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Coastal Women's Contribution to Child Stunting Prevention: A Social Dimension Approach in Coastal Communities

Kontribusi Perempuan Pesisir terhadap Pencegahan Stunting pada Anak: Pendekatan Dimensi Sosial Masyarakat Pesisir

Hardianty Askar[1*]
[1]Department of Fishery Product Technology, Institut Teknologi dan Bisnis Nobel Indonesia, Makassar 90221 Indonesia
**email: hardianty@nobel.ac.id*

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Abstract

Stunting is a serious health issue that affects children's physical and mental development, with both short-term and long-term harmful impacts. This study aims to examine the influence of social aspects of women in coastal areas on stunting prevention, focusing on the role of fisheries product diversification. Data were collected through observation, interviews, and questionnaire responses from three groups of mothers: mothers of toddlers, pregnant mothers, and breastfeeding mothers. Data analysis using a quantitative approach through multiple regression analysis shows that for mothers of toddlers, variables such as parental education level, fish consumption patterns, early marriage rates, availability of health facilities, and the role of fisheries product diversification significantly impact stunting prevention. For pregnant mothers, considerable influence was found on the availability of health facilities and the role of fisheries product diversification. Breastfeeding mothers, variables like parental education level, child-rearing patterns, fish consumption patterns, and the availability of health facilities showed significant effects. The results of this study are expected to contribute to developing more effective and integrated health policies, particularly in stunting prevention in coastal communities.

Keywords: Fish, Coastal Communities, Coastal Women, Stunting

Abstrak

Stunting merupakan masalah kesehatan serius yang mempengaruhi perkembangan fisik dan mental anak, dengan dampak jangka pendek dan panjang yang merugikan. Penelitian ini bertujuan untuk mengkaji pengaruh aspek sosial perempuan di wilayah terhadap pencegahan stunting, berfokus pada peran diversifikasi produk perikanan. Data dikumpulkan melalui observasi, wawancara, dan pengisian kuesioner dengan tiga kelompok ibu: ibu balita, ibu hamil, dan ibu menyusui. Analisis data menggunakan kuantitatif melalui pendekatan regresi berganda menunjukkan bahwa pada ibu balita, variabel seperti tingkat pendidikan, pola konsumsi ikan, tingkat pernikahan dini, ketersediaan fasilitas kesehatan, dan peran diversifikasi produk perikanan memiliki pengaruh signifikan terhadap pencegahan stunting. Pada ibu hamil, pengaruh signifikan ditemukan pada ketersediaan fasilitas kesehatan dan peran diversifikasi produk perikanan. Ibu menyusui, variabel pendidikan orang tua, pola asuh anak, pola konsumsi ikan, dan ketersediaan fasilitas kesehatan menunjukkan pengaruh yang signifikan. Hasil penelitian ini diharapkan dapat memberikan kontribusi dalam pengembangan kebijakan kesehatan yang lebih efektif dan terintegrasi, khususnya dalam pencegahan stunting di komunitas pesisir.

Kata kunci: Ikan, Masyarakat Pesisir, Perempuan Pesisir, Stunting

1. Introduction

Coastal communities live in coastal areas and depend on the natural resources around them. Although most of them still depend on the fisheries sector, many of them live in economic conditions. Limited employment options and low education levels pose challenges. Restricted access to resources also makes fishermen's settlements often inadequate, not meeting health standards, and vulnerable to various diseases. These conditions impact access to nutritious food, which can cause children to be malnourished and at risk of stunting (Hasmyati et al., 2025).

Stunting is when toddlers have less length or height than expected for their age. Stunting is not caused by just one factor, but rather by multiple factors, including parenting and maternal knowledge, economic status, and nutritional intake, which cause stunting in children's golden age (Yanti et al., 2020). The impact of stunting on children can occur in the near or distant future. The most immediate impacts experienced by children with stunting include impaired or damaged brain development, low intelligence levels (IQ), and a weakened immune system, which results in uncomplicated infection or disease. In contrast, impacts of stunting are short stature, loss of productivity, increased health care costs, greater risk of diabetes and cancer and premature death (Beal et al., 2018).

Stunting is a serious health problem for children, and the role of mothers is significant in determining the proper parenting to maintain children's health. To take good care of children, mothers need to have a sufficient understanding of children's needs (Muthohharoh & Yuniartika, 2024). Therefore, mothers need to understand aspects of child health as a preventive measure against various health problems, including stunting (Abdulaziz et al., 2024). Although coastal areas are rich in fishery resources, community access to nutritious food is often limited, especially in utilizing local food resources. This condition is an important basis for understanding more about the role of mothers in stunting prevention efforts in coastal communities. Alternative foods derived from local food ingredients, such as fish, are believed to have great potential to be developed as a regional food source in supporting the acceleration of stunting prevention (Askar et al., 2024). Fish provides many nutritional benefits for infants, toddlers, and pregnant women. Its protein content is vital to support the growth and development of toddlers, while for pregnant women, fish consumption is beneficial to help fetal development in the womb (Muslimin et al., 2024).

Various parties need to carry out efforts to deal with and prevent stunting, especially mothers who play an important role in child growth and development. Mothers play a role in implementing health behaviours during pregnancy until breastfeeding (Widiastuti & Putri, 2023). Based on this background, this study aims to explore how social factors play a role in the high stunting rate in South Sulawesi's coastal areas. The ultimate goal is to formulate effective strategies to overcome stunting and provide input to the government in designing comprehensive and integrated health policies, especially in efforts to prevent and overcome stunting in coastal areas of South Sulawesi.

2. Materials and Methods

2.1. Time and Place

This research location was selected based on the high stunting rate at the sub-district level in Makassar City. Sangkarrang sub-district ranks second highest with a prevalence of 5.45% (Askar et al., 2024). In addition, South Sulawesi Riskesdas data in 2018 showed that most of the stunted children came from fishing families, which amounted to 29.3% (Thasim & Anggraeny, 2023). Based on these facts, coastal areas were chosen as the research location, hoping the results can provide additional helpful information to support future policy making.

2.2. Population and Sampling

The latest data from Dasawisma PKK Makassar City notes that the number of homemakers living in coastal areas is 1,185 people. This study used the Cluster Random Sampling technique. Based on the determined cluster division, the details of the sample size can be seen in Table 1. By considering these criteria, the total research sample was calculated using the Slovin formula, as follows.

Table 1. Research Sample in Sangkarrang Sub-district

Housewife Groups	Population	Sample
Pregnant Mom	62 People	38 People
Breastfeeding Mom	289 People	74 People
Mother of a toddler	834 People	89 People

Data Source: Dasawisma PKK Makassar City (2024)

2.3. Data Collection Methods

Data was collected through observation and interviews with the help of a questionnaire as the main instrument. The data used in this study were obtained from the results of filling out questionnaires, interviews, and direct observation of three groups of mothers, namely mothers of toddlers, pregnant women, and breastfeeding mothers.

2.4. Data Analysis

This research uses quantitative analysis with multiple regression methods, which include ANOVA, coefficient of determination (R^2), partial test, and t-test. This approach is used to reveal the cause-and-effect relationship between the variables studied, so that the results can provide a more informative, comprehensive, and accurate picture of the social factors that influence stunting prevention efforts in coastal communities.

3. Result and Discussion

3.1. Social Aspects of Adaptation to Diversification of Processed Fishery Products and Stunting Prevention

These social factors include the level of parental education, parenting traditions, fish consumption patterns, early marriage rates, availability of health facilities, and the role of fishery product diversification. Based on the results of the regression tests, namely the T-Test, the results obtained are shown in Table 1:

Table 1. Results of multiple linear regression test analysis, social aspects

Aspects	Conditions	Variable	Coefficients		Description
			t	Sig	
Social	Mother of a toddler	Parent educational level	3.154	0.002	Significant
		Parenting traditions	1.819	0.073	non-significant
		Fish consumption pattern	5.226	0.000	Significant
		Early marriage rate	4.665	0.000	Significant
		Availability of Health Facilities	3.506	0.001	Significant
		The Role of Fisheries Product Diversification	2.779	0.007	non-significant
	Pregnant Mom	Parent educational level	1.147	0.260	non-significant
		Parenting traditions	-1.255	0.219	non-significant
		Fish consumption pattern	1.860	0.072	non-significant
		Early marriage rate	-2.361	0.025	Significant
		Availability of Health Facilities	766.37	0.000	Significant
		The Role of Fisheries Product Diversification	2.479	0.019	Significant
	Breastfeeding Mom	Parent educational level	-3.357	0.001	Significant
		Parenting traditions	3.873	0.000	Significant
		Fish consumption pattern	-2.329	0.023	Significant
		Early marriage rate	1.065	0.291	non-significant
		Availability of Health Facilities	-3.493	0.001	Significant
		The Role of Fisheries Product Diversification	1.672	0.099	non-significant

From the test results in Table 1, it can be seen that there are variables that have a negative coefficient value, which means that each addition of one unit of the independent variable will cause a decrease in the involvement of social factors in stunting prevention by the coefficient value of each variable assuming that other variables are constant. In other words, if the variable has a positive coefficient, it means that each addition of 1.00% of the variable will increase the involvement of social factors in stunting prevention by the coefficient value of each variable, assuming that the other independent variables contained in the model are constant. This is because these variables are one of the determining factors in preventing stunting in the Sangkarrang Sub-district's coastal area.

3.2. Partial test (T Test)

A partial or t-test determines how far one independent variable explains the variation in the dependent variable individually. To interpret the coefficient of the independent variable, you can use unstandardized or standardized coefficients by looking at the significance value of each independent variable from the coefficients table, which is the test output using SPSS. By looking at the significance value of the variables, the following is a hypothesis test of the independent variables (Table 1).

3.2.1. Parent Education Level Variable

Based on the linear regression test results in Table 1, the conditions of mothers under five and breastfeeding mothers obtained a t value of 3.154 and -3.357, respectively. Has a significant effect on stunting prevention. This is indicated by the significance value (Sig.), which is less than 0.05. This variable proves that parental education is very influential in stunting prevention in the family. Low education and knowledge affect health awareness and disease prevention (Badriah et al., 2019). Supported by research, Safitri et al. (2022), socioeconomic conditions in the family can affect stunting related to family income at a low level of parental education, because mothers do not know enough about nutrition for their children.

Low knowledge about stunting may indicate the need for better educational interventions. The research results revealed the effect of health education on respondents' knowledge about stunting prevention (Suryagustina et al., 2018). High maternal knowledge can influence the toddler's diet, which in turn can impact the nutritional status of toddlers (Rahayu et al., 2022). Maternal knowledge about fish consumption is one of the components that influences behaviour in consuming certain foods for themselves and providing food for their families (Prameswari et al., 2019).

In this variable, only the breastfeeding mother group shows the influence of parenting on children's social aspects in preventing stunting. This is shown in Table 1, the significance value (Sig.), which is less than 0.05 or 0.000. Causes that can describe chronic low nutritional status include inappropriate parenting. Lack of optimal parenting will exacerbate the cause of the increase in stunting prevalence. Behavioural aspects also influence stunting, especially in poor parenting and feeding practices. The majority of people have the perception that malnutrition is only caused by incorrect consumption patterns. However, three things must be considered in preventing stunting, namely: 1) improved consumption patterns, 2) improved parenting, and 3) improved sanitation and access to clean water (Thasim & Anggraeny, 2023). One of the factors that influences the high prevalence of stunting in Indonesia is parenting practices for children (Huriah & Nurjannah, 2020). The parenting provided by parents will affect children's physical and psychological development (Safitri et al., 2022).

Efforts to overcome stunting must consider the socio-cultural factors of the family and involve strategies that strengthen health practices and healthy parenting patterns, as well as increasing family awareness about the importance of children's nutrition and health (Khan et al., 2023). In addition, handling stunting also requires involving families in efforts to prevent and treat stunting in children (Harahap et al., 2024).

3.2.2. Fish Consumption Pattern Variable

The results of SPSS data processing that have been carried out on three conditions of the coastal community of Sangkarrang District show a significant influence of fish food consumption patterns on community social conditions in preventing stunting in groups of mothers of toddlers and pregnant women. The results obtained in Table 1 t values are (5.226 and -2.329), and the resulting significance value (Sig.) is less than 0.05 with values (0.000 and 0.023). Babies are ready for solid foods when they learn to chew at 6 or 7 months of age. Complementary breastfeeding foods are given to infants after 6 months of age that provide additional nutrients in addition to breast milk (Vonaesch et al., 2017; Huriah & Nurjannah, 2020). The parenting pattern of feeding mothers to toddlers follows the parenting pattern of feeding in general that occurs in the local community. The research location is a coastal area of Sangkarrang District, which has abundant marine resources, and most local people work as fishermen. This is one of the factors mothers use to feed their children, according to the food ingredients available in the household, such as fish. Training children to consume the right food from an early age needs assistance from parents so that they have good, nutritious food consumption patterns from childhood. The following are the results of interviews from research respondents: "….. *disinika dekat laut ji, orang-orang disinikan kebanyakan nelayan ji jg, jadi ikan semua ji dimakan, jadi anak-anakka ikut tommi dikasi makan ikan*." (R1). "..... It's near the sea, most of the people here are fishermen too, so they eat all the fish, so the children eat fish too." (R1).

"…… *kalau disini de' apa yang dimakan itu mi juga dikasi makan kan ananak, kalau ikan disini hampir setiap hari ji ada dirumah, apalagi disini daerah pulau ji, kalau saya anakku ku masakkan bubur nanti ku campur ikan sm sayur*" (R2). "…….in this place what is eaten is also given to the children, we eat fish almost every day, especially here in the island area, if I cook porridge for my children, then I mix fish with vegetables" (R2).

Toddlers are vulnerable to nutritional problems, especially if the nutrients needed for growth and development are not fulfilled during the golden period. If not supported by proper feeding patterns, the intake of nutrients is automatically low in quantity and quality, which impacts the emergence of nutritional problems that hamper the growth and development of toddlers (Loya & Nuryanto, 2017).

In pregnant women, the variable of fish consumption patterns does not significantly influence social aspects in preventing stunting in coastal areas. The value is 1.860, which indicates that the variable of fish diet in toddlers does not significantly affect the frequency of visits. With regression analysis testing, the significance is 0.072 > 0.05. One of the causes of the lack of effect of fish consumption in pregnant women is that pregnant women believe in hereditary myths inherent in coastal communities, one of which is that after the mother gives birth, the baby will smell fishy.

The socio-cultural multifactors associated with stunting in Indonesia also affect the incidence of stunting (Ginting & Hadi, 2023). Research conducted in the Bugis-Makassar tribe where mothers have certain habits or traditions in terms of eating practices such as abstaining from consuming squid during pregnancy because it is considered that the baby born will have black skin, then most mothers abstain from consuming fish because it is believed that the baby who will be born will smell fishy like fish, and refrain from consuming shrimp which is supposed to cause the baby to become hunchbacked like shrimp (Putriana et al., 2020).

3.2.3. Early Marriage Variable

Based on the results of the linear regression test in Table 1 using SPSS, it explains that in the group of mothers of toddlers and pregnant women, there is a significant influence between the variables of early marriage level and social aspects in preventing stunting with a t value of (4.665 and -2.361) respectively. This is indicated by the significance value (Sig.), which is less than 0.05. Stunting is a condition in children whose growth is not following their age due to a lack of nutritional intake, following the dose and over a long enough time, or other causes such as early marriage. As regulated by Law No. 16 of 2019, marriage is permitted if the woman has reached 16 and 19 years for men. The National Population and Family Planning Agency (BKKBN) states that based on health

science, the ideal age for someone to have their first marriage is 21 years for women and 25 years for men with consideration of the maturity of a person's biological and psychological conditions at age (Hermambang et al., 2021; Sari et al., 2024).

The reality in the field was that 21% of the respondents were married under the ideal age rules in health science, namely, the age range below 21 years. This situation indicates the occurrence of early marriage/child marriage. Toddlers born from early marriages have a higher risk of developmental delays compared to toddlers born to parents who did not marry early. Marrying at a young age while still a teenager will have a negative impact on their children. Research findings (Widowati et al., 2024) show that the factors causing growth delays in toddlers are maternal health history (age), economic status, and lack of nutritional fulfilment. Pregnancy at an early age can increase the likelihood of low-weight babies (Hendrawati et al., 2023). The birth of a low-weight baby can inhibit the growth and development of toddlers and cause stunting.

Early marriages in the Sangkarrang Sub-district's coastal areas are mainly due to the unstable economic conditions of the parents. Low income levels trigger early marriage and school dropouts in the area. Unplanned teenage pregnancy or teenage pregnancy from early marriage is more common among people from economically disadvantaged backgrounds (Saputra et al., 2024). This highlights the importance of reaching adolescent girls, as young women who become pregnant while facing malnutrition are at high risk of poor birth outcomes that can lead to child stunting (Beal et al., 2018).

3.2.4. Availability of Health Facilities Variable

The variable availability of health facilities is a variable that significantly influences the prevention of stunting in social aspects in all community groups, namely, mothers of toddlers, pregnant women, and nursing mothers. The results of SPSS data processing that have been carried out on three conditions of the coastal community of the District of Sangkarrang shows the t values obtained in Table 1 are mothers under five (3.506), pregnant women (766.37), and breastfeeding mothers (-3.493) and the resulting significance value (Sig.) is less than 0.05 with sequential values 0.001, 0.000 and 0.001). Research by Purnamasari et al. (2022) explains that health facilities are a factor that affects the incidence of stunting in children under five. Community access to health care facilities and the ease of reaching them affect the utilization of health services, so children who live far from health facilities tend to utilize lower-quality health facilities (Sari & Handayani, 2020).

The availability of health facilities and easy access to health for the community in the coastal area of Sangkarrang Sub-district plays an essential role in handling and preventing stunting from an early age. The availability of community health centers, auxiliary health centers, and posyandu in each island of Sangkarrang Sub-district, namely Barang Lompo Island, Barang Caddi Island, and Kodingareng Lompo Island, makes it very easy for people to access health services in the area. Posyandu provides services for pregnant women, nursing mothers, infants, and toddlers. Posyandu services include monitoring the health of mothers and children. The rapid service provided by health workers for people whose children are indicated to be stunted has done a good job. Research found that most children are stunted due to their size and low birth weight. Examinations given routinely to toddlers are the first step in preventing the chance of stunting. With the availability of adequate health facilities, it can support mother groups, especially toddlers, to carry out complete immunization. Mothers can make this effort with the support of health facilities to prevent stunting in children. Children who have incomplete immunization have a higher chance of stunting (Rahman & Mustafa, 2023).

One form of intervention to accelerate stunting rates is the Posyandu. Posyandu is a strategic effort to reduce infant mortality, maternal mortality, and birth rates. Through this program, nutritional problems of toddlers, pregnant women, and breastfeeding mothers can be monitored directly to detect cases of malnutrition early (Rahmiati et al., 2023).

3.2.5. The Role of Fishery Product Diversification Variable

Based on the results of SPSS data processing, the t value obtained, namely in the condition of mothers under five (2.779) and pregnant women (2.479), shows that there is a significant influence between the variable role of fishery product diversification on the social aspects of coastal communities in efforts to prevent stunting with the resulting significance value (Sig.) which is less than 0.05 with a value of (0.007 and 0.019) respectively.

Fish consumption in Makassar City is among the highest in Indonesia (Rasdi et al., 2024). One of the coastal areas of Makassar City is the Sangkarrang Sub-district, which produces abundant marine wealth. Fish is a food that can contribute to the diversity of human nutrition (Millward, 2017). Fish is a type of protein the body needs because it contains essential amino acids (Muchtar & Hastian, 2023). The role of fish in improving food quality is very important. It is a good source of omega-3 and omega-6 essential fatty acids and provides good long-chain polyunsaturated fatty acids (Funge-Smith & Bennett, 2019). The abundance of fish resources in the coastal area of Sangkarrang Sub-district provides opportunities for business actors to carry out processing by utilizing fresh and quality fish to get added value and maximum profit. The results of fish processing can also increase the surrounding community's income and meet the community's animal protein needs (Askar, 2023; Askar et al., 2024).

Sangkarrang Sub-district has various household industries and MSMEs that process fish into various processed fishery products. The diversified fishery products include fish balls, shredded skipjack, otak-otak, tumpi-tumpi, kambu bolu, and mairo fish crackers. One of the business groups in Sangkarrang Sub-district, precisely on Barang Caddi Island, is the Sinar Harapan Group, which produces tumpi-tumpi and kambu bolu products. The products produced are sold in the local community and outside the island, namely in Makassar City. Since stunting is very common, it is necessary to prevent it with protein-rich foods and energy-source foods, such as protein concentrates from fish (Muslimin et al., 2024).

Policies to support the availability of seafood play an important role in improving diets and thus reducing child mortality (Byrd et al., 2021). However, due to limited knowledge and experience in making various fish preparations, children become bored with eating fish. In the concept of nutrition science, food diversification can complement daily needs. Introducing varied food ingredients from an early age will enrich the recognition of texture, taste, and aroma, which will help fulfil nutritional needs for optimal growth and development (Nirmala & Octavia, 2022). Lack of knowledge about healthy and nutritious food processing makes parents only provide food without looking at the nutritional status of the food. However, with assistance, MSME players and home industries are encouraged to develop new products (Latief et al., 2024) that can be consumed as highly nutritious products. Awareness of the ocean's potential encourages children to consume seafood as a source of protein, which is the primary strategy in utilizing aquatic nutrition sources.

For all three groups (mothers of children under five, pregnant women, and breastfeeding mothers), the variables that most frequently showed significant effects were fish consumption patterns, early marriage rates, availability of health facilities, and the role of fishery product diversification on social aspects.

3.3. Simultaneous Test (F Test)

Based on the results of the regression testing in the F Test, the results are shown in Table 2:

Table 2. Results of the F test

Aspects	Conditions	Anova		Description
		F	Sig	
Social	Mother of a toddler	22.399	.000[a]	Significant
	Pregnant Mom	3.526	.000[a]	Significant
	Breastfeeding Mom	6.701	.000[a]	Significant

The simultaneous test determines whether all independent variables included in the regression model jointly influence the dependent variable. Based on the results of data processing (Table 2) obtained from the three community groups in the coastal area of Sangkarang Subdistrict, namely groups of mothers of toddlers, pregnant women, and nursing mothers, the calculated F value of each group (22,399, 3,525, 6,701) with a probability value of 0.000 <0.05, it can be interpreted that the independent variables simultaneously influence the dependent variable.

3.4. R-Square

Based on the results of the regression testing in the R Square, the results are shown in Table 3:

Table 3. Results of R Square

Aspects	Conditions	R Square
Social	Mother of a toddler	0.6211
	Pregnant Mom	0.711
	Breastfeeding Mom	0.875

In general, the regression model shows that many social factors play a role in the family health aspects of stunting prevention, with the R Square value in Table 3 being quite high, especially for breastfeeding mothers (0.875), which implies that the effect of the independent variable on the dependent variable (in this case, the social aspects of stunting prevention) is 87.5% and other factors influence the rest. These other factors are not included in the measurement variables used in the social aspects of stunting prevention. These variables include exclusive breastfeeding (Amalia et al., 2023), quality, complementary feeding, biological factors, gender, sanitation, and drinking water conditions (Huriah & Nurjannah, 2020).

4. Conclusions

The influence of social aspects in stunting prevention efforts can be concluded that in the group of mothers of a toddler, the variables of parental education level, fish consumption patterns, early marriage rates, availability of health facilities, and the role of fishery product diversification show a significant influence on stunting prevention. In the pregnant women group, only the variables of availability of health facilities and the role of fishery product

diversification show a considerable influence on stunting prevention. The breastfeeding mother group, on several variables, namely the level of parental education, parenting, fish consumption patterns, and the availability of health facilities, significantly influences the prevention of stunting in the social aspects of coastal communities.

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