



Identification of Factors Influencing Stunting in Children from Parent's Perspective

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Abstract

Stunting is a chronic undernutrition in early childhood and Indonesia is still listed as one of the largest stunting percentages in the world with 21.6% in 2023. Indonesia has included stunting as one of its priorities to tackle and encourage many health programs that aim to reduce it. Many of its programs then focus on children but also their parents as parents play an important role in this problem. However, there is still very little research related to what factors influence the parents so their children can avoid stunting. This paper then analyses what factors affect parents particularly stunting with variables related to the perception and behavior of humans which is the Extended theory of planned behavior (TPB). Structural Equation Modelling (SEM) then was used to analyze all the variable's correlations, The results of this study are that there are 4 significant correlations between variables, namely Descriptive Norm has a significant and negative effect on Intention to Use. This study also found that Attitude, Perceived Health Literacy, and Perceived Economic Knowledge had a positive and significant effect. In addition, other findings are that Perceived Usefulness, Perceived Effectiveness, and Perceived Behavioural Control do not have a significant effect on Intention to Use. This paper provides insight into what factors can be focused on stunting programs so they can be more successful in the future.

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Introduction

Data from the Ministry of Health of Indonesia revealed that about a third of nine million children in Indonesia suffered from stunting in 2018 (UNICEF, 2021). Stunting, a form of chronic malnutrition, significantly impairs growth and development in children, affecting both physical and cognitive outcomes. Recognizing the severity of this issue, the Indonesian government implemented the Delivery of Additional Food program at the national level, which includes the distribution of nutritious biscuits to pregnant women and toddlers, with a focus on those suffering from malnutrition. Stunting in toddlers in developing countries, including Indonesia, is tightly connected to malnutrition, as the prevalence of stunting is influenced by long-term nutritional deficiencies. Prolonged malnutrition during toddler age can hinder growth and development, which is observable through metrics such as height and body weight (Satriyono et al, 2023). Therefore, nutritional supplementation during early childhood is essential to mitigate stunting in Indonesia. Numerous clinical and non-clinical studies have investigated effective supplement interventions for stunted populations globally. These interventions often involve micronutrients and vitamin supplementation

delivered directly to toddlers through tablets, supplement drops, and fortified foods (Maulina, 2020). Despite ongoing research efforts, the high prevalence of stunting in Indonesia necessitates continued investigation into effective interventions.

In 2017, the government of Indonesia escalated stunting reduction to a national priority, identifying 100 villages in 10 districts with the highest stunting rates and poverty levels as prioritized areas for intervention. Inadequate nutrient intake is a critical determinant of child stunting and maternal anemia. The WHO/UNICEF Global Strategy for Infant and Young Child Feeding and Indonesia's Balanced Nutrition Guideline emphasizes the importance of locally available nutrient-dense foods to improve nutrition adequacy (Satriyono, 2024). Feasible, accessible, and locally contextual food-based recommendations (FBRs), including complementary feeding recommendations (CFRs), are crucial to achieving adequate nutrient intake. The diverse population of Indonesia, with varying food patterns and availability, poses challenges to ensuring nutrient adequacy from locally available foods (Saputri, 2019).

In 2020, Indonesia ranked 115th out of 151 countries in terms of stunting prevalence based on JME data from UNICEF and the World Bank. According to the WHO classification, Indonesia is still within the high stunting prevalence group (Mitra, 2015). The onset of the COVID-19 pandemic in 2020 exacerbated the situation, with stunting rates in Southeast Asia increasing from 24.7% in 2019 to 38.5%. Consequently, stunting prevalence in Indonesia was also projected to rise in the same year (UNICEF, 2021). A study on the nutritional status of toddlers in 2019 indicated that 18 provinces had stunting prevalence rates above the national average, with the Central and Eastern regions of Indonesia, particularly East Nusa Tenggara (NTT) at 43.82%, being the most affected (Bait et al, 2022).

Research on stunting interventions in Indonesia has primarily focused on improving nutritional intake for stunted toddlers. Strategies generally involve direct nutritional intervention for pregnant women and toddlers through the provision of fortified foods or supplements consumed regularly (Pusat Data dan Informasi Kementerian Kesehatan, 2020). Providing micronutrients, vitamins, and protein supplementation to pregnant women can reduce the risk of infant malnutrition, notably lowering the risk of low birth weight by 16%. Additionally, enhanced complementary feeding combined with nutrition counseling can significantly reduce stunting and malnutrition rates (Badan Pusat Statistik, 2019).

Despite all the research, we are still lacking knowledge in the aspect of parent's and children's behavioral relationship and its effect on stunting. To the best of the author's knowledge, until now there has been very little research that specifically examines the motives for Stunting in childhood, especially from the parent's perspective in Indonesia. Based on the explanation, this paper examines the factors resulting in stunting from the parent's perspective, what factors influence this phenomenon, and how policymakers can use this research to better prepare the stunting program are the questions that make this research important. The results of this study are expected to be the basis of information for policymakers in making rules, especially related to the implementation of the stunting prevention program. Hopefully, by deeply understanding the relationship between parents and children, we can propose a more suitable program to prevent stunting in the future.

Methods

One of the behavioral model theories commonly used in behavior and perception-related research is the Theory of Planned Behavior (TPB). TPB has been used specifically to analyze perception and habits in various studies around the world (Bhutta et al, 2008). Related to Stunting in children, Research by Zhang et al (2010) has developed the TPB variable into variables namely Attitude, Descriptive Norms, Perceived Behavioral Control, and Comfort. This TPB variable can then also be combined with other theories regarding human perception such as the Protection Motivation Theory (PMT). The combination of TPB and PMT can be seen in the study by Prasetyo et al, (2020) which examined the perception of the level of effectiveness of Stunting in childhood in the Philippines. PMT variables are Perceived Effectiveness and Perceived Vulnerability. In addition to TPB and PMT, several studies related to human behavior and psychology show an interesting fact that human psychology is equipped with individual concern (Davis, 1980). All these variables can then be analyzed for correlation with Structural Equation Modeling (SEM) which is an advanced statistical analysis technique related to the relationship between multi-variables in a tested model.

This research then used a modified TPB questionnaire and was given to 240 samples of respondents of parents in rural and urban areas in Solo, Central Java because this area consisted of various cases of high prevalence stunting. The research was conducted from January 2023 to April 2023 The demography was 66% man and 34% woman and after a set of validity and reliability testing, 38 of data was

invalid or unreliable, so the total data of this research was 202 respondents. The research variables for the research are :

Independent Variables: Individual Concern, Perceived Effectiveness, Perceived Economic Aspect, Perceived Social Aspect, Perceived Behavioral Control, Descriptive Norms, Attitude, and Perceived Usefulness. Dependent Variable: Intention to Use preventive measures against childhood stunting. The justification and research of each variable will be explained below:

Research by Erdiaw-Kwasie (2023) states that knowledge about Stunting in childhood, aspects of organizational factors, and the adoption of Stunting in childhood are related. Therefore, this study proposes:

H1: Individual Concern in stunting cases is significantly correlated with intention to use. Research by Nittono, (2016) also emphasizes the importance of forming a perception for everyone that an action, no matter how small, will have an impact and contribute to society at large. This is important because there is a tendency for a person's perception that the larger the scale faced, the more ineffective the person's behavior will be. Therefore, this study proposes:

H2: Perceived Effectiveness is significantly correlated with Intention to Use. Research by Singh (2016) states that when an individual faces something that is considered significant economically or there is a lack of economic incentives, they will be motivated to perform a behavior that can protect it. Things that are done such as taking preventive actions that can reduce the risk of these threats. Therefore, this study proposes:

H3: Perceived economic aspect is significantly correlated with Intention to Use. Research by Chakraborty., (2018) where more than 40% of respondents felt something related to society would stimulate them to one phenomenon. Therefore, this study proposes:

H4: Perceived social aspect is significantly correlated with Intention to Use. Research by Hellmich et al. (2019) states that self-efficacy has a significant impact on a person's capability in doing a task. Self-efficacy means a person's belief and confidence in his ability to successfully do something. Therefore, this study proposes:

H5: Perceived behavioral control is significantly correlated with Intention to Use. Research by Rahman et al, (1999) confirms that individual behavior is influenced by the norms that exist in their community. Other research also confirms that there is a strong relationship between norms and compliance behavior in an organization or society. Therefore, this study proposes:

H6: Descriptive Norms have a significant correlation with Intention to Use. Many studies confirm that people will comply with the rules, conditions, and guidelines given if they have a positive attitude (Pangaribuan et al, 2003). who ignore certain habits will not comply with the given guidelines. Therefore this study proposes

H7: Attitude is significantly correlated with Intention to Use. Perceived Usefulness is defined as "How far a person believes that a particular system can improve a person's performance" (Fatimah et al,2018). This variable becomes the determining factor of a person's behavior towards something. This means that if residents feel the satisfaction and benefits of preventing Stunting in childhood, they will continue to prevent it based on their wishes. Therefore, this study proposes:

H8: Perceived Usefulness is significantly correlated with Intention to Use

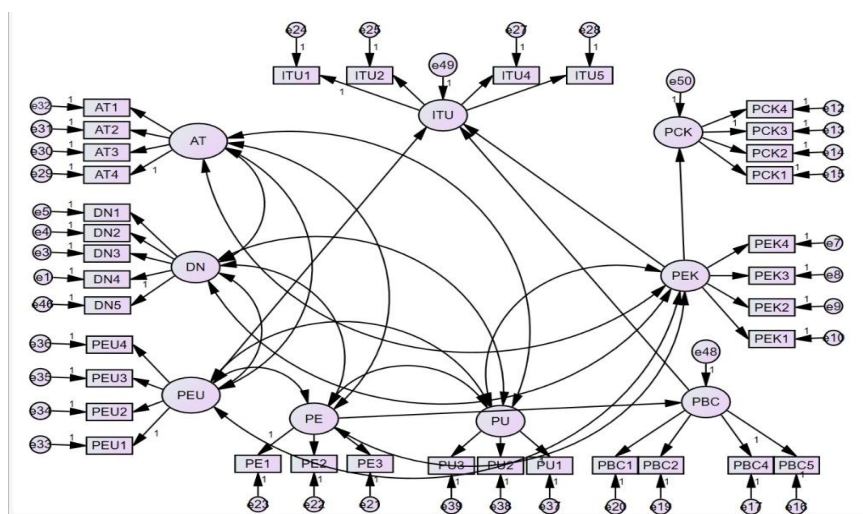


Figure 1. Structural Equation Model

Results

Figure 1 presents the modeling in AMOS based on the theoretical framework. From Table 1, the results of the data output show that five hypotheses are significant. Specifically, H1 indicates that Perceived Stunting in Individual Concern (IC) positively affects the intention to use (ITU). Additionally, H3 and H4 show that perceived economic and social aspects positively affect the intention to use (ITU). Notably, H6 and H7 indicate that Descriptive Norms (DN) and Attitude (AT) have a positive effect on the intention to use (ITU).

Table 1. AMOS Results

			Estimate	S.E.	C.R.	P	Label	Description
ITU <---	IC		.220	.113	1.950	.051	par_26	Significant
ITU <---	PE		.028	.109	.253	.800	par_27	Not Significant
ITU <---	PEA		.208	.108	1.928	.054	par_25	Significant
ITU <---	PSA		.209	.111	1.880	.060	par_33	Significant
ITU <---	PBC		.028	.139	.203	.839	par_34	Not Significant
ITU <---	DN		.102	.120	1.740	.075	par_31	Significant
ITU <---	AT		.053	.130	1.262	.089	par_32	Significant
ITU <---	PU		.083	.096	.860	.390	par_35	Not Significant

This study found that the Individual Concern variable significantly and positively affects parents' responses to childhood stunting. These results are based on model testing with AMOS, which produces a CR value of 1.950 (standard: 1.96), a P value of 0.051 (standard: 0.05), and an estimate of 0.220. This implies that individual concern is a crucial factor in motivating parents to address stunting. The study also reveals that the Attitude (AT) variable has a significant positive effect on parents' responses to preventing childhood stunting. Model testing with AMOS shows a CR value of 1.262 (standard: 1.96), a P value of 0.089 (standard: 0.05), and an estimate of 0.53. This indicates that positive attitudes towards stunting prevention are essential for encouraging parental action.

Table 2. Parameter Model

Goodness of Fit Index	Criteria	AMOS Result	Conclusion	Reference
Chi-Square	Small Chi Square	578.750	Adequate fit	Mardiantoro(2011), Bagus (2016)
RMSEA	≤ 0.08	0.006	Excellent fit	Bagozzi & Yi (1988)
CMIN/df	≤ 3.00	1.008	Excellent fit	Mardiantoro(2011), Bagus (2016)
SRMR	<0.08	0.060	Excellent fit	Bentler & Bonett (1980)
CFI	≥ 0.90 - 1	0.996	Excellent fit	Bagozzi & Yi (1988)
IFI	≥ 0.90 - 1	0.996	Excellent fit	Bollen (1989)
TLI	≥ 0.90 - 1	0.996	Excellent fit	Mardiantoro(2011), Bagus (2016)
NFI	≥ 0.90 - 1	0.693	Marginal fit	Bentler & Bonett (1980)
PClose	>0.05	1.00	Excellent fit	Hu and Bentler (1999)

Furthermore, the descriptive norms variable significantly and positively affects childhood stunting. The AMOS model testing results in a CR value of 1.740 (standard: 1.96), a P value of 0.075 (standard: 0.05), and an estimate of 0.102. This finding aligns with research by Chan et al. (2005), confirming that individual behavior is influenced by community norms. The results suggest the importance of fostering a community mindset that supports disciplined social management to combat stunting.

However, the study found that the Perceived Usefulness variable had no significant effect on residents' desire to prevent childhood stunting. The AMOS model testing yields a CR value of 0.860 (standard: 1.96), a P value of 0.390 (standard: 0.05), and an estimate of 0.083. This indicates that preventing childhood stunting is still not perceived as useful by the respondents. This study recommends focusing on increasing the perceived value of stunting prevention. Additionally, the Perceived Effectiveness variable had no significant effect on residents' desire to prevent childhood stunting. The AMOS model testing produces a CR value of 0.253 (standard: 1.96), a P value of 0.800 (standard: 0.05), and an estimate of 0.028. The results suggest that people still believe that preventing childhood stunting will not have a significant impact.

Discussion

The findings of this study provide several important insights. The positive impact of Individual Concern on the intention to use suggests that personal relevance and awareness about stunting are pivotal in motivating parents to take preventive actions. This aligns with previous research highlighting the importance of personal concern in health-related behaviors. The significant effect of Attitude on the intention to use further supports the notion that fostering positive attitudes toward stunting prevention is crucial. This can be achieved through targeted educational campaigns and interventions that emphasize the benefits and importance of preventing stunting. Descriptive norms also play a significant role, indicating that community standards and behaviors can influence individual actions. This finding is consistent with the work of Simanjuntak et al. (2018) and suggests that leveraging social influence and community leaders can be an effective strategy in promoting stunting prevention behaviors.

On the other hand, the lack of significant effects for Perceived Usefulness and Perceived Effectiveness points to potential areas for improvement. The low perceived usefulness might stem from a lack of awareness about the tangible benefits of preventing stunting. Thus, increasing public knowledge about the long-term advantages of stunting prevention could enhance its perceived value. Similarly, the low perceived effectiveness could indicate skepticism about the efficacy of current interventions. Addressing this requires not only improving the effectiveness of stunting prevention programs but also effectively communicating their success stories and impacts to the public.

In summary, this study underscores the importance of individual concern, positive attitudes, and community norms in preventing childhood stunting. It also highlights the need for better communication and education to enhance the perceived usefulness and effectiveness of stunting prevention efforts. Policymakers and health practitioners should consider these factors when designing and implementing interventions to reduce childhood stunting in Indonesia.

Conclusion

This study obtained the knowledge that the economic and social aspect of Stunting in childhood has a significant effect on parent's decision to prevent Stunting. It means we need to boost economic and social aspects in the community to reduce stunting prevalence. The other significant aspect was individual concern, This is because it creates a sense of satisfaction and is bound as an instant reward when they know they have prevented something as bad as stunting for their children. In addition, the perception of the ease of preventing Stunting in childhood will boost the prevalence number as it will be easier for them to learn more about Stunting in childhood.

This study also found another interesting fact, namely how the perception related to the descriptive norm and attitude is significant and positive. This can happen because they feel the magnitude of stunting prevention in childhood. This also resulted in a positive correlation between descriptive norms. This study also confirms that perceived usefulness and effectiveness are not significant. It means the parents do not feel adequately significant for this program. This finding is important because the government can start increasing information about the importance of Stunting prevention in childhood and have a positive effect on nutrition in early childhood.

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Conflict of Interest

The authors declare no conflict of interest for this research.

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