cleanliness, sanitation practices, utilization of health facilities, and childcare patterns. This behavior is the result of the interaction between knowledge, attitudes, and socioeconomic conditions of the family. Mothers with good education tend to have better health behaviors, which can ultimately lower the risk of stunting in children [7]. Similarly, a mother's employment status can affect family health behavior, both through increased economic resources and changes in time patterns and attention to children.

The path analysis approach is a relevant method to be used in studying the complex relationships between these variables. Through path analysis, it can be found that the direct and indirect relationship between maternal education and maternal employment status on stunting incidence can be seen, with family health behavior as a mediating variable. This approach allows researchers to understand the underlying mechanisms of stunting more comprehensively, so as to provide a clearer picture of the most influential factors.

This research is planned to be carried out in West Lombok Regency, which is one of the areas in West Nusa Tenggara Province with stunting problems that are still a concern [8]. The diverse socio-economic conditions of the community, as well as differences in access to health services and education, make West Lombok Regency a relevant location to study the factors that affect the incidence of stunting. In addition, research at the regional level is essential to produce recommendations that are more contextual and in accordance with the needs of local communities.

Research on the relationship between maternal education, employment status, and stunting has actually been conducted. However, most of the research still focuses on the direct relationship between variables, without considering the role of mediating variables such as family health behaviors. In fact, family health behavior is a key factor that bridges the influence of socioeconomic factors on children's nutritional status [9][10]. Therefore, research is needed that is able to integrate these various factors in one comprehensive analysis model.

Based on this description, this study aims to analyze the influence of education and maternal employment status on the incidence of stunting in toddlers through family health behavior as a mediating variable in West Lombok Regency. In particular, this study also aims to examine the influence of maternal education and maternal employment status on family health behavior, analyze the influence of family health behavior on stunting incidence, and identify direct and indirect influences between education and maternal work on stunting incidence through a pathway analysis approach. Thus, the results of this study are expected to contribute to the development of more effective intervention strategies, not only focusing on nutritional aspects, but also on improving maternal education, family economic empowerment, and improving health behaviors in the family to reduce stunting rates in a sustainable manner.

2. Methods

This type of research is quantitative research [11]. The method of this study using the survey method is a data collection method that uses questionnaire instruments to get responses from respondents who are research samples. The population in this study is all mothers who have toddlers aged 0 –59 months who live in West Lombok Regency. The sample in this study amounted to 75 respondents who were selected using the purposive sampling technique. This technique is used with the consideration that not all members of the population meet the research criteria, so the researcher sets certain criteria in the selection of respondents. The inclusion criteria in this study include mothers who have toddlers aged 0–59 months and are domiciled in West Lombok Regency.

The data collection method used in this study is a questionnaire. In this study, data was obtained by visiting all respondents and providing questionnaires or questionnaires for respondents to fill out, then respondents filled in the answers to questions in the questionnaire, and collected the questionnaires that had been filled out. In this study, purposive sampling was used, namely by providing limited limits to respondents who met the criteria.

The variables in this study consist of independent, dependent, and mediation variables. The independent variables are the mother's education and the mother's work. The dependent variable is the incidence of stunting in toddlers, while the mediating variable is family health behavior. Maternal education is defined as the last level of formal education that the mother has completed, while maternal employment is the status of the mother's employment whether working or not working. Family health behavior is any form of family actions or habits related to efforts to maintain and improve health, such as diet, environmental cleanliness, and the use of health care facilities.

In this study, the data analysis technique used is a validity and reliability test. In the Classical Assumption Test, there are Normality Tests, Multicollinearity Tests and Heterogeneity Tests and Path Analysis to test correlation, regression and path analysis so that it can be known to arrive at the last dependent variable, either through the direct path or through the intervening variable [12].

3. Results and Discussion

3.1. Validity and Reliability

The data obtained was tested for validity and telability. The validity test is used to find out and test the accuracy and determination of a research measuring instrument, while the reliability test is used to find out whether the questionnaire used in the research is reliable or not. Based on the results of the analysis, each variable has met the validity and reliability tests so that further testing can be carried out, namely the classical assumption test [13].

3.2. Classic Assumtion Test

This test is carried out because it is a requirement for track analysis. This classical assumption analysis consists of normality tests, heterokedasticity tests, autocorrelation tests, and multicollinearity tests. The test results can be seen as follows:

3.2.1. Normality Test

The normality test is intended to test whether in the regression model the residual value has a normal distribution or not. The data is declared to be normally distributed, if the significance is > 0.05 [14].

Table 1. Results of the Normality Test Analysis

Model	Kolmogorov-Smirnova	
	df	Sig.
Mother's Work	75	.071
Mother's Education	75	.372
Case Behavior. Family	75	.052
Stunting	75	.532

a. Lilliefors Significance Correction

Based on the results of the normality test using the Kolmogorov-Smirnov method with Lilliefors correction, it was obtained that all variables had a value of Sig. > 0.05. The Mother's Work variable had a Sig. value of 0.071, Mother's Education of 0.372, Family Health Behavior of 0.052, and Stunting of 0.532. The results above show that all significance values are > 0.05, so it can be concluded that the data on each variable is normally distributed.

3.2.2. Multicollegiate Test

This multicollinearity test was performed to show that there is a strong linear relationship between several variables in the regression model. Where if the VIF value is < 10, then there is no multicollinearity problem [15].

Table 2. Results of the multicollegiate test analysis model 1

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Mother's Work	.854	1.171
	Mother's Education	.854	1.171

a. Dependent Variable: Case Behavior. Family

Based on the results of the analysis in Table 2 above, it can be seen that the VIF value of the overall variable is less than 10, so it can be concluded that there is no problem of multicollinearity.

Table 3. Results of the multicollegiate test analysis of model 2

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Mother's Work	.840	1.191
	Mother's Education	.833	1.200
	Case Behavior. Family	.970	1.031

a. Dependent Variable: Stunting

Based on the results of the analysis in Table 3 above, it can be seen that the VIF value of the overall variable is less than 10, so it can be concluded that there is no multicollinearity problem.

3.2.3. Heteroscedasticity Test

The heterokedasticity test aims to test whether in the regression model there is variance disparity from one observation to another. A good regression model should not have heteroscedasticity. To detect the presence or absence of heterokedasticity, it can be seen by using the Glijser test [16].

Table 4. Results of the analysis of the heteroscedasticity test model 1

Model		t	Sig.
1	(Constant)	5.455	.000
	Mother's Work	1.237	.220
	Mother's Education	-.021	.983

a. Dependent Variable: abs_res

Table 4 above shows that the data does not show symptoms of Heteroscedasticity because the Variables of Work and Maternal Education show a significance value of > 0.05 which means that the Heteroscedasticity assumption test has been met.

Table 5. Results of the analysis of the model 2 heteroscedasticity test

Model		t	Sig.
1	(Constant)	3.235	.002
	Mother's Work	.058	.954
	Mother's Education	1.591	.116

Model		t	Sig.
	Case Behavior. Family	.658	.513
a. Dependent Variable: abs_res2			

Table 5 above shows that the data do not show symptoms of Heteroscedasticity because the Variables of Employment, Maternal Education, and Family Health Behavior show a significance value of > 0.05 which means that the Heteroscedasticity assumption test has been met.

3.3. Path Analysis Model

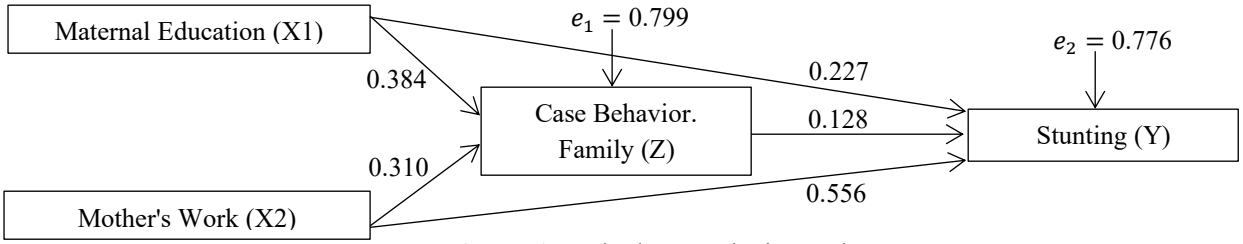

Figure 1. Path chart analysis results

Figure 1 shows the value of the path coefficient for each dependent variable. Thus, the sub-structure equation for the above path diagram can be formulated as follows.

Model 1 $(Z) = 0.384X_1 + 0.310X_2 + e_1$ (1)
Model 2 $(Y) = 0.227X_1 + 0.556X_2 + 0.128Z + e_2$ (2)

Based on the above equation, the standardized coefficient analysis for each model can be explained as follows:

Model 1 Regression Analysis (Z)

In Model 1 (Z), the coefficient value for the positive X_1 variable of 0.384 indicates a positive relationship. This explains that if the variable X_1 increases, the variable Z becomes an increase assuming that the other variable is constant. Furthermore, the value of the coefficient for the positive X_2 variable of 0.310 indicates a unidirectional relationship. If the variable X_2 increases then the variable Z also increases assuming the other variable is constant. In Model 1 (Z), it is known that the variable X_1 has a greater influence on the variable Z, because it has the largest coefficient value.

Model 2 Regression Analysis (Y)

In Model 2 (Y), a positive variable coefficient value of X_1 was obtained of 0.227, indicating a unidirectional relationship. If the variable X_1 increases then the variable Y will increase assuming the other variable is constant. Furthermore, in the X_2 variable, a positive coefficient value of 0.556 was obtained, indicating a unidirectional relationship. If the variable X_2 increases then the variable Y will also increase assuming the other variable is constant. Then for variable Y, a positive coefficient value of 0.128 was obtained, indicating a unidirectional relationship. This explains that if the Z variable increases, the Y variable also increases with other variables being constant. In Model 2 (Y), it is known that the variable X_2 is the variable that has the most influence on the Y variable, because it has the highest coefficient value compared to other variables.

3.4. Hypotesis Test (T Test)

Table 6. Testing Research Hypotheses

Hipotesis	Variable Relationships	Standardized Coefficient	Sig-value	Say. α	Conclusion
1	$X_1 \rightarrow Z$	0.384	0.001	0.05	Positive - Significant
2	$X_2 \rightarrow Z$	0.310	0.006	0.05	Positive – Significant
3	$X_1 \rightarrow Y$	0.227	0.047	0.05	Positive – Significant
4	$X_2 \rightarrow Y$	0.556	0.009	0.05	Positive – Significant
5	$Z \rightarrow Y$	0.128	0.337	0.05	Positive – Insignificant

Based on the results of the analysis in the table above, it is known that maternal education has an influence on family health behavior with a *standardized coefficient* value of 0.384 and a significance value of 0.001. The positive coefficient value shows that the relationship that occurs is unidirectional, that is, the higher the mother's level of education, the better the family health behavior that is applied. In addition, based on the stipulated that the value of Sig. 0.001 < 0.05 (Sig. tolerance), it can be concluded that the effect is significant. This shows that maternal education is an important factor in shaping family health behavior, because mothers with higher levels of education tend to have better knowledge about healthy lifestyles, sanitation, nutritional fulfillment, and disease prevention in the family.

Furthermore, mother's work also showed an influence on family health behavior with a standardized coefficient value of 0.310 and a significance value of 0.006. A positive coefficient value indicates that the better or more stable the mother's work, the better the family's health behavior also tends to be. Based on the results of the significance test, a value of Sig. 0.006 < 0.05 was obtained, so it can be concluded that the effect is significant. This shows that mother's work not only plays a role in improving family economic conditions, but also has an impact on the family's ability to implement healthy living behaviors, such as fulfilling balanced nutrition, access to health services, and implementing a clean and healthy lifestyle in daily life.

Maternal education is one of the factors that has an impact on the quality of parenting and the fulfillment of children's nutritional needs. based on the results of the analysis in Table 6 above, it shows that maternal education has a significant effect on the incidence of stunting in toddlers with a Sig. value of 0.047 and a positive standardized value of 0.227. Therefore, according to the stipulated provisions, the Sig-value is $0.047 < 0.05$ (Sig. tolerance) which proves a significant influence. The results of this study support the research (Irawan et al) (Rahayu) that maternal education has a significant effect on stunting incidence. This shows that maternal education is one of the important elements that need to be considered in the prevention of stunting in toddlers.

Furthermore, maternal work on stunting incidence showed a standardized coefficient value of 0.556 with a significance value of 0.009. A positive coefficient value indicates that there is a one-way relationship between maternal work and stunting incidence, while a Sig. value of 0.009 < 0.05 indicates that the effect is significant. Thus, mother's work has a significant effect on the incidence of stunting in toddlers. The magnitude of the coefficient value shows that the mother's work variable has a fairly strong influence compared to other variables in this model. This shows that mothers' work conditions can affect the family's ability to meet children's nutritional needs, both through increased income and access to health resources.

However, the results of the analysis showed that family health behavior (Z) to the incidence of stunting (Y) had a standardized coefficient value of 0.128 with a significance value of 0.337. Although the coefficient value indicates a positive relationship direction, the Sig. value is 0.337 > 0.05 (Sig. tolerance), so it can be concluded that the effect is not significant. This shows that in this study, family health behaviors have not been proven to directly affect the incidence of stunting in toddlers. In other words, although family health behaviors are important, their influence on stunting is not statistically strong enough in the models used.

Based on the results of testing the research hypothesis above, maternal education (X_1) and maternal work have a positive influence on stunting (Y). The magnitude of the direct influence between (X_2) maternal education (X_1) on stunting (Y) was 0.227. Meanwhile, to find out the indirect influence, it can be multiplied between the beta value of maternal education (X_1) on family health behavior (Z) and the beta value of family health behavior (Z) on stunting (Y) namely: $0.384 \times 0.128 = 0.049$. So the total influence of maternal education (X_1) on the incidence of stunting (Y) can be known by summing the direct and indirect influences, namely: $0.384 + 0.049 = 0.433$.

The magnitude of the direct influence between mother's work (X_2) on stunting (Y) was 0.556. Meanwhile, to find out the indirect influence, it can be multiplied between the beta value of the mother's work (X_2) on family health behavior (Z) and the beta value of family health behavior (Z) on stunting (Y), namely: $0.556 \times 0.128 = 0.071$. Thus, the total influence of the mother's work (X_2) on the incidence of stunting (Y) can be known by summing the direct and indirect influences, namely: $0.556 + 0.071 =$

0.627. Overall, the results of this study show that maternal education and maternal work have a significant influence on both family health behavior and stunting incidence. Maternal education plays a role in increasing knowledge and awareness of the importance of health, while maternal work contributes to improving economic conditions and access to health resources. Meanwhile, family health behavior, although it has a positive relationship with stunting incidence, does not show a significant effect. The results of this study imply that stunting prevention efforts need to be carried out comprehensively by paying attention to the education and work factors of mothers as the main determinants. Intervention programs that focus on improving women's education and family economic empowerment are expected to have a more effective impact in reducing stunting rates in toddlers. In addition, although family health behaviors were not proven to be significant in this study, they still need to be considered as part of promotive and preventive efforts in improving the overall health of the community.

4. Conclusion

Based on the results of the data analysis carried out, it can be concluded that maternal education and maternal work have a significant influence on family health behavior and the incidence of stunting in toddlers. Maternal education has proven to play an important role in shaping family health behavior, where the higher the level of maternal education, the better the implementation of a healthy lifestyle, nutritional fulfillment, and efforts to prevent diseases in the family. In addition, maternal education also has a significant effect on the incidence of stunting, which shows that higher levels of education allow mothers to have better knowledge and awareness in caring for and meeting children's nutritional needs. Maternal work also shows a significant influence, both on family health behavior and on stunting incidence, with a relatively greater contribution than maternal education. This indicates that the economic aspect resulting from mother's work also determines the family's ability to provide nutritional needs and access to health services for children.

However, family health behaviors did not show a significant influence on stunting incidence, although it had a positive relationship direction. This shows that in this study, family health behavior has not been able to directly affect the incidence of stunting statistically, so there is a possibility that there are other factors that are more dominant, such as environmental conditions, sanitation, or other socioeconomic factors. In addition, the results of the analysis also showed that the total influence of maternal education and maternal work on stunting incidence was greater than the direct influence, which indicated an indirect contribution through family health behavior, although not significant. Therefore, efforts to prevent stunting need to be carried out comprehensively by focusing on improving maternal education and family economic empowerment, accompanied by strengthening health education programs to improve the quality of life and nutritional status of children in a sustainable manner.

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