



Influence of Mother's Characteristics and Self-Determination on Stunting Toddler Care Behavior Using Partial Least Square Model



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Authors

Habibbarrahman S.N.I.¹ MSc

Yusriani Y.^{1*} PhD

Alwi M.K.¹ PhD

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¹ Department of Public Health, Faculty of Public Health, University Muslim Indonesia, Makassar, Indonesia

*Correspondence

Address: Jl. Urip Sumohardjo Km. 05 Campus II UMI, Makassar City, South Sulawesi, Indonesia. Postal Code: 90-231

Phone: +6285255997212

Fax: 425-606

yusriani.yusriani@umi.ac.id

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ABSTRACT

Aims The objective of this research was to examine whether there exists a correlation between certain attributes of a mother and her determination to make decisions independently and how these factors impact her actions toward stunted toddlers.

Instrument & Methods A quantitative approach with a cross-sectional design was utilized in the work area of the Manuju Health Center from January to March 2023. By census method, the sample size was determined to be 102. Data was collected using a combination of interviews, observations, and questionnaires.

Findings Knowledge, intrinsic motivation, extrinsic motivation, and amotivation had significant effects on the stunting toddler care behavior ($\chi^2=83.95$; $df=8$; $p<0.001$). The coefficient of determination indicated that 75.8% of the stunting toddler care behavior was influenced by knowledge, intrinsic motivation, extrinsic motivation, and amotivation. The characteristics had no significant effect on behavior ($p=0.576$), but the motivation had a direct significant effect on behavior ($p<0.001$).

Conclusion Intrinsic and extrinsic motivation are the most influential parameters in stunting toddler care behavior.

Keywords Stunting; Knowledge; Self Determination; Toddler Care Behavior

CITATION LINKS

[1] Factors associated with the incidence of stunting ... [2] The WHO child growth ... [3] The influence of audiovisual media counseling on knowledge of stunting prevention among pregnant women in Cibatok 2 ... [4] Indonesian Ministry of Health. Book for Monitoring Nutritional Status about the Results of Monitoring ... [5] Dietary diversity, dietary patterns and dietary intake are associated with stunted children in Jeneponto ... [6] Buku Saku Pemantauan Status Gizi Tentang Hasil Pemantauan Status Gizi, Kementrian Kesehatan ... [7] Pusat Data dan informasi Kementrian ... [8] Under-five anemia and its associated factors with dietary diversity, food security, stunted, and deworming in Ethiopia: Systematic review and ... [9] Program kemitraan masyarakat kelompok petani dalam penerapan diversifikasi produk olahan daun kelor ... [10] Hubungan karakteristik ibu dengan kejadian stunting baduta (7-24 Bulan) ... [11] Duodenal microbiota in stunted undernourished children ... [12] Trends and patterns of stunted only and stunted-underweight children in Malawi ... [13] Health-promoting behaviors and menopausal symptoms ... [14] Pengaruh Penggunaan Media terhadap Pengetahuan Ibu dalam Pelaksanaan Inisiasi ... [15] Relationship of mother factors and stunting incidence in children (24-59 months) in Buniwangi village, ... [16] Analysis of factors related to the motor development of stunted toddlers in South Halmahera Regency ... [17] Determinants of stunting prevention among mothers with children ... [18] Determinants of stunted children in Indonesia: A multilevel analysis ... [19] Textbook of health promotion and community ... [20] The relationship between parenting styles and the nutritional status of toddlers aged 12-59 months working area of the Kalirungkut ... [21] The role of health workers in implementing of childbirth planning and compl cat on prevent ... [22] Amino Acid Digestibility of Extruded Chickpea and Yellow Pea Protein is High and Comparable in Moderately Stunted South Indian Children with ... [23] Determinants of low birth weight and its relationship with stunted toddler ... [24] Community partnership program for cadre groups in preventing stunting through promoting ... [25] Why is the private forest program stunted in ... [26] Duodenal microbiota in stunted undernourished children ... [27] Ecological analysis of stunted toddler in ... [28] Regional disparities of stunted toddler in ... [29] Stunted from the start: Early life weather conditions and child undernutrition ... [30] Determinants of stunted children in Indonesia: A multilevel analysis at the individual, household, and ...

Introduction

The toddler stage is a period of rapid growth and development within a short period. From the first day of pregnancy until age 2, this phase is commonly called the "golden period" or "critical period". During this time, toddlers are highly sensitive to their surroundings, necessitating increased attention, particularly regarding nutritional needs. Failure to meet these needs can impede a child's growth and development. Approximately 144 million children under the age of five are stunted on a global scale. The World Health Organization (WHO) has compiled data on the prevalence of stunting in children under five and determined that Indonesia has the third-greatest prevalence rate in Southeast Asia, with an average prevalence rate of 36.4% between 2005 and 2017. In 2017, 9.8% of infants aged 0 to 59 months in Indonesia were severely underweight, while 19.0% were stunted. Following East Timor and India, Indonesia ranks third in Southeast Asia in terms of the prevalence of stunting. Although the percentage of stunted children in Indonesia has decreased from 37.8% in 2013 to 27.67% in 2019, this figure is still quite significant [1].

According to data from the WHO in 2018, the prevalence of diminutive toddlers in Southeast Asia was high between 2005 and 2017. East Timor ranked first in this region with a prevalence of 50.2%. India came in second with a prevalence of 38.4%, followed closely by Indonesia in third with 36.6%. Observing the 2018 Basic Health Research (Riskesdas), Indonesian infants' nutritional status has improved from 2013 to 2018. The prevalence of stunting has decreased from 37.2% to 30.8% of the global population. However, it is essential to note that this number remains relatively high, as a prevalence of 20% or higher is considered a serious public health concern. Therefore, Indonesia's large percentage of short infants is an urgent health concern requiring intervention [2].

According to the data provided by the Central Bureau of Statistics, Indonesia's total population has increased by 32.56 million since 2010. In addition, approximately 70.72 percent of the population is comprised of those who are of productive age. This productive age range is vital to the advancement of the Indonesian economy and presents an opportunity for Indonesia to become a global economic superpower by 2030. Nonetheless, if Indonesia continues to struggle with the problem of stunting, the utilization of this opportunity may be hampered. According to data from the Directorate General of Development, the prevalence of stunting among children in Indonesia continues to be alarmingly high, with 14 million cases reported. According to Balitbangkes, there is a 27.7% national prevalence rate for stunting, which supports this [3, 4]. In 2016, 35.6% of minors in South Sulawesi were found to have stunted growth. In 2017, however, the

percentage decreased slightly, falling to 34.8%. Unfortunately, the incidence of stunting rose to 35.7% in 2018, a new high. These statistics demonstrate that the prevalence of stunting in South Sulawesi is still considerably higher than the standards set by the provincial administration (1.2% of the population) and the World Health Organization (20% of the total population). According to the 2017 Nutritional Status Monitoring (PSG), malnutrition in South Sulawesi was 34.8%.

Notably, certain districts within South Sulawesi reported particularly high rates of stunting, including Enrekang District (45.9%), Sinjai (43.7%), Tana Toraja (43%), Pangkajene (41.9%), Maros (41.2%), and Bone (40.1%). Other districts, such as Bantaeng (38.1%), Soppeng (38.7%), Gowa (36.8%), and Takalar (33.3%), were classified as having high prevalence. In terms of progress, Makassar City (25.2%) and East Luwu (22.1%) have almost achieved the target set by the World Health Organization, which is below 20% [4-6].

According to the explanation, the initial data collected from the Manuju Health Center work area is as follows: In 2018, there was a single case of stunted growth in children. This number increased to three children in 2019 and significantly rose to 91 children in 2020. Furthermore, the number of stunted children will increase in 2021, reaching 141. As of November 2022, it is estimated that there will be around 102 children who are affected by stunting. In addition to the data, interviews conducted with health workers and the local community in November 2022 revealed various factors contributing to childhood stunting. Among these factors, maternal characteristics play a significant role. For instance, the age range of mothers during pregnancy is typically between 17-24 years. Moreover, the average number of children per mother is three or more. The economic status of these mothers and their families is characterized by a household income below 3,000,000 rupiah. In terms of education, most mothers have completed only elementary or junior high school, with only a few having attained a high school education. Tertiary education is even less common among mothers. It is worth noting that there is a general lack of awareness and knowledge regarding stunting and its treatment among mothers, with some even believing that it is not dangerous.

Given this background, researchers aimed to investigate the influence of maternal characteristics and self-determination on the stunted toddlers' caring behavior by the Partial Least Square model.

Instrument and Methods

A quantitative approach with a cross-sectional design was utilized in the work area of the Manuju Health Center from January to March 2023. The population under study consisted of 102 toddlers identified as

experiencing stunting. By census method, the sample size was determined to be 102.

Data was collected using a combination of interviews, observations, and questionnaires. Primary data was obtained through a questionnaire administered to the respondents. Secondary data was gathered from the Manuju Health Center's monthly nutrition report. In this case, interviews were conducted with mothers who have babies under the age of two and experience stunting to obtain information on data and other necessary information related to the problem under study and being the object of research. Observations were carried out to observe as a whole the object to be studied, namely direct observation of stunting babies and studying matters related to research directly at the research location, namely related to the characteristics of the Manuju Health Center area. Questionnaire sheets were given to mothers of toddlers to find out and analyze stunting and how to deal with it. Data collection using a questionnaire contains how to ask questions that have been prepared in writing by distributing questionnaires and accompanied by alternative answers that will be given to respondents. The number of questions in the questionnaire is 55 items consisting of knowledge variables, 25 items, intrinsic motivation, extrinsic, and amotivation ten items each, and questions about the characteristics of the respondents. The variable assessment process uses a Likert scale, with the highest score being four and the lowest score 1. The assessment category was good if the score was $>62.5\%$ and low if the score was $<62.5\%$.

The study conducted a multivariate test utilizing multiple logistic regression tests due to the categorical nature of the stunted toddlers' caring behavior. Specifically, the multiple logistic regression test employed predictive modeling, which seeks to establish a model incorporating knowledge, intrinsic motivation, extrinsic motivation, and amotivation deemed most effective in forecasting dependent events [7]. The Chi-Square test, the logistic regression model feasibility test, and the coefficient of determination (R^2) were used to analyze the data in SPSS 20 software and PLS (Partial Least Square).

Findings

There was a noticeable disparity between respondents who exhibited caring behavior and those who did not, relating to unfavorable care behavior. Individuals who displayed caring behavior exhibited a higher incidence of poor grooming behavior when coupled with low intrinsic motivation (Table 1).

Table 1. Comparison (Chi-square test) of the frequency of maternal characteristics of samples (n=102)

Parameter	Not Good		Good		p Value
	No.	%	No.	%	
Age					
At risk	17	16.7	7	6.9	0.241
No Risk	44	43.1	34	33.3	
Parity					
High	15	14.7	14	13.7	0.371
Low	46	45.1	27	26.5	
Economic Status					
Low	16	15.7	11	10.8	0.999
High	45	44.1	30	29.4	
Education					
Low	52	51.0	31	30.4	0.3
High	9	8.8	10	9.8	
Knowledge					
Less	43	42.2	8	7.8	0.001
Enough	18	17.6	33	32.4	
Intrinsic motivation					
Less	42	41.2	2	2.0	0.001
Enough	19	18.6	39	38.2	
Extrinsic motivation					
Less	44	43.1	5	4.9	0.001
Enough	17	16.7	36	35.3	
Amotivation					
Less	35	34.3	14	13.7	0.027
Enough	26	25.5	27	26.5	

Knowledge, intrinsic motivation, extrinsic motivation, and amotivation had significant effects on the stunting toddler care behavior ($\chi^2=83.95$; $df=8$; $p<0.001$), and the presented model fit the data ($\chi^2=12.547$; $p=0.128$). The results of the prediction model's accuracy showed that the accuracy level in predicting opportunities for stunting toddler care behavior for poor behavior is 100.0% higher than the prediction accuracy of respondents who have good behavior of 0.0%. Nonetheless, the overall prediction accuracy of the model was 59.8%.

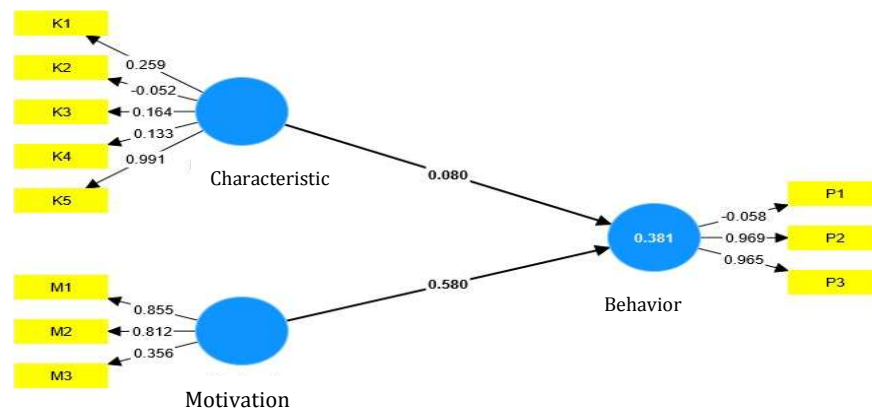


Figure 1. Model PLS Bootstrapping

The coefficient of determination indicated that 75.8% of the stunting toddler care behavior was influenced by knowledge, intrinsic motivation, extrinsic motivation, and amotivation (Figure 1).

The characteristics had no significant effect on behavior (coefficient value=0.08; $p=0.576$), but the motivation had a direct significant effect on behavior (coefficient value=0.58; $p<0.001$; Table 2).

Table 2. Path coefficients

Paths	Original	Mean	SD	t	p
Characteristics -> Behavior	0.080	0.101	0.142	0.559	0.576
Motivation -> Behavior	0.580	0.564	0.082	7.045	0.001
K1 <- Characteristics	0.259	0.233	0.233	1.113	0.266
K2 <- Characteristics	-0.052	0.069	0.324	0.162	0.871
K3 <- Characteristics	0.164	0.085	0.306	0.535	0.593
K4 <- Characteristics	0.133	0.170	0.322	0.414	0.679
K5 <- Characteristics	0.991	0.626	0.601	1.649	0.099
M1 <- Motivation	0.855	0.854	0.044	19.614	0.001
M2 <- Motivation	0.812	0.801	0.063	12.946	0.001
M3 <- Motivation	0.356	0.345	0.162	2.206	0.027
P1 <- Behavior	-0.058	-0.073	0.190	0.304	0.761
P2 <- Behavior	0.969	0.961	0.028	34.22	0.001
P3 <- Behavior	0.965	0.961	0.032	29.925	0.001

Discussion

Mother's self-characteristics are based on age; this means the mother's age when they are ready to carry out caring behaviors for their babies. Teen mothers are still experiencing a period of physical growth, resulting in difficulties for the fetus to get nutrition from the mother because there is competition for nutrients between the mother and the fetus. So that pregnant women have a risk of IUGR, LBW, and short fetuses [8, 9]. Psychologically young mothers have a mindset in the form of immature parenting regarding child nutrition. Meanwhile, mothers who are too old usually have decreased stamina and enthusiasm to care for their pregnancy. A researcher also said that a person's level of maturity will be more mature in thinking. Still, as Verner and Davison stated, six distinct factors can impede adult learning, resulting in a decline in cognitive capacity at certain moments [10].

Parity is high when a woman or mother gives birth to 4th or more children. Children with a higher order of parity, such as fifth, sixth, and so on, are more likely to suffer from nutritional disorders than children 1, 2, and 3. The potential risk to a child arises if there is another birth while the previous child is still drinking breast milk so that the mother's attention turns to the child [11, 12].

According to the other research, this research states that the group of mothers aged less than 20 years has more toddlers who experience stunting. The chi-square test yielded a p-value of 0.003, which indicates statistical significance (<0.05). Consequently, it was determined that there is a significant correlation between maternal age and the prevalence of stunting. This finding aligns with previous research that demonstrated a noteworthy

association between teenage pregnancy and stunting, as opposed to pregnancies at a more mature age. Additionally, another study corroborated these findings by establishing a connection between being too young (Below 35 years) and the incidence of stunting, compared to the optimal maternal age range of 20-35 years [14].

Parity, or the number of births, is closely related to birth spacing. The higher the parity, the shorter the birth spacing. This is not in line with the opinion that children with a higher order of parity, such as the fifth child, are more likely to suffer from nutritional disorders or become stunted than children 1, 2, and 3 [15].

This research was in line with research which said that respondents with low economic status (Income less than the UMK Depok) who had good stunting handling behavior were 12 people (75.0%), and those who had less stunting handling behavior were four people (25.0%). In comparison, respondents with high economic status (Income equal to or above the Depok UMK) who had good stunting handling behavior were five people (100%). The chi-square test is not feasible. The Fisher test was employed to assess the given data, yielding a p-value of 0.532. This result indicates no statistically significant correlation between economic status, as it does not meet the required criteria and behavior in handling stunting in mothers who have toddlers in Cimpaeun Village [16].

According to previous studies, there is a correlation between the educational attainment of mothers and the likelihood of their toddlers experiencing stunting ($p=0.001$). It has been found that higher levels of education positively impact both knowledge and income levels [17,18]. Having a good level of knowledge enables mothers to make informed and appropriate food choices for their children, as well as treat health problems properly, so that you have a greater chance of knowing a healthy lifestyle and how to keep your body fit which is reflected in implementing a healthy lifestyle such as consuming a nutritious diet. Sufficient income allows for a better quality of life [19]. Similarly, a separate study demonstrated an absence of a noteworthy correlation between the knowledge of mothers and the prevalence of stunting in children under the age of five (p value=1.00). Conversely, alternative research demonstrates a connection between a mother's knowledge and her actions in mitigating stunting ($p=0.007$). Yusriani shows that the data analysis results show an increase in knowledge of the sufficient category in the knowledge of pre-test cadres (57.1%) to post-test (85.70%). This shows a change in knowledge before and after being given education [20-22].

The risk of poor pregnancy outcomes is caused by, among others, the short gestation interval (<2 years). Therefore, it is better if the distance between pregnancies is more than two years because it is associated with morbidity and mortality of mothers and children under five [22].

Malnutrition, especially stunting, is more influenced by the socio-economic dimension. In addition, according to Doriza & Mugianti, the likelihood of a child experiencing stunted growth and being underweight is considerably influenced by the economic condition of their household research, which showed a tendency to be stunted [23].

Parents' educational background plays a crucial role in determining the nutritional status of their children. Well-informed parents can access valuable external resources that guide effective parenting practices, particularly in child feeding [24].

Parents with a solid understanding of child nutrition and effective parenting will prioritize fulfilling their children's nutritional needs and providing appropriate parenting daily. A comprehensive knowledge base among parents has a beneficial impact on their parenting practices. This knowledge motivates parents to offer their children the necessary guidance and support throughout their growth and development, resulting in optimal outcomes [25].

If the risk factors that contribute to stunting are not considered, the prevalence of stunting will continue to rise. How toddlers are taught, nurtured, and cared for plays a pivotal role in their growth and development. Any disruptions in the parenting patterns of toddlers can lead to nutritional disorders in their children. Insufficient intake of nutrients can have a detrimental impact on brain development, resulting in impaired cognitive abilities in children. Factors such as inadequate childcare practices due to busy parents, limited access to nutritious food for families, and a lack of clean water and sanitation also play a significant role in stunting [26, 27].

Self-efficacy is a factor from within the mother influencing stunting prevention behavior in toddlers. Good self-efficacy will shape good behavior. Good efficacy will support the formation of good behavior. Mothers who understand that they can do something good will support them in behaving well. On the other hand, for mothers who feel that their abilities are lacking, their self-efficacy is likely lower, so they will make their behavior less good. A mother's self-efficacy in preventing toddler stunting can be observed in how the mother provides a variety of foods, provides adequate food portions according to the toddler's needs, and the mother's confidence in learning to cook nutritious food for toddlers [28].

This research showed that a mother's motivation is very influential in the parenting, compassion, and care for each child that will be given. The incidence of wasting in toddlers is intricately connected to the behavior of mothers in caring for their young ones. Mothers who exhibit positive parenting patterns typically have children with favorable nutritional statuses, while conversely, mothers who employ inadequate nutritional parenting styles often have children with unfavorable nutritional statuses.

According to the researchers' assumptions, it turns out that mothers providing care behavior for their stunted children are not only motivated by the family but extrinsic motivation is also obtained by village midwives, health workers, and cadres because they provide more extrinsic motivation, especially regarding the development of growth and development—his son who is currently stunting.

According to other research, the various roles of health workers (doctors, midwives, nurses, and others) are as communicators. A communicator is a person who provides information to those who receive it. The role of other health workers is as a motivator who motivates other people. The last role is as a facilitator; a facilitator is a person or agency that makes it easy to provide facilities for other people in need. This role influences one's knowledge and attitude [29].

Researchers assume that when there is no supportive motivation from the family, it also underlies the cause of stunting in children; why? because the mother does not get better attention or support from her family or outsiders. The external parties referred to here are midwives and health cadres, Posyandu facilities, and the activeness of mothers in checking their children at the Posyandu so that they can always know and monitor the child's growth and development [30].

Conclusion

Intrinsic and extrinsic motivation are the most influential parameters on stunting toddler care behavior.

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