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The influence of social support, perception, and maternal behavior in preventing stunting cases in Indonesia

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ABSTRACT

The research aims to analyze the simultaneous influence of social support, perception and maternal behaviour in preventing stunting cases in Indonesia. The research adopts the quantitative cross-sectional approach to provide an explanatory survey. The sample was taken based on proportional random sampling. A sample size of 220 pregnant women in the second and third trimesters participated in this study. The research instrument employed was a questionnaire, which underwent validation by 12 experts using Aiken's V content validity index. The collected data were analyzed utilizing the Lisrel program, employing multiple linear regression tests and structural equation modeling (SEM) analysis. The findings of this study revealed that the perception, social support, and behavior of pregnant women were reasonably categorized. Social support has a significant positive influence on perception. Social support and perception simultaneously have a significant positive influence on the behaviour of pregnant women. In conclusion, the behavior of pregnant women can be recommended as the solution in the primary prevention of stunting.

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1. INTRODUCTION

The sustainable development goals (SDGs) are a global program designed to enhance the quality of the environment, promote economic well-being in communities, foster social sustainability, and implement equitable development and management practices to improve the quality of life for future generations. The UN Resolution outlines the SDGs as a comprehensive action plan aiming to foster peace and prosperity for all individuals across the globe by 2030 [1]. In line with its commitment to the sustainable development goals (SDGs), the Indonesian government has integrated them into its national development planning. The national medium-term development plan (RPJMN) 2020-2024 is the government's concrete commitment to implementing the SDGs. Among the key objectives of the RPJMN is the prevention of stunting, which aligns with the SDGs. Another fundamental goal of the SDGs is to attain food security, eradicate hunger, and address all forms of malnutrition by 2030 [2]. The implementation of the SDGs emphasizes the principle of no one left behind (no one is left behind) as a part of human rights to ensure no discrimination occurs and pays explicitly special attention to vulnerable or poor groups of people [3].

RI Presidential Regulation No. 72 of 2021 plays a pivotal role in the central government's endeavours to expedite stunting prevention. This regulation underscores the government's commitment to

prioritizing and engaging society at all levels in combating stunting. As part of this initiative, a family companion program has been implemented to facilitate early detection of stunting risk factors and undertake necessary measures to mitigate or prevent such risks [4].

The main factors contributing to the prevalence of stunting are the interaction between genetic entities, environmental factors, nutritional status, and psychosocial and secular rates of change in growth [5]. The height based on the growth of bone is mainly due to genetic inheritance with the role of many genes known as polygenic trait. Hereditary play a major role with 80% and the remaining percentage consists of hormone signaling, malnutrition and environmental factors such as socio-economy, poor preventive health care, low birth weight and many other cofounder factors [6]. Stunting occurs due to the interaction between genetic and environmental factors. Many genetic studies have been conducted on stunted children, explaining genes' role in influencing low birth weight, socio-economics, prevention, poor health care, and others [7].

Szreter [8] identifies three distinct types of social support based on their social bonds. Moreover, the study's findings indicate a correlation between a mother's social support and the nutritional status of her child. This highlights the significance of social support in influencing and improving children's well-being and dietary outcomes [9]. The synergy of all social support can be achieved by increasing social participation so that health promotion becomes very effective [10]. In addition to the findings mentioned earlier, the study also reveals a synergistic relationship among different forms of social support, enabling the community to expedite the reduction of stunting. This implies that by harnessing and combining various types of social support, communities can effectively work together to address and combat the issue of stunting more efficiently [11].

A study in Sri Lanka and India revealed that social capital could affect health during pregnancy; binding social capital, expressed as ties to caste and faith-based organizations has the opposite impact. Social capital is associated with a child's nutritional status, but the effect depends on local development [12]. Meanwhile, a study in Ecuador mentioned a relationship between maternal social capital and child nutritional status. However, mothers' participation in community organizations increased the prevalence of anemia in children [9]. These results highlight the need for further studies focusing on different types of social capital concepts and how they impact health in Indonesia.

The aims of this study are to analyze the simultaneous influence of social support and perception on the behavior of pregnant women and to determine the behavior of pregnant women in the primary prevention of stunting. This study contributes to the importance of optimizing social support roles and perceptions of pregnant women in creating a supportive environment for stunting prevention efforts. The substantial social support and perceptions of pregnant women are the first steps in improving prevention behavior.

2. METHOD

This quantitative and cross-sectional explanatory survey aims to analyze the simultaneous impact of social support and perception on the behavior of pregnant women, particularly in the context of primary stunting prevention. The study employed a proportional random sampling technique to select a sample of 220 pregnant women in the second and third trimesters from the Kulon Progo Regency area. The sample size was determined based on the formula for estimating a single population proportion with a 95% confidence level and a 5% margin of error. The calculation ensured that the sample size would provide sufficient statistical power to detect meaningful differences in the variables of interest [13]. The model represents the pregnant women population from 12 districts, with each district proportionally represented. The collected data were analyzed using the multiple linear regression Test with structural equation modeling (SEM) through the Lisrel program. Additionally, the reliability of the questionnaire was assessed using Cronbach's Alpha. Indicators and latent variables are presented in Table 1. The Health Research Ethics Committee of Dr. Moewardi General Hospital approved the study and issued the ethical clearance letter 987/VII/HREC/2022. All subjects have signed informed consent indicating that they have received informed consent and accept to participate in the research study.

Table 1. Latent variables and research indicators

Latent variable		Indicator
Exogenous	Social support (X1)	X1.1=bonding
		X1.2=bridging
		X1.3=linking
		X1.4=communication
Endogenous	Pregnant women's perceptions in primary stunting prevention (Y1)	Y1.1=Absorption
		Y1.2=Understanding
		Y1.3=Evaluation
	Pregnant women's behavior in primary stunting prevention (Y2)	Y2.1=Antenatal care (ANC)
		Y2.2=Nutritious food's consumption
		Y2.3=Taking iron tablets' method
		Y2.4=Pregnant women's class

3. RESULTS AND DISCUSSION

This study has two variables, namely endogenous and exogenous variables. Endogenous variables include the behaviour and perception of pregnant women, while exogenous variables include social support. A descriptive analysis of the social support variable is presented in Table 2. Based on Table 2, the social support variable is in the sufficient category. Score 102.4-113.0 for 119 respondents (54.09%). A descriptive analysis of the variable social support has a score in a reasonably sufficient category. The respondents perceive social support well based on bridging, bonding, linking, and communication.

Social support is a social determinant parameter accepted in public health and welfare. Social support is essential as an agent of social change [14], [15]. Social support is a part of social life, instant informal norms that lead to cooperation and mutual assistance between two or more individuals [16]. In this study, social support is expressed as trust, compliance with applicable norms, the ability to build social networks, participation in social groups that underlie social cohesion, and participation in the public interest. Furthermore, social support with its indicators is presented in Table 3. Based on Table 3, the highest category for bonding social support is excellent, with 83 respondents (37.7%). The highest type for bridging social support is quite good, with 136 respondents (61.8%). The highest category for linking social support is quite good, with 72 respondents (32.3%). The highest classification for communication social support is quite good, with 101 respondents (45.9%).

In this study, bonding social support is more about bonds of trust, norms, and networks within a family, namely the nuclear family and other family members. Family member play a crucial role that encompasses activities such as maternal nutrition, breastfeeding insight, introducing appropriate complementary foods and sharing nutritional knowledge support for the stunted children. Respondents trust their family, believing that the family will help, spend time with, interact with, and have close relationships with. It indicates that sufficiently good social support will increase the tendency of people to behave better. Murayama *et al*. [17] and Fukuyama [18] argue that the family is an essential source of social support. Family role during the prenatal phase is important in averting instances of stunting in the future. During the initial half of the crucial 1,000-day period, encompassing conception through the first six months of life, the family serves as first gate of defense against stunting as maternity nutrition is the first nourishment for the infant [19]. Based on the descriptive analysis, it is known that linking is classified as sufficient category with a score of 33.3-30.3 of 71 (32.3%). This linking facilitates access to resources across different strata and is more complex than bonding or bridging social support because many relationships exist between actors with various political, social, economic, and cultural backgrounds [20]. Communication in this study includes exchanging information through social media, frequency, and virtual support. Effective communication is essential to increase knowledge and reach target groups to prevent communities from unwanted adverse outcomes [21], [22].

Table 2. Descriptive analysis of the social support variables

Variable	Score	Category	Frequency	Percentage (%)
Social support	123.8-134.4	Excellent	12	5.45%
	113.1-123.7	Good	48	21.82%
	102.4-113.0	Sufficient	119	54.09%
	91.70-102.3	Poor	32	14.55%
	81-91.6	Worst	9	4.09%
Total			220	100%

Table 3. Descriptive analysis of the social support variables indicators

Variable	Indicator	Score	Category	f	Percentage (%)
X1.1	Bonding	27.8-30.4	Excellent	83	37.7%
		25.1-27.7	Good	46	20.9%
		22.4-25.0	Sufficient	63	28.6%
		19.7-22.3	Poor	24	10.9%
		17.0-19.6	Worst	4	1.8%
X1.2	Bridging	36.8-40.4	Excellent	14	6.4%
		33.1-36.7	Good	37	16.8%
		29.4-33.0	Sufficient	136	61.8%
		25.7-29.3	Poor	28	12.7%
		22.0-25.6	Worst	5	2.3%
X1.3	Linking	27.1-30.1	Excellent	23	10.5%
		36.4-39.4	Good	56	25.5%
		33.3-36.3	Sufficient	71	32.3%
		30.2-33.2	Poor	62	28.2%
		24.0-27.0	Worst	8.0	3.6%
X1.4	Communication	93.4-96.4	Excellent	14	6.4%
		90.3-93.3	Good	74	33.6%
		87.2-90.2	Sufficient	101	45.9%
		84.1-87.1	Poori	28	12.7%
		81.0-84.0	Worst	3	1.4%

Indicators of perception include absorption, understanding, and evaluation. A descriptive analysis of perception is presented in Table 4. Table 4 presents the perception of pregnant women as sufficient, with 76 respondents (34.5%). It indicates that respondents can absorb, understand, and evaluate stunting prevention with a good perception. Daily experiences through the senses can build perception [23]. Improving pregnant women's perception about their pregnancy will be the first step in enhancing behaviour to prevent stunting. Furthermore, perceptions with their indicators/manifestations are presented in Table 5.

The results obtained from Table 5 shows that most respondents have good absorption abilities, with 74 respondents (33.6%) falling into this category. The majority also have a reasonably good level of understanding, with 81 respondents (36.8%) falling into this category. Most respondents have excellent evaluation ability, with 71 (32.3%) falling into this category. Most respondents' absorption ability is categorized as reasonably good, with scores ranging from 19.2-21.2, and 63 respondents (28.6%) fall into this category. In addition, an individual's perception results from their understanding of social reality. Human senses absorb stimuli, resulting in an individual's understanding [24].

Regarding understanding, 36.8% (81 respondents) achieved a score of 19.2-21.2, indicating sufficient understanding in the context of stunting prevention. The respondents' perception during the understanding stage was categorized as reasonably good. It is worth noting that a pregnant mother's perception significantly influences her attendance in prenatal classes [25]–[27]. When a mother perceives her pregnancy as vulnerable, she is more likely to actively seek solutions, such as attending prenatal classes, to ensure the well-being of herself and her child [28]. On the other hand, if the mother perceives her pregnancy as unpleasant, she will not be compliant in attending prenatal classes [29], [30].

Table 4. Descriptive analysis of the pregnant women's perception variable

Variable	Score	Category	Frequency	Percentage (%)
Perception of pregnant women	69.4-75.4	Excellent	60	27.3%
	63.3-69.3	Good	58	26.4%
	57.2-63.2	Sufficient	76	34.5%
	51.1-57.1	Poor	22	10.0%
	45.0-51.0	Worst	4,0	1.8%

Table 5. Descriptive analysis of the indicator of the variable perception of pregnant women

Variables	Indicators	Scores	Categories	F	Percentage (%)
Y1.1	Absorptions	23.4-25.4	Excellent	54	24.5%
		21.3-23.3	Good	74	33.6%
		19.2-21.2	Sufficient	63	28.6%
		17.1-19.1	Poor	22	10.0%
		15.0-17.0	Worst	7	3.2%
Y1.2	Understanding	23.4-25.4	Excellent	48	21.8%
		21.3-23.3	Good	51	23.2%
		19.2-21.2	Sufficient	81	36.8%
		17.1-19.1	Poor	35	15.9%
		15.0-17.0	Worst	5	2.3%
Y1.3	Evaluation	23.2-25.4	Excellent	71	32.3%
		20.9-23.1	Good	57	25.9%
		18.6-20.8	Sufficient	67	30.5%
		16.3-18.5	Poor	16	7.3%
		14.0-16.2	Worst	9	4.1%

As we know, a positive perception of pregnancy from the mother will increase her willingness to seek and obtain information, thus encouraging pregnant mothers to behave in a way that prevents complications during pregnancy [31]. Out of the total respondents, 67 (30.5%) scored between 18.6-20.8, indicating that the descriptive analysis in the evaluation was classified as sufficient. The indicators of pregnant women's behavior include consuming nutritious food, adhering to ANC visits, taking iron supplements, and attending prenatal classes. The descriptive analysis of pregnant women's behavior is presented in Table 6. Table 6 shows that most pregnant women's behaviour variables fall under the excellent category at 87 (39.5%). This suggests that respondents have a reasonably good understanding of healthy behaviour during pregnancy, although there may be a gap in perception regarding this topic. It is important to note that stunting can occur due to prolonged malnutrition during early life [32]–[34]. Pregnant women's behaviour with their indicators is presented in Table 7.

Based on Table 7, shows that the majority of ANC visit indicators are good 104 (47.3%), consumption of nutritious food is good category 94 (42.7%), how to consume high blood pressure is outstanding category 79 (35.9%). A class of pregnant women is categorized as sufficient 63 (28.6%). In

addition, descriptive analysis indicates that the ANC visits fall under the excellent category, with a score range of 18.9-22.1, consisting of 104 respondents (47.3%). Comprehensive antenatal care (ANC) is essential for all pregnant women, and integrated ANC is a valuable approach for providing quality and holistic care [35]. This study emphasizes the significance of ANC visits, explicitly examining the frequency and accuracy of these visits as indicators of pregnant women's proactive engagement in ANC examinations. Prior research has consistently underscored the importance of ANC in the early assessment of the health status of both the mother and the fetus. Preventive efforts against stunting include consuming nutritious food, adhering to ANC visits, taking iron supplements, and attending classes for pregnant women, all of which are not easy to implement.

The results of the descriptive analysis indicated that 94 (42.7%) of the respondents fall into the excellent category for consuming nutritious food during pregnancy, scoring between 18.9 to 22.1. It is crucial to recognize that pregnant women's health and nutritional status directly affect fetal growth and can impact the risk of stunting. Thus, ensuring proper nutrition for pregnant women is paramount throughout pregnancy. Maintaining a balanced diet can significantly reduce the risk of stunting. Notably, pregnant women's behaviour towards food is influenced by their perceptions. Nutritionist support generally plays a crucial role in influencing mothers' understanding, beliefs, and behaviors concerning their nutritional requirements during pregnancy, further emphasizing the significance of addressing maternal nutrition to mitigate the risk of stunting [36]. Therefore, paying attention to food intake is very important for pregnant women.

Table 6. A descriptive analysis was performed on the variables related to pregnant women's behavior

Variables	Scores	Categories	Frequency	Percentage (%)
Behaviour of pregnant women	88.4-100.4	Excellent	34	15.5%
	76.3-88.3	Good	85	38.6%
	64.2-76.2	Sufficient	87	39.5%
	52.1-64.1	Poor	13	5.9%
	40.0-52.0	Worst	1	0.5%

Table 7. Descriptive analysis of pregnant women's behaviour with their indicators

Variables	Indicators	Scores	Categories	f	Percentage
Y2.1	ANC visit	22.2-25.4	Excellent	76	34.5%
		18.9-22.1	Good	104	47.3%
		15.6-18.8	Sufficient	31	14.1%
		12.3-15.5	Poor	7	3.2%
		9.0-12.2	Worst	2	0.9%
Y2.2	Consume nutritious food	22.2-25.4	Excellent	72	32.7%
		18.9-22.1	Good	94	42.7%
		15.6-18.8	Sufficient	41	18.6%
		12.3-15.5	Poor	12	5.5%
		9.0-12.2	Worst	1	0.5%
Y2.3	How to consume iron supplement	22.8-25.4	Excellent	79	35.9%
		20.1-22.7	Good	47	21.4%
		17.4-20.0	Sufficient	47	21.4%
		14.7-17.3	Poor	39	17.7%
		12.0-14.6	Worst	8	3.6%
Y2.4	Prenatal class	21.6-25.4	Excellent	21	9.5%
		17.7-21.5	Good	60	27.3%
		13.8-17.6	Sufficient	63	28.6%
		9.9-13.7	Poor	26	11.8%
		6.0-9.8	Worst	50	22.7%

In this study, the nutritious food consumption is defined as the regular intake of food three times a day, encompassing five food groups, and taking into account the type, variety, and amount of food consumed. It follows what was stated by Taslim *et al*. when pregnant women have an inadequate intake of nutrients, poor eating habits, or consume low-quality food, their newborns may experience stunted growth, commonly known as stunting [37]. As a result, malnutrition during pregnancy that because stunting can increase child and infant mortality rate, heighten susceptibility to illness, impair cognitive abilities, and cause no optimal body posture. Therefore, it can be inferred that maternal malnutrition can have severe consequences for both mother and child. Based on descriptive analysis result, it is established that the method of taking iron tablets is in the outstanding category with a score of 22.8-25.4 of 79 (35.9%). It is supported by other study which stated that pregnant women who comply with iron tablet consumption as per the health workers recommendations [38].

Based on the multivariate normality test, the p-value is 0.0600, which means that all variables fulfill the normality test criteria because the p-value is greater than 0.05. The measurement analysis conducted using the LISREL 8.8 software assesses the reliability and validity of the observed variables (indicators/manifest) within the SEM model. This evaluation is accomplished using the confirmatory factor analysis (CFA) measurement model. The results obtained from the CFA indicate that all standardized factor weight coefficients (standardized loading factors) exceed the minimum threshold of ≥0.05, suggesting satisfactory reliability and validity of the observed variables. This outcome suggests that each indicator effectively measures the construct employed in the study as illustrated in Figure 1 and Table 8.

Table 8 presents the validity and reliability analysis results conducted on the observed variables (manifest) within the measurement model. In the validity analysis, the t-values of the observed variables are examined to determine if they meet the required criteria, which is a value greater than the critical value of 1.96. Moreover, the standardized loading factors of the observed variables are assessed based on the criteria proposed by Igbaria *et al.* [39]. A standardized loading factor greater than 0.50 is considered highly significant, while values above 0.30 indicate a significant relationship with the variables.

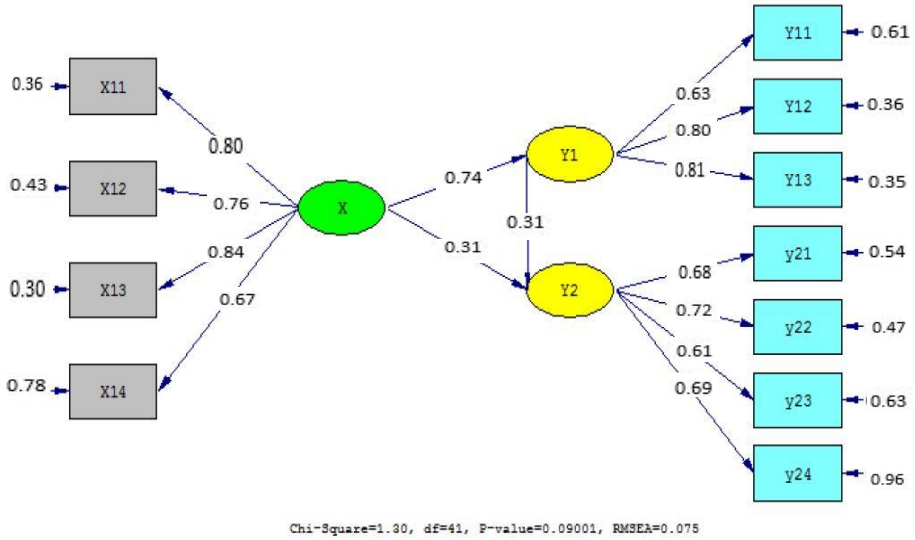

Figure 1. Standardized solution of the overall model using a path diagram

Table 8. The result for the validity and reliability of manifest/indicator variables

Latent variable	Indicator code/manifest	t-value	Standardized loading factor ≥0.50	Composite reliability CR ≥0.70	Information
Social support (X1)				0.83	Reliable
	X1.1	13.50	0.80		Valid
	X1.2	12.47	0.76		Valid
	X1.3	14.35	0.84		Valid
	X1.4	6.96	0.67		Valid
Perception of pregnant women				0.79	Reliable
(Y1)	Y1.1	8.00	0.63		Valid
	Y1.2	8.88	0.80		Valid
	Y1.3	8.96	0.81		Valid
Behavior of pregnant women				0.73	Reliable
(Y2)	Y2.1i	8.00	0.68		Valid
	Y2.2i	7.42	0.72		Valid
	Y2.3 i	6.86	0.61		Valid
	Y2.4i	2.47	0.69		Valid

Following the validity analysis, the reliability analysis of the measurement model is performed by calculating the construct reliability (CR) value. This calculation is based on the standardized loading factors and error variance values. The validity and reliability analysis outcomes provide insights into the strength and consistency of the observed variables within the measurement model.

According to Table 8 all indicator variables have loading factors of ≥0.50, indicating their validity

as measures of latent variables. Furthermore, the composite reliability (CR) measurement for all three variables is ≥0.70, indicating their reliability as indicators representing latent variables. The analysis of the measurement equation model reveals that the t-value for each indicator variable is ≥1.96, signifying a significant positive effect with a loading factor of ≥0.5 and constructs reliability of ≥0.70. This confirms that each indicator is both valid and reliable in representing latent variables. This study, the model was tested to analyze the direct influence of social support on perception, and to analyze the combined effects of social support and perception on the behavioral patterns of pregnant women.

Table 9 states that the three hypotheses have a t-value of ≥1.96, indicating a significant positive impact, as outlined:

i. *The impact of social support on the perception of pregnant women*

The t-value is 7.70, and the coefficient of social support effect on perception is 0.53. This implies that an increase of one unit in the social support variable expected to generate a 0.53i increment in perception. This value is the greatest compared to other variables. It is because social support can stimulate collective action to respond to situations outside the environment. Based on this, pregnant women in this story with quite good social support will also tend to have a good perception.

ii. *The impact of perceptions on the conduct of pregnant women*

The perception t-value is 2.20, and the coefficient of social support influences perception is 0.44. This implies that if the perception variable value increases by 1, the behavior of pregnant women is estimated to escalate by 0.44. The perception of pregnant women refers to their assessment and interpretation of stunting prevention, which can have a positive or negative impact on their behavior. According to the health belief model, behavior change is influenced by perceptions and beliefs, which influence decision-making after weighing the cons and pros [28]. A positive perception of pregnant women encourages them to seek out information to increase their understanding and change their behavior accordingly. Improving and enhancing the pregnant women preception is the first step in promoting preventive behavior. Community and family support serves as a reinforcing factor for the expected preventive behavior.

iii. *The impact of social support on the behavior of pregnant women*

The t-value =2.29 ≥1.96 with a loading factor of 2.29≥1.96 which implies a statistically significant positive impact. The influence of social support variables on behavioural variables is 1.29, where the direct effect (loading factor =0.32) is smaller than the indirect effect (loading factor =0.97). Because of the direct effect< indirect effect, it can be concluded that the perception variable is an intermediate variable between social support and the behavior of pregnant women. According to the results, every form of social support has a crucial role in establishing a conducive environment to prevent stunting. The perception of pregnant women becomes a determinant of prevention behaviour, as the behavior change theory, it is posited that perception is a predisposing factor for certain behaviors. Threat perception as an individual factor and social support as a social factor influence prevention behaviour.

Table 9. Test of structural model

Hypothesis	t-value	Standardized coefficients >0.05			Information
	>1.96	Direct	Indirect	Total	
X1-Y1	7.70	0.53	-	0.53	Significant
Y1-Y2	2.20	0.44	-	0.44	Significant
X1-Y2	2.29	0.32	0.97	0.32	Significant

4. CONCLUSION

In conclusion, social support influences perception. Besides, the behaviour is simultaneously influenced by social support and perceptions. The study revealed that pregnant women with higher education levels were more likely to receive and utilize information related to stunting prevention. Additionally, the study highlights the importance of effective communication and promotional activities in increasing positive perceptions of stunting prevention. The findings also emphasized the role of social support, particularly linking social support, facilitating access to resources, and stimulating collective action. Furthermore, this research demonstrated that pregnant women's perceptions significantly influenced their attendance in prenatal classes and their willingness to seek and obtain information related to stunting prevention. Overall, this study contributes to the understanding of the factors influencing pregnant women's behavior in preventing stunting and emphasizes the need to optimize social support and perceptions to create a supportive environment for prevention efforts.

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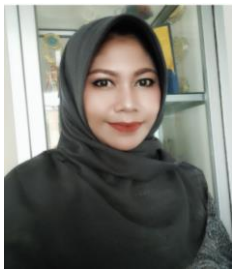

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