Social Determinants of Stunting in Indonesia

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Article Info

Abstract

Stunting is a form of malnutrition that causes growth disorders characterized by height that is not per age. Around 8.9 million Indonesian children experience suboptimal growth. This study aimed to determine the social factors associated with the incidence of stunting in Indonesia. The method used was secondary data processing from Indonesian family data collection in 2021. The population of this data collection was 66.207.139 families from 33 provinces in Indonesia. The research samples were 38.886.147 families. The variables analyzed were indicators of pre-prosperous families, environmental facilities, and high-risk pregnancy in couples of childbearing age, with the risk of stunting. Data were analyzed using linear regression. The results showed that the determinants of stunting are maternal education, parental occupation and income, environment, social and family support, and health service factors. Based on the analysis, there is a relationship between the social determinants of health according to healthy people and the increase in stunting cases in Indonesia.

Introduction

Stunting (short) is a form of under-nutrition characterized by height for age under minus two as measured by standard deviation with WHO reference (Tanjung et al., 2020). The Height/Age indicator indicates chronic nutritional problems, result of a long-lasting condition, causing growth disorders characterized by height that is not per age. Stunting is a nutritional problem in the world, 80% of stunting under-fives are spread in 14 countries worldwide, and Indonesia ranks fifth in the country with the highest number of stunting (Beal et al., 2018). Stunting data in Indonesia shows that the prevalence of stunting has increased from 35.6% (2010) to 37.2% (2013). This condition illustrates that around 8.9 million Indonesian children experience suboptimal growth, or one in three children is stunted.

Stunting in toddlers needs special attention because it can hinder the nation's future. In the short term, children can experience brain disorders, physical growth disorders, and metabolic disorders in the body (Onis & Branca, 2016; Tanjung et al., 2020). In the long term, children with stunting are more likely to grow up to become adults who are unhealthy and poor (Santosa et al., 2022; Woldeamanuel & Tesfaye, 2019). It is due to decreased cognitive abilities, low education level so that income as an adult is low, decreased immunity so that it is easy to get sick, high risk of diabetes, obesity, heart and blood vessel disease, cancer, stroke, and disability in old age, increasing the risk perinatal-neonatal disease and death, as well as uncompetitive work quality and will result in low quality of human resources (HR) which results in low productivity of the nation's economy.

The Indonesian government has issued many policies and regulations related to potential interventions to reduce stunting. Specific Nutrition Program interventions are

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carried out by the Ministry of Health (MoH) through the Community Health Center (Puskesmas) and Integrated Service Posts (Posyandu) through the First 1000 Days of Life Movement (1000 HPK). In addition, another program is the Provision of Supplementary Food for Undernourished Toddlers. The Intervention in Sensitive Nutrition, which has been carried out by the government through the relevant ministries/institutions, among others are as follows: 1) PAMSIMAS Program (Provision of Clean Water and Community-Based Sanitation); 2) Fortification of food ingredients (salt, flour, and cooking oil); 3) Providing access to health and family planning services; 4) Providing National Health Insurance; 5) Providing Universal Early Childhood Education; 6) Provide education on sexual and reproductive health and nutrition for adolescents; 7 Rice Subsidy Programs for Low-Income Communities (Raskin/Rastra) and the Family Hope Program (PKH) (Kementrian Kesehatan, 2018). Based on these programs, it appears that the government is making serious efforts to reduce the prevalence of stunting, which of course is accompanied by a large budget allocation. Data from Basic Health Research shows that the stunting prevalence rate has decreased from 37.2% in 2013 to 30.8% in 2018. However, this decline is still far from the target. The government targets the stunting rate to fall to 14% by 2024.

Previous research on social determinants of stunting was conducted by Picauly and Toy in Kupang and East Sumba. The results of this study indicate that the determinants of stunting include family income, knowledge of maternal nutrition, maternal parenting patterns, history of infectious diseases, history of immunization, protein intake, and maternal education. The risk factors for stunting are family income, working mother, knowledge of nutrition and maternal parenting, having a history of infectious disease, not having a complete immunization history, and low protein intake. Meanwhile, low maternal education is a protective factor against stunting (Picauly & Toy, 2013). Based on this background, the authors are interested in discussing stunting to analyze the social determinants of health associated with stunting in Indonesia according to the Healthy People 2030 framework.

Methods

The method used in writing this article is the analysis of secondary data from the 2021 Indonesian Family Data Collection (PK21) conducted by the National Population and Family Planning Board (BKKBN) throughout Indonesia. Family data collection is an activity of collecting primary data on population data, family planning, family development, and family member data which is carried out simultaneously by the community and the government at a predetermined time. Data collection and processing were carried out using the census method by collecting data on all families who were the target of data collection in Indonesia by conducting house-to-house visits.

The characteristics of the PK21 data include 1) using detailed micro-family-based data; 2) the latest primary data can be periodically updated; 3) field operations are used for grassroots interventions, 4) focus target segmentation can be made into family maps so that targets are more accurate; 5) community data from by and for the community as well as Real Conditions; 6) data is collected and updated by people who know the exact conditions of their area.

The population of this data collection was 66.207.139 families from 33 provinces in Indonesia. One province has not yet reported the data collection, namely DKI Jakarta Province. The research samples were 38.886.147 families. The variables analyzed were indicators of pre-prosperous families, environmental facilities, high-risk pregnancy in couples of childbearing age, with the risk of stunting. Data were analyzed using linear regression.

Result and Discussion

Based on the results of the 2021 Indonesian Family Data Collection carried out by the BKKBN, the number of target families was 38.886.147 families out of a total of 66.207.139 families in Indonesia. The number of Target Families by Screening for Potential Stunting Risk based on Indonesian Family Data Collection in 2021 can be seen in Table 1.

Table 1. Number of Target Families by Screening for Potential Stunting Risk

Province	Number of Family	Number of Target Family	Target				Family Category Potential Stunting	
			Have Children		Couples of Childbearing Age	Pregnant	Risk	No Risk
			0-23 Months	24 - 59 Months				
Aceh	1,196,842	783,810	118,371	247,047	773,590	44,152	630,404	153,406
Sumatera Utara	3,337,404	1,877,033	206,615	485,089	1,855,245	68,721	1,529,081	347,952
Sumatera Barat	1,201,691	717,975	106,863	205,370	709,389	36,134	605,384	112,591
Riau	1,385,549	920,306	103,390	230,840	911,400	35,211	752,782	167,524
Jambi	919,705	603,634	68,115	141,958	598,306	22,734	491,953	111,681
Sumatera Selatan	2,102,355	1,331,566	141,976	317,769	1,318,466	44,257	1,105,478	226,088
Bengkulu	516,748	331,537	34,166	78,491	328,796	12,597	264,391	67,146
Lampung	2,158,048	1,340,013	135,783	311,600	1,329,045	43,624	1,071,994	268,019
Kepulauan Bangka Belitung	390,497	236,135	28,272	56,191	233,364	7,878	189,124	47,011
Kepulauan Riau	424,596	298,166	37,663	76,632	294,526	11,377	238,267	59,899
Jawa Barat	13,283,382	7,931,586	1,061,389	2,038,806	7,822,002	309,508	6,493,908	1,437,678
Jawa Tengah	10,679,773	5,930,140	759,869	1,419,781	5,870,344	209,074	4,708,531	1,221,609
D.I. Yogyakarta	1,080,421	530,124	64,359	117,422	525,968	18,720	408,590	121,534
Jawa Timur	11,848,066	6,373,612	683,028	1,331,341	6,309,132	187,189	5,065,076	1,308,536
Banten	2,658,505	1,763,211	206,408	443,814	1,741,025	61,249	1,373,383	389,828
Bali	1,048,611	603,905	57,898	124,968	600,733	16,129	496,046	107,859
Nusa Tenggara Barat	1,528,192	942,204	143,387	259,677	925,538	47,800	799,235	142,969
Nusa Tenggara Timur	1,057,231	640,414	116,150	202,672	623,734	28,191	603,893	36,521
Kalimantan Barat	1,082,393	697,637	72,413	169,086	688,997	23,382	640,618	57,019
Kalimantan Tengah	510,206	343,875	37,018	77,370	340,332	11,563	291,957	51,918
Kalimantan Selatan	1,051,582	644,292	74,561	146,125	635,477	22,905	535,976	108,316
Kalimantan Timur	792,046	508,351	63,216	128,885	501,372	18,218	406,202	102,149
Kalimantan Utara	125,675	84,104	11,010	22,097	82,790	3,043	71,982	12,122
Sulawesi Utara	640,530	334,382	36,821	74,161	328,217	8,644	272,556	61,826
Sulawesi Tengah	733,776	452,713	65,179	118,498	445,164	17,342	390,608	62,105
Sulawesi Selatan	2,145,260	1,217,795	171,785	313,706	1,197,914	49,272	1,039,979	177,816
Sulawesi Tenggara	604,791	380,662	59,492	111,964	373,044	17,305	320,807	59,855
Gorontalo	329,539	200,333	29,665	49,528	196,453	8,034	171,934	28,399
Sulawesi Barat	287,945	189,696	29,824	56,401	186,406	9,357	169,363	20,333
Maluku	288,831	171,886	23,132	48,332	167,742	6,264	147,657	24,229
Maluku Utara	237,528	158,838	17,416	36,757	156,656	5,622	135,172	23,666
Papua	476,620	296,461	21,369	49,335	290,249	11,525	278,861	17,600
Papua Barat	82,801	49,751	6,380	13,730	48,306	1,774	45,006	4,745
	66,207,139	38,886,147	4,792,983	9,505,443	38,409,722	1,418,795	31,746,198	7,139,949

Source: Indonesian Family Data Collection, 2021 (BKKBN)

From these results, data on the number of Indonesian families at risk of stunting were 31,746,198 families or 81.64% of the total families in the data. It is, of course, very worrying. Based on data from the Indonesian Toddler Nutrition Status Survey (SSGBI) in 2021, the current prevalence of stunting is still at 24.4% or 5.33 million children under five. The prevalence of stunting has decreased from previous years but still has not reached the WHO standard, where the incidence of stunting in a country must be below 20%. From these data, continued analysis of the effect on the screening variable and the risk of stunting using regression analysis and then supported by the literature review. In this study, several variables were obtained from the social determinants of health according to healthy people that were stunting, as shown in Table 2.

Social Determinants of Stunting in Indonesia based on the Healthy People variable are: 1) Economic Stability (Family income and Parents' Jobs), 2) Education (Mother's education), 3) Social and Communication (Social and family support, Culture, and lifestyle, and Parenting pattern), 4) Condition of

Home and Surrounding Environment (Source and access to clean water, and Sanitation & Hygiene), 5) Health and Health Services (Pregnancy Condition, Pregnancy checkup, and Nutrition Services). Based on these determinants, the researcher then conducted a regression analysis of the screening variable for the Indonesian Family Data Collection associated with the risk of stunting. The screening variables taken were economic stability (pre-prosperous family status, having children aged 7-15 years not attending school, not having a source of income to meet basic needs, and not being able to eat a variety of foods at least twice a day), mother's education at least junior high school, Condition of House and Surrounding Environment (no source of drinking water, no latrine, no decent house), health (risk of pregnancy too young, too old, too close, and too much).

Educational level is the stage of education that is determined based on the level of development of students, the goals to be achieved, and the abilities developed. In this study, it was divided into 3 levels. Primary Education (low level), Secondary Education (middle), and Higher Education (high level). Primary education is the initial education level for 9 (nine) years, namely Elementary School (SD) for 6 years and Junior High School (SMP) for 3 years. Basic education is a compulsory education program. Secondary education is a level after the basic, namely Senior High School (SMA) and Vocational High School (SMK) for 3 years of education. Higher education is a level of education after secondary education which includes diploma, bachelor, master, doctoral, and specialist education programs organized by universities.

Based on data regression analysis, there is a positive influence between positive education between mother's education with a maximum of junior high school and families at risk of stunting (99.03%). It means that the more mothers with low education in an area, the more families at risk of stunting in that area will be. Scatter Plot Education of Mothers and Families at Risk of Stunting can be seen in figure 1.
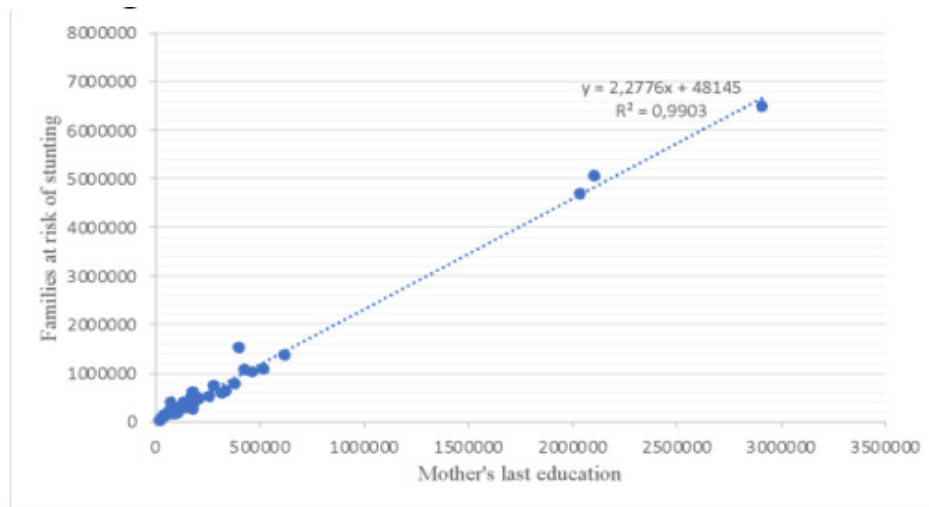

Figure 1. Scatter Plot Education of Mothers and Families at Risk of Stunting

Low maternal education is the primary cause of stunting in school children and adolescents. More educated mothers are more likely to make decisions that will improve the nutrition and health of their children (Novitasari & Wanda, 2020; Rakotomanana et al., 2017). Mother's education level is the last formal education completed. The function of education for mothers is to develop children's insight into themselves and the environment. Mothers with low education will find it difficult to receive information, so children who live in families with basic education levels tend to experience slow growth because of the parenting pattern given to their children (Sari & Sartika, 2021). A mother's education level affects children's food consumption caused of mindset and experience. Mothers with a high

level of education will prefer food of better quality than those with a low level of education. Mothers with higher education will prefer foods that have a high nutritional content following available food and eating habits since childhood so that nutritional needs are met (Cameron et al., 2021; Damanik et al., 2020).

In addition, mothers with junior high school education tend to be better at parenting and better at choosing the type of food for their children. It is because mothers with junior high school education have a higher opportunity to access information about the nutritional status and health of children so that their knowledge increases. Then it is put into practice in the child care process, which will affect nutritional status and better health of children. The level of education, especially the mother's, affects the health status. It is related to the role that plays

the most in the formation of children's eating habits because it is the mother who prepares the food starting from setting the menu, shopping, cooking, preparing food, and distributing food (Rizal & van Doorslaer, 2019).

The problem of stunting, in general, is a problem with a fairly high prevalence compared to the problem of overweight or wasting. Various aspects that can affect the occurrence of stunting include economic, political, health services, education, social, cultural, and environmental aspects. The economic factors that influence it. Such as work, income level, education, and knowledge of parents. Low economic status can cause inaccessibility in the fulfillment of daily nutrition and health services for pregnant women and children under five (McGovern et al., 2017).
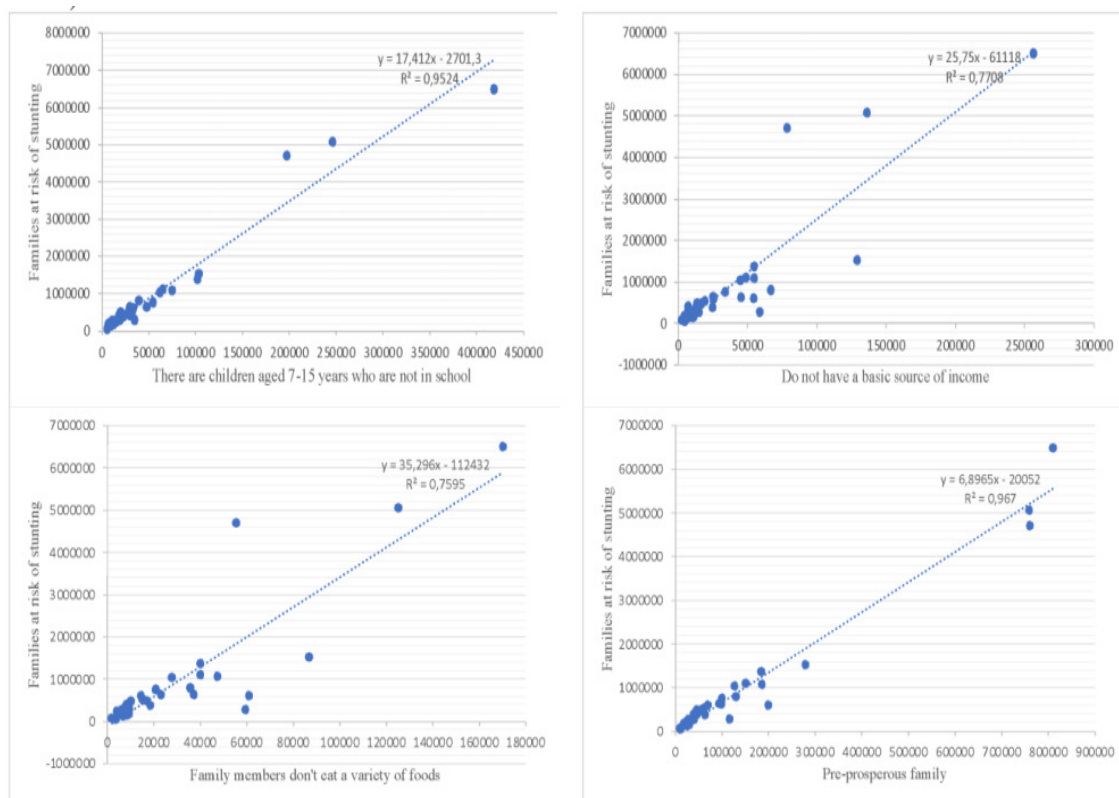

Figure 2. Scatter Plot of Economic Factors and Families at Risk of Stunting

The scatter plot of each variable is shown in Figure 2. Based on data regression analysis, it can be seen that there is a positive influence between the ownership of children aged 7-15 years who are not in school (95.24%), not having income to meet basic needs (77.08%),

families do not eat varied foods at least twice a day (75.95%), and pre-prosperous family status (96.7%) with the risk of stunting in the family. Economic factors here play a close role as a trigger for stunting in a family. One of the influential economic factors is family income.

Family income is the income received by the household concerned, both from the income of the head of the household and the income of household members. Household income can come from remuneration for labor production factors (wages and salaries, profits, bonuses, etc.), capital remuneration (interest, profit sharing, etc.), and income from gifts from other parties (transfers).

Family income will affect a person's ability to access food. It will affect the nutritional status of children. Usually, families with lower incomes will consume cheaper and less varied foods. A low-income level is a factor in the incidence of stunting which has a 2.3 times greater risk of having stunted children than than families with sufficient income. A high income will allow the fulfillment of the food needs of all family members (Sari & Sartika, 2021). In addition, the work of parents, especially fathers, also has a vital role in determining the quality and quantity of food needed for all family members. This job will determine the amount of their income.

From this description, it can be grouped that from an economic point of view, there are several factors that influence the incidence of stunting in a family, including the work of parents, parents' income, parental education, and parenting in the family. All of these factors turned out to be interrelated with each other. Education will have an influence on the type of work which will also affect the income of a family. Income will determine how the family meets the nutritional needs of the family and health services for stunting prevention.

There are two factors that affect the nutritional status of children, these factors are direct and indirect factors. Culture is one of the indirect factors that can cause stunting. Existing culture, traditions, or habits such as dietary restrictions, and wrong eating patterns can lead to nutritional problems, especially for toddlers. This can have an impact on the growth and development of toddlers, which is one of the indirect factors that influence the mother's attitude in undergoing pregnancy, undergoing the delivery process, as well as in child care patterns. Problem analysis with a cultural approach is needed as an effort to identify the relationship of health problems according to cultural background to the prevalence of stunting (Soekatri et al., 2020).

Social and family support factors are the most influential factors on the provision of specific nutrition interventions. Basically, the family has an important role in shaping the culture and daily health behavior (Raharjo, 2016). Each family member has several roles in the family, including as a motivator, educator, and facilitator. Social support is the ability of families and communities to provide time, attention, support in the form of physical, mental, and social. Social support includes attention or family support for mothers in feeding, psychosocial stimulation, and practices in infant health (Ponum et al., 2020; Wati, 2022). The higher the family support, the better the mother's motivation in child care. However, there are still many mothers who have sufficient social and family support but are not good at providing specific nutritional interventions (Aryotochter, 2018). This is because there is a culture in the family that is not beneficial for health but is still followed. Especially the role of a grandmother in directing a mother in breastfeeding and feeding patterns to children (Aguayo & Menon, 2016; Febriana & Nurhaeni, 2019).

In addition to social and family support, indirect factors that influence the provision of specific nutrition interventions are culture and lifestyle. Culture is a complex whole, which includes knowledge, belief, art, morals, law, customs, and other capabilities and habits acquired by humans as a society. Meanwhile, culture is the view of life of an individual or group with reference to values, beliefs, norms, patterns, and practices that are learned, shared, and passed on between generations. Usually it is parents who teach their children's cultural values and lifestyles from generation to generation, including teaching cultural values and lifestyles in society (Mulyaningsih et al., 2021). Habits that are formed based on culture can affect nutritional status and cause malnutrition. In this study, respondents who have babies are still limited by culture, habits, customs, and beliefs that have become the life customs of a region. Most of the factors of cultural values and lifestyles owned by respondents tend to be unfavorable to health. One of the cultures

that is still inherent in the community is giving coconut water to newborns with the aim of making babies healthy and strong, giving smooth bananas to babies before the age of 6 months so that children are not fussy, consuming lots of rice and a little protein. This has a high potential for stunting in children (Ciptanurani & Chen, 2021).

Good parenting habits are carried out by the mother herself with the maximum time a mother has in accompanying her toddler on a daily basis. Parenting done by the mother herself is certainly different from parenting done by others such as grandmothers or baby sitters. Because mothers can supervise, give full attention, and affection to their children for 24 hours. The full time that mothers give to their toddlers will provide a sense of comfort and good attention from mothers so as to support efforts to maintain health, nutritional status of toddlers, and create closeness between mothers and children. The results of this study are in line with the results of Turnip's (2008) research in Sidikalang District which states that there is a significant difference between parenting habits and children's nutritional status. Families who apply bad parenting habits have 9 times the chance of poor child nutritional status. A close and intimate relationship between parents and children is an absolute requirement to ensure harmonious growth and development, both physically, mentally and psychosocially. Mothers who provide good psychosocial stimulation to children have a positive effect on children's nutritional status. On the other hand, if the child's psychosocial condition is bad, it can affect the nutritional status and development of the child. The bad psychological condition of children looks like feeling depressed, stress and depression will affect consumption patterns, as well as absorption of nutrients in children (Sari & Sartika, 2021; Soekatri et al., 2020).

Environmental factors that become the focus of attention of researchers in relation to stunting under five were water, sanitation, and hygiene (WASH). Thus, research scoping examines these aspects. The WASH concept is applied by WHO in an effort to prevent diarrhea, although in general it can be applied to the prevention of other diseases including enteropathy and malnutrition (WHO, 2014).

Access to clean water is generally not only used for drinking and cooking purposes, but also for bathing and other water purposes. However, there are differences in the types of water sources studied, namely clean water sources and drinking water sources (Headey, D., Hirvonen, 2016). Access to drinking water specifically for family drinking purposes (sari & Sartika, 2021). Sources of clean water and protected drinking water are those that flow to the household level through pipelines including tap water, public taps, public hydrants, water terminals, rainwater reservoirs, or protected springs and wells, drilled wells or pumps that are at least 10 meters away from sewage, waste collection and garbage disposal.

It was found that research discusses the relationship between sanitation and the incidence of stunting under five. The variables measured related to sanitation were the ownership of latrines, wastewater treatment facilities and sanitation facilities, with inconsistent results. There is not a single article that explains how access and sanitation facilities and wastewater treatment facilities are assessed. It was only explained that the variable was a dichotomy variable with yes/no answers and qualified/unqualified answers. In addition, it is not explained whether the access and sanitation facilities are specifically owned by themselves or are shared facilities.

Hygiene practice is known to be an important aspect in maintaining the health of toddlers. There are four articles that measure aspects of hygiene practice, namely washing hands with soap and running water. Only one article describing handwashing time was assessed, namely a study in Central Sulawesi which included washing hands before preparing food, before breastfeeding and after defecating. Hand washing practice is consistently associated with stunting in this article, with an AOR of more than one. Hygiene behavior that is measured in addition to washing hands is defecation behavior, namely in the research in Banggai and Sigi (sari & Sartika, 2021).

Environmental risk factors that were also found were regarding waste management. Aspects of waste management are found in two articles. However, only one study has statistically significant results, namely the

research on the results of IFLS data processing (Irianti, S., Prasetyoputra, P., Dharmayanti, I., Azhar, K., Hidayangsih, 2017). In addition, a variable regarding exposure to cigarette smoke was found in one article with insignificant results. Another environmental aspect that is assessed is the housing factor, where what is measured includes the type of wall of the house and the type of floor of the house. The type of wooden house walls and thatched roofs as well as earth floors as in the Mozambique study were significantly related to the incidence of stunting.

Environmental factors have an important and significant role in the occurrence of stunting in toddlers. A number of existing research

results can be used as a basis for planning stunting interventions through modification of environmental factors, which so far have mostly been stunting interventions through supplementation.

Based on the regression analysis related to the condition of the mother with pregnancy at risk, it was found that there is a positive influence between pregnancy at a young age (90.61%), pregnancy at an old age (99.69%), pregnancy with birth spacing that was too close (87.12%), and pregnancies in which too many children have been born (93.17%), with families at risk of stunting. Scatter Plot of Pregnancy Status and Families at Risk of Stunting can be seen in figure 3.
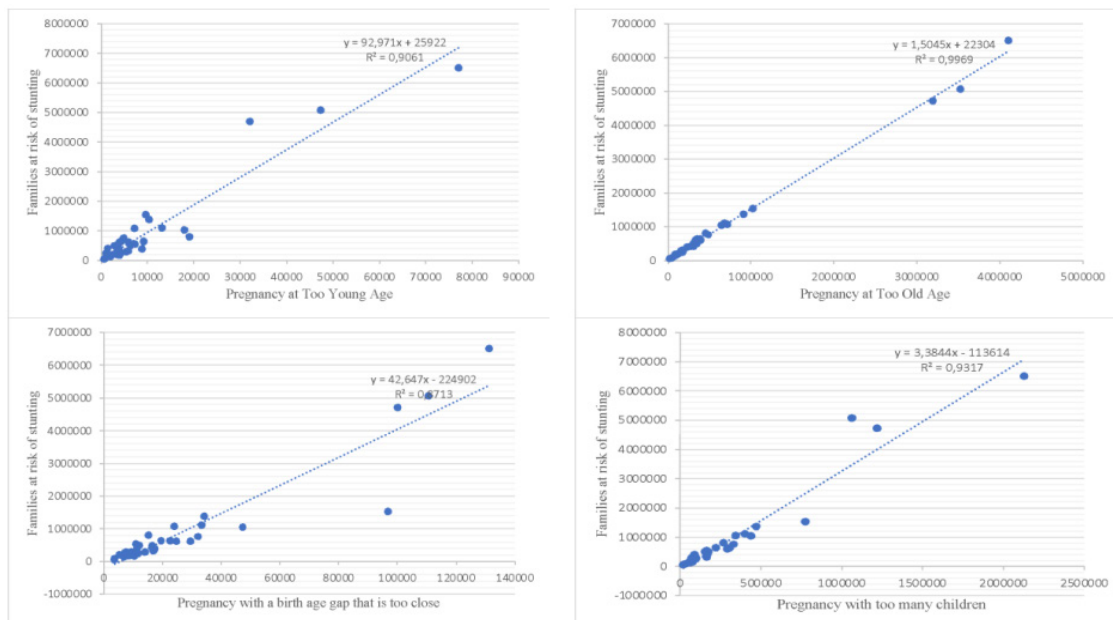

Figure 3. Scatter Plot of Pregnancy Status and Families at Risk of Stunting

Teenage pregnancy increases the prevalence of stunting. Accoding to Simbolon (2021), stunting prevalence is higher in toddlers of married mothers of adolescents compared to mothers of married mature. The stunting prevalence was also higher in children under five years from adolescent pregnant women compared to mothers who were of sufficient age. A married teenage woman is 1.2 times at risk, and a woman who is less than 20 years pregnant is 1.3 times at risk of having a stunting toddler.

Health services are an indirect cause of stunting. The existence of health services is a step in an effort to reduce nutritional

problems and also improve the health status of the community. Nutrition services in this health service include immunization, weighing children, pregnancy checks including antenatal care, and facilities such as posyandu and health centers. Antenatal Care / ANC is often referred to as prenatal care. The frequency of antenatal care visits (ANC) is one of the risk factors for toddlers experiencing stunting, this is because when ANC visits are carried out regularly, the risk of pregnancy in a mother can be detected early, especially those related to nutritional problems. According to (Mulyaningsih et al., 2021), ANC visits are a risk factor for stunting under five in the working area of the Dasan

Agung Health Center. In this study, it was found that mothers with non-standard ANC visits had a 2.3 times risk of having stunting under five compared to mothers with standard ANC visits.

The standard of ANC visits is seen from the frequency of visits by pregnant women to check their pregnancy with health workers with a minimum number of visits 4 (four) times during pregnancy with a distribution of visits in the first trimester, once in the first trimester, once in the second trimester and twice in the third trimester. So that pregnancy problems, especially those related to nutritional problems in pregnant women, can be identified early, the community, especially pregnant women, can take advantage of pregnancy examination facilities as much as possible so that interventions can be carried out earlier.

Conclusion

The social determinants of stunting according to the Healthy People Framework was parental education factors, economic factors, social factors, environmental factors, and health service factors. Economic factors and environmental factors are two factors that have a large enough impact on the occurrence of stunting. Based on data regression analysis, there is a positive influence between positive education between mother's education with a maximum of junior high school (99.03%), the ownership of children aged 7-15 years who are not in school (95.24%), not having income to meet basic needs (77.08%), families do not eat varied foods at least twice a day (75.95%), and pre-prosperous family status (96.7%), pregnancy at a young age (90.61%), pregnancy at an old age (99.69%), pregnancy with birth spacing that was too close (87.12&), and pregnancies in which too many children have been born (93.17%), with families at risk of stunting.

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