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Nutritional Interventions by Local Governments as an Effort to Accelerate Stunting Reduction

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Abstract: Nutritional problems, known as stunting, are a major threat to the quality of Indonesian society that interferes with children's physical growth and brain development disorders that will affect their achievement. This study aims to analyze the nutrition intervention program and program achievements carried out by the Palembang City government. The research method used is qualitative research with a descriptive approach. This study uses secondary data from the Palembang City Health Office to measure the number of short toddlers taking measurements in the October 2021 period. This is continued by describing the achievements of the nutrition intervention program that has been carried out by the Palembang City government and analyzing the problems that exist in the stunting program in Palembang City using the SWOT method. This study found that specific nutrition interventions were carried out through health programs while sensitive nutrition interventions were carried out through environmental programs. In an effort to reduce stunting in the city of Palembang, the strengths are stunting data collected by name by address and program innovations run at health centers. However, the weakness is that there is not optimal coordination and program synergy between related agencies. Low community motivation and lack of knowledge related to child-rearing patterns are a challenge, but the Palembang City government's commitment, as stated in the Mayor's Regulation policy, becomes the basis and direction of policy in designing stunting reduction and programs for the next five years.

Keywords: stunting; nutrition intervention; local government

1. Introduction

It is very important for a country to have quality human resources that can be used to develop and generate prosperity for the country. Human resources consist of two kinds, namely physical and thinking power. In addition, human resources are also an object and subject in a country's development and development process. One of the ways to get quality human resources is through adequate nutrition during the child's growth period due to infant and young child feeding, which is the main pillar for healthy growth and development (Stewart et al., 2013, p. 29). Adequate nutrition is needed to ensure optimal growth and development of infants and children (Ramli et al., 2009). Stunting is one of the nutritional problems where toddlers have a length or height that is less when compared to age, namely if the body length or height measured is more than minus two standard deviations of the median standard deviation of child growth standards from WHO (Purwanti & Nurfita, 2019, p. 154).

The problem of nutrition or stunting is a major threat to the quality of Indonesian society. Indonesia occupies the country's position with the highest number of stunting cases in Southeast Asia and is declared the country with the second-worst sanitation in the world. In addition, 15 to 22 children under the age of five in Indonesia die from diarrhea every hour due to poor environmental hygiene and sanitation (Herawati et al., 2020, p. 8). Stunting not only interferes with physical growth, but children also experience brain development disorders cognitive and motor delays that will affect their abilities and achievements (Dewey & Begum, 2011, p. 5; Diana et al., 2021; Saptarini et al., 2020; Stewart et al., 2013, p. 29), increase in health care costs (Victora et al., 2010), and a decline in economic productivity (Daniels & Adair, 2004, p. 1439; Horton & Steckel, 2014, p. 247). In addition, children who suffer from stunting will have a bad health history because their immune system is also bad. Stunting can also pass to the next generation if it is not taken seriously (Sartika et al., 2021).



Figure 1. Stunting prevalence in Palembang city 2018–2020 (E-PPGBM Data)

Palembang City became the locus of stunting in 2020. Figure 1 shows the prevalence of stunting in Palembang City based on the e-PPGBM application data (electronic - Community Based Nutrition Data Collection and Reporting) Palembang City Health Office in 2018 of 10.9% and experiencing a decrease in 2019 by 7.5% and also in 2020 by 3.3%.

The problem of stunting nutrition is the result of various interrelated factors. Two direct factors affect the nutritional status of individuals, namely dietary factors and infectious diseases, both of which influence each other (Rosha et al., 2020, p. 174). Meanwhile, indirect factors that affect individual nutritional status are poverty, low education, lack of food availability, uncertain job opportunities, and inadequate health services (Irianto, 2014). Other factors that affect the mother are the mother's body posture (short), the distance between pregnancies is too close, the mother is still a teenager, and the lack of nutritional intake at the time of delivery, and the baby with low birth weight (Abbas et al., 2021).

According to Presidential Regulation number 72 of 2021 regarding the acceleration of stunting reduction, the government has established a national strategy to accelerate stunting reduction, with six main objectives. Furthermore, to reduce stunting rates in Palembang City, Mayor Regulation Number 41 of 2020 was issued, which contains directions, strategies, programs, and nutrition intervention activities, both specific and sensitive nutrition interventions. The Indonesian government, both at the central and regional levels, already has various programs that can be used to reduce stunting but have not been optimally coordinated, both in terms of planning, budgeting, and implementation. In addition, the capacity of implementers and the quality of program implementation are still limited. Therefore, this study aims to analyze the nutrition intervention program and program achievements that the Palembang City government has carried out through the Health Office to reduce stunting.

2. Methods

The research method used qualitative research with a descriptive approach. This study uses secondary data from the Palembang City Health Office to measure the number of short toddlers taking measurements in the October 2021 period. This followed by describing the achievements of the nutrition intervention program that has been carried out by the Palembang City government and analyzing the problems that exist in the stunting program in Palembang City using the SWOT method (Strengths, Weaknesses, Opportunities, and Threats).

3. Results and Discussion

Regular weight measurement can describe the nutritional state of children, so it can be used as one monitor children's physical growth. The heavy body is a sensitive measure that is greatly affected by the changes in nutritional status. At the health center level or field, a general determinant of nutritional status is done by weighing toddlers (weight per age). Bodyweight index by age compared to standard/child figures normal ones. The child's height will not decrease with decreasing nutritional status of the child (Maflahah, 2019, p. 39). The growth line series forms a growth graph child as in other developing countries; stunting cases in Indonesia is common. Stunting is caused by a lack of nutritional intake obtained by the baby/fetus during the first 1000 days of life, where this can cause fetal death (Nisa, 2018, p. 173). The prevalence of stunting in infants and children is still quite high due to inadequate nutritional intake (Utami et al., 2013, p. 127). Agricultural, socioeconomic, and demographic factors at the household and individual levels also play an important role in mediating nutritional impacts (Phalkey et al., 2015). Several factors cause stunting: first, lack of nutrition for a long time. It can happen since the child is in the womb. The reason is that the mother does not have access to healthy and nutritious food, thus causing her baby to be malnourished. In addition, the low intake of vitamins and minerals consumed by the mother can also affect the condition of fetal malnutrition. Malnutrition in the womb is also the biggest cause of stunting in children. Second, less effective parenting (Purwanti & Nurfiti, 2019, p. 161). More due to the behavior and practice of feeding children. If parents do not provide good nutritional intake, then the child can experience stunting. In addition, maternal factors during adolescence and pregnancy lack of nutrition and poor lactation can also affect the growth and brain of children.

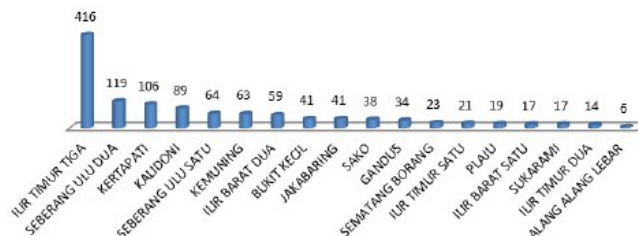
The third factor causing stunting is diet (Susiloretni et al., 2021) and family characteristics (Mulyaningsih et al., 2021). Low access to foods with high nutritional value and an unbalanced diet can affect children's growth and increase the risk of stunting. It is because mothers do not understand the concept of nutrition before, during, and after giving birth. Fourth, do not do postnatal care. Postnatal care is considered necessary to detect disorders that mothers and children may experience after childbirth: fifth, mental disorders and hypertension in mothers. If a mother

experiences mental disorders and hypertension during pregnancy, her child's risk of stunting is also higher.

Sixth is a recurrent infection in children (Arlinda et al., 2022, p. 41). It is caused by the body's immune system that does not work optimally. When a child's immune system does not function properly, the risk of developing various health problems, including stunting, becomes higher—seventh, Sanitation Factor (Ravsanjanie et al., 2021, p. 50). A poor living environment and limited access to clean water will increase the risk of stunting in children (Mulmi et al., 2016). When children grow up in an environment with inadequate sanitation and water conditions, this can affect their growth. Low access to health services is also one of the factors causing stunting.

Based on data from the Palembang City Health Office in 2021, the prevalence of stunting under five in 2021, as shown in Figure 2, the total stunting in Palembang City was in that period 1,187 toddlers or 1.1 percent of the total children under five measured. Judging from the stunting incidence rate based on five sub-districts, Ilir Timur Tiga District is the highest stunting area, 416 stunting toddlers or 35 percent of the total stunting toddlers.

Figure 2. Distribution of Stunted Toddlers in Palembang City by District in 2021



Seberang Ulu Dua District then followed them with 119 stunting toddlers or 10 percent, Kertapati District with 106 stunting toddlers or 8.9 percent. Meanwhile, Kalidoni Subdistrict has 89 stunting toddlers or 7.5 percent, and Seberang Ulu Satu Subdistrict has 64 stunting toddlers or 5.4 percent.

In an effort to reduce the stunting rate in the city of Palembang, a Mayor Regulation No. 41 of 2020 was issued regarding directions, strategies, programs, and nutrition intervention activities, both specific and sensitive nutrition interventions to accelerate integrated stunting prevention, control, and reduction. Specific Nutrition Interventions contribute 30% to stunting prevention through interventions aimed at children in the First 1,000 Days of Life (HPK), generally carried out by the health sector and are short-term in nature; the results are recorded in a relatively short time. Meanwhile, the Sensitive Nutrition Intervention contributed 70%. The intervention was aimed at various development activities outside the health sector, and the target was the general public, not specifically for 1,000 HPK. The implementation of intervention programs or activities by the Palembang City Health Office is as illustrated in Table 1 and 2.

Table 1. Implementation of Specific Nutrition Intervention Program

Specific Nutritional Interventions	Intervention Programs/Efforts
Providing additional food for pregnant women and toddlers	Provision of additional toddler food for undernourished toddlers at Posyandu
Overcoming iron and folic acid deficiency	Supplementation of blood-boosting tablets to pregnant women and young women
Reducing intestinal worms in pregnant women and toddlers	Giving worm medicine to toddlers
Encouraging Early Initiation of Breastfeeding	Counseling on Early Initiation of Breastfeeding
Encouraging exclusive breastfeeding and complementary feeding	a. Monitoring of exclusive breastfeeding b. Implementation of Breastfeeding Support Groups c. Counseling on healthy food for mothers of toddlers

Source: Processed from the Palembang City Health Office

Table 2. Implementation of Sensitive Nutrition Intervention Program

Sensitive Nutrition Intervention	Intervention Programs/Efforts
Increasing access to nutritious food	<ul style="list-style-type: none"> a. Food industry supervision b. Workshop on school children's snack food intervention program c. Safe market campaign from hazardous materials d. Guidance on school food safety e. Food quality and safety improvement f. Alternative food counseling
Raising awareness, commitment and practice of maternal and child nutrition	Early childhood education development related to parenting classes
Increasing the supply of clean water and sanitation facilities	<ul style="list-style-type: none"> a. Provision of clean water facilities b. Provision of healthy latrine facilities c. Counseling on Clean and Healthy Lifestyle

Source: Processed from the Palembang City Health Office

Overall, the health office carries out efforts to reduce stunting for specific nutrition interventions. This does not mean only the responsibility of the Health Office, but the responsibility of all lines and across sectors (Aryastami & Tarigan, 2017, p. 238). Efforts to reduce stunting in sensitive nutrition interventions were also carried out by several related agencies, such as the social service which assisted The Family Hope Program is a program of providing conditional social assistance to poor families who are designated as beneficiary families of the program, distributed the Healthy Indonesia Card, as well as several other agencies, such as the agriculture office and so on. in the implementation of stunting reduction.

Based on the 2020 nutrition surveillance dissemination data obtained from the Palembang City Health Office, that stunting reduction has been implemented through specific and sensitive nutrition interventions as illustrated in Table 3.

Table 3. Specific Nutrition Intervention Indicators

Specific Nutrition Intervention Indicators (%)				
Babies get early initiation of breastfeeding	Exclusive breastfeeding	Pregnant women get FE tablets	Infants aged 0-11 months get basic and complete immunizations	Number of pregnant women who get Supplementary Food
74,6	76,14	89,8	81,9	100

Source: Processed from the Palembang City Health Office

Based on the data in Table 3, the implementation of the stunting policy in Palembang City has been going well following Mayor Regulation Number 41 of 2020, as evidenced by specific nutrition intervention programs carried out by the Palembang City Health Office, such as the coverage of babies who get Early Breastfeeding Initiation of 74.6%. Early Initiation of Breastfeeding is a mother who has just given birth. Then health workers carry out Early Initiation of Breastfeeding for the mother and baby by placing the baby on the mother's chest for 10-15 minutes after birth. With the achievement of 74.6%, health workers still have to optimize the implementation of Early Breastfeeding Initiation by providing socialization and encouragement from health workers about Early Breastfeeding Initiation. From research conducted in Bhutan on the factors that cause stunting, it was concluded that children who did not receive Early Initiation of Breastfeeding were 9.5 times more likely to experience stunting than those who received Early Initiation of Breastfeeding (Aguayo et al., 2015, p. 333). There is a significant relationship between early breastfeeding initiation and the incidence of stunting.

Exclusive breastfeeding can increase height growth in children (Kamudoni et al., 2015, p. 96). There is a positive relationship between breastfeeding and increasing children's height growth (Khatoon et al., 2011, p. 349). Exclusive breast milk is the most influential factor in stunting; the content of lactoferrin in breast milk functions to bind iron to inhibit bacterial growth, besides the peroxidase enzyme in breast milk can destroy pathogenic bacteria (IDAI, 2009). The composition of Mother's Milk is infant nutrition that contains hundreds to thousands of different bioactive molecules,

protecting babies from infection inflammation and contributing to immune maturation, organ development, and health (Djaiman, 2021, p. 96).

The achievement of babies receiving exclusive breastfeeding is 76.14%. This is the percentage of Palembang City that has not reached the target according to Presidential Decree No. 72 of 2021, which is 80%, but compared to the national target of 69%, the coverage has reached the target. However, 14 out of 18 sub-districts in Palembang City whose range is still below the target, so it is a concern to increase promotion and counseling related to the importance of exclusive breastfeeding for babies.

The coverage of giving blood-added tablets to pregnant women in Palembang City in 2020 is 89.8%; this coverage has not reached the target of Palembang City, which is 96%. Blood Enhancement Tablets are nutritional supplements to increase blood in tablets/caplets/capsules that can be obtained from the Program or independently. The Blood Add Tablet program is provided by the Government and distributed to target groups through government health service facilities. Independent Blood Add Tablets are obtained based on prescriptions/instructions from health workers, self-purchase initiatives at private health facilities/pharmacies/drug stores or obtained from gifts from family/others. If seen from the coverage data, it is necessary to encourage and socialize health workers to maximize the provision of blood-added tablets to pregnant women in the city of Palembang. Giving blood supplement tablets is one of the important efforts and is an effective way to prevent and overcome anemia due to iron and or folic acid deficiency. Blood supplement tablets are given to women of childbearing age and pregnant women. Pregnant women are given blood-added tablets every day during their pregnancy or at least 90 (ninety) tablets (Ministry of Health, 2014). Data on giving blood-added tablets to pregnant women aims to describe the consumption of blood-added tablets during pregnancy as a risk factor for anemia in pregnant women.

Meanwhile, the achievement of the number of pregnant women who received Supplementary Food in Palembang City in 2020 was 100%. Special attention should be paid to the nutritional health of the mother because it has the most effect on the baby (Rodriguez-Llanes et al., 2016). Pregnant women are a nutritional vulnerable group which is one of the targets of the Supplementary Feeding program. This program aims to overcome malnutrition in pregnant women with a focus on macro and micronutrients needed to prevent Low Birth Weight Babies. The supplementary food provided can be in the form of family food based on local food with recommended recipes or additional, more practical manufacturer food with a standard composition of nutrients according to Minister of Health Regulation No. 51 of 2016.

Additional foods included in this question are:

1. Supplementary food that is only given every time the integrated service center/ Supplementary Food is given during counseling
2. Supplementary food specifically given to pregnant women with Chronic Energy Deficiency is usually given for 90 days of feeding/Supplementary Feeding recovery. They are usually given at the Posyandu or through cadres/midwives/community Health centers officers.
3. Supplementary food is obtained from the assistance of other parties, for example, donations from social institutions/companies or certain parties who are conducting campaigns or promotions of certain products.

Table 4. Indicators of Sensitive Nutrition Intervention

Specific Nutrition Intervention Indicators (%)					
Families who have health insurance from assistance have stunted toddlers	Families who have health insurance from assistance have stunted toddlers	Family with health insurance	Families who do not have health insurance	Active Family Planning Participants	Percentage of Open Defecation Free (ODF) stops.
69.2	43.3	23.8	5.3	79.1	57.01

Source: Processed from the Palembang City Health Office

Based on the data in [Table 4](#), the ownership of health insurance is significantly related to stunting in children under five. Families with health insurance from assistance have the most stunting children under five, namely 69.2%. In comparison, families with independent health insurance have stunting toddlers as much as 43.3%, families with health insurance as much as 23.8%, and families who do not have health insurance as much as 5.3% ([Ainy, 2010](#)). The ownership of health insurance affects the incidence of stunting.

This can illustrate that the more people who have health insurance, the higher the opportunity for families to improve the health status of all family members, including reducing the risk of stunting in children under five. Health insurance ownership is significantly related to stunting in children under five.

Active family planning participants cover new and old family planning participants who are still actively using contraceptives and drugs to delay, space out pregnancy, or end fertility. Based on data from the Palembang City Health Office in 2020, the coverage of active family planning participants was 79.1%; this figure has reached the target of the city of Palembang, which is 78%.

The percentage coverage of Open Defecation Free stops in Palembang City is 57.01%, which shows that this coverage is still very far from the target of 90%. The use of latrine facilities that do not meet health requirements, the practice of open defecation, and the disposal of toddler feces not in latrines causes children to be contaminated with environmental pollution, thereby facilitating the transmission of pathogens from feces and increasing the incidence of stunting in toddlers. Environmental factors indirectly cause stunting in toddlers ([Purba et al., 2020, p. 195](#)). Unsafe disposal of toddler feces, low use of latrines by children due to the high risk of falling in children, increasing the prevalence of diarrhea, intestinal worms, and the incidence of stunting in toddlers ([Brown et al., 2013, p. 629](#)). Environmental health aspects, such as sanitation and waste management, can hinder the absorption of nutrients in the body of children under five who are at risk of stunting ([Essa et al., 2021, p. 21](#)).

The behavior of stopping Open Defecation Free is included in one of the sensitive nutrition interventions. With the achievement of the percentage of Stop Open Defecation Free, which is still low in Palembang, it is necessary to carry out health promotion efforts to increase public awareness so as not to do open defecation. This action aims to break the chain of the spread of diseases such as diarrhea intestinal worms to reduce the incidence of stunting because low Open Defecation Free impacts the quality of water used for community needs ([Mulmi et al., 2016, p. 63](#)). Therefore, special attention is needed from families in disposing of toddler feces in the appropriate toilet, and special attention from stakeholders is needed to pay attention to families who do not have access to healthy latrines.

The health sector's specific nutrition interventions for toddlers are monitoring growth and development, giving immunizations, and providing additional food. Interventions for mothers such as (pregnancy classes, supplementary feeding for pregnant women, nutrition and health seminars) and interventions for adolescents (blood supplement tablet program). Meanwhile, sensitive nutrition interventions carried out by the non-health sector include environmental health interventions, interventions to overcome poverty ([Rossha et al., 2016, p. 135](#)). In an effort to reduce stunting in the city of Palembang, a SWOT analysis has been carried out as follows:

3.1. Strength

Stunting data was collected by name by address to support specific and sensitive nutrition interventions. The Palembang City Government has carried out several innovations that the health department has implemented and health centers by forming communities such as the Anemia Monitoring Community in schools, the Joint Movement for Nutrition Care, Monitoring Drink Tablets to Increase Blood Pregnant

Women and Young Women. In addition, the Palembang City Government, in order to support the stunting reduction program, also made intervention efforts through:

1. Healthy latrines for healthy families is called JASUKE, an effort to increase access to healthy latrines so as not to open defecation-free. This program provides healthy latrine assistance to families in Palembang City who do not have access to healthy latrines. Spears (2013, as cited in [Liem et al., 2019, p. 169](#)) states a positive relationship between open defecation and stunting, where districts with a higher prevalence of defecation report a higher prevalence of stunting.
2. Come on, Exclusive Breastfeeding is called SIK, an effort to encourage mothers who have babies to do exclusive breastfeeding by giving rewards to babies who get exclusive breastfeeding. This program also provides educational space for breastfeeding mothers to consult with health workers, especially nutrition workers and midwives, regarding maternal and child health during the breastfeeding process. Positive effects of continued breastfeeding up to 12 months of age on immunity against gastrointestinal infections in infants ([Diana et al., 2021](#)).
3. Movement to rise free of malaria is called Gerbang Basmala, an effort to prevent malaria in pregnant women by providing mosquito nets.

3.2. Weakness

Handling stunting is a cross-sectoral responsibility that must synergize and coordinate. Collaboration establishes cooperation with various parties, including academics, businesses, communities, institutions, and the community. Stakeholders can participate in government programs in education, socialization, campaigns, and improving nutrition and sanitation ([Essa et al., 2021, p. 26](#)). Several programs have been carried out to reduce stunting in the city of Palembang that have not yet reached the predetermined target, so that more optimal efforts and steps are needed, such as exclusive breastfeeding coverage, giving blood-added tablets to pregnant women, and the percentage of stopping open defecation because they have not optimal coordination and synergy of programs between related agencies/institutions within the framework of the Palembang City Poverty Reduction Coordination Team. In addition, the lack of nutrition/health workers and extension workers causes the implementation of interventions in the field to be not optimal and significantly affects efforts to improve community nutrition.

3.3. Opportunity

There is a commitment from the Palembang City government as stated in the Mayor's Regulation Number 41 of 2020, which contains directions, strategies, programs, and nutrition intervention activities, both specific and sensitive nutrition interventions. The government's commitment is the basis and focus of policy in designing stunting reduction targets and programs. This commitment indicates an opportunity to implement stunting reduction efforts over the next five years. Consistency and political commitment to financial support and implement the program influence the success of the nutrition improvement program. Action plans for stunting interventions through the commitment and vision of the highest state leadership, national campaigns were focusing on understanding, behavior change, political commitment, accountability, convergence, coordination, and consolidation of national, regional, and community programs, encouraging "Food Nutritional Security" policies, monitoring and evaluation ([Nisa, 2018, p. 174](#)).

Five points of the Regional Head's Commitment to Supporting the Acceleration of Prevention of Dwarf Children Stunting are 1. It was conducting regional meetings to accelerate the prevention of stunting with all regional apparatus organizations, sub-district heads, village heads, and other related parties; 2. It was conducting convergence/integration actions of programs and activities related to the acceleration of prevention of stunting in the regions; 3. It was collecting and publishing data on stunting children as well as acceleration programs that have been carried out regularly

and using the data as a basis for making program improvements; 4. Develop a policy on behavior change campaigns and interpersonal communication to accelerate the prevention of stunting for stunted children; 5. It was increasing the role of the village in carrying out the convergence of preventing stunting in the village.

3.4. Threat

To be able to support stunting prevention programs, it is necessary to strengthen coordination and expand coverage with poverty reduction programs. One of the main reasons the poverty rate is still quite high is the high open unemployment rate (Hidayat & Erlyn, 2021, p. 93). In addition, low-income people will increase the incidence of stunting due to a lack of access to nutritious food (Lloyd et al., 2019). The distribution of poverty levels among subdistricts in Palembang City is not evenly distributed. Of the 18 sub-districts in Palembang, there are at least four sub-districts that are the highest contributors to the poverty rate. The factors that influence the high level of poverty, especially in the four sub-districts that contribute to the highest poverty rate, are the low level of education, the condition of the area, which is still swampy, and the elements of development that are more concentrated in the Seberang Ilir area. As a result, the availability of job opportunities and urban development has not been felt by some people in the region. In addition, the issue of stunting is still new in the community. Indonesian people have a small body, "short" is often considered normal due to genetic factors. In addition, low motivation and awareness can be influenced by the lack of public knowledge. The lack of public knowledge regarding good parenting can trigger stunting, especially parents.

4. Conclusion

Specific nutritional interventions carried out by the Palembang City Health Office were encouraging early initiation of breastfeeding, exclusive breastfeeding, giving blood-added tablets to pregnant women, and overcoming iron and folic acid deficiencies in pregnant women. In an effort to reduce stunting in the city of Palembang, the strengths are stunting data collected by name by address, and program innovations run at health centers. However, the weakness is that there is not optimal coordination and program synergy between related agencies. In addition, low community motivation and lack of knowledge related to child-rearing patterns are a challenge, but the Palembang City government's commitment, as stated in the Mayor's Regulation policy, becomes the basis and direction of policy in designing stunting reduction and programs for the next five years.

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