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## Parents Education is One of Affected Factor in Stunted Children Profile in Pekanbaru

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### ABSTRACT

Stunting is a developmental disorder in children caused by poor nutrition, recurrent infections, and inadequate psychosocial stimulation, marked by the child's height or length being below the threshold (Z-Score) of -2 standard deviations. The prevalence of stunting in Pekanbaru remained high, at 11.4%. To examine the family profiles with stunted children based on indicators of acceleration stunting reduction. This was descriptive research with quantitative data, and the sample size was 75. The variables studied included family profiles based on the stunting reduction acceleration indicators according to Presidential Regulation No. 72 of 2021. The family profile of those with stunted children included fathers with mostly secondary education (64%), mothers with secondary education (57.3%), 19 mothers experiencing short stature (CED), with only four mothers receiving additional food (Pemberian Makanan Tambahan/PMT), mothers who took iron supplements during pregnancy (80%), children with stunting who were exclusively breastfed (78.7%) and introduced to complementary feeding (80%), children with stunting taken to integrated health posts (Posyandu) for regular growth and development monitoring (76%), children with stunting receiving complete immunization (57.3%), families participating in family planning programs (60%), and children with stunting resulting from unwanted pregnancies (40%). The majority of parents with stunted children had a lower to middle education level, low income, did not participate in the national health insurance program (JKN), and did not receive either cash or food assistance.

**Keyword:** Education level, Family Income, Family Planning, National Health Insurance, Stunting



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## 1. Introduction

According to the World Health Organization (WHO), stunting is a developmental disorder in children caused by malnutrition, recurrent infections, and inadequate psychosocial stimulation. When a child's height is < -2 standard deviations from the median growth standards established by WHO, they are said to be experiencing stunting [1]. Based on the Multicenter Growth Reference Study (WHO-MGRS) standardized criteria, stunting is defined as a condition of significantly short stature [2].

According to the World Health Organization (WHO), in 2018, the global prevalence of stunting in toddlers was 22%. However, integrating data from the March National Socioeconomic Survey (Susenas) and the Indonesian Child Nutrition Status Study (Studi Status Gizi Balita Indonesia or SSGBI) in 2019 indicates a higher prevalence of stunting at 27.67% in Indonesia. This figure surpasses the WHO threshold of 20%, highlighting the chronic nature of Indonesia's stunting problem. Furthermore, the prevalence of stunting in these 14 provinces surpasses the national rate, underscoring the chronic nature of the stunting problem in

Indonesia. The distribution of stunting prevalence in Indonesia reveals the highest rates in East Nusa Tenggara Province (43.82%) and the lowest in Bali Province (14.42%) [3]. In Riau Province, stunting is 23.95%, with Kuantan Singingi District having the highest prevalence at 29.55%. The prevalence of stunting in Pekanbaru City is 11.4% [4].

The factors causing stunting consist of both direct and indirect causes. Direct factors include maternal nutritional status, infections during pregnancy, exclusive breastfeeding, birth weight, birth length, and recurrent infections. Additionally, other factors contributing to stunting can be environmental and genetic. Environmental factors such as poor sanitation and limited access to clean water play a role. Indirect factors that can lead to stunting include parenting practices, children's feeding patterns, food availability, family access to clean water, and the reach of healthcare services [5].

The characteristic profile of families with stunted children can be observed through the parents' (especially the mother's) level of education and family income (economic status). It can also be described by indicators of stunting reduction based on Presidential Regulation No. 72 of 2021. These indicators include the nutritional status of the mother during pregnancy, particularly experiencing Chronic Energy Deficiency (CED), pregnant mothers with CED receiving supplementary feeding, iron tablet consumption during pregnancy, exclusive breastfeeding and complementary feeding practices, regular monitoring of child growth and development at integrated health posts (Posyandu), primary immunization for children, family planning programs, health insurance participation, and government assistance programs, whether in the form of cash, social support, or food aid [5].

The high stunting prevalence of 11.4% in Pekanbaru certainly requires effective and efficient intervention. Therefore, the researcher is interested in conducting a study to obtain the family profile data of children with stunting based on indicators for accelerating stunting reduction in Pekanbaru. The data from this study can also serve as a reference for effective and efficient intervention efforts to accelerate the reduction of stunting in Pekanbaru.

## 2. Method

This was a descriptive survey study with quantitative data about the family profiles of stunting children, as observed through accelerating stunting reduction indicators in Pekanbaru. The study was conducted in several neighborhoods designated as focal points for stunting in Pekanbaru, Riau Province. The population of this research consists of all parents with stunted children. The sample for this study is determined using a consecutive sampling method, with inclusion criteria involving parents who have toddlers with stunted children and are willing to participate as respondents. Data collection was carried out by taking primary data, namely asking questions to research subjects directly. The data taken is open question data about information from research subjects. The data taken does not require validation because it is primary information collection directly to the research subjects.

The data undergo descriptive analysis using statistical methods, with the results being presented in the form of frequency distribution tables and narratives, which will be used in drawing conclusions.

## 3. Result and Discussion

Age of the respondents This study has been conducted at three community health centers designated as focal points for stunting in Pekanbaru. A total of 126 samples were initially obtained for the study, but 51 children were excluded as they were unwilling to participate as respondents in this study. Therefore, the total number of samples examined is 75 children.

The profile of families with stunted children is shown in Table 1.

Table 1. Profile Of Families with Stunted Children

Variables	Frequency (n)	Percentage (%)
<b>Paternal Education</b>		
Low	26	34,7
Middle	48	64
High	1	1,3

<b>Maternal Education</b>		
Low	29	38,7
Middle	43	57,3
High	3	4
<b>Family Income</b>		
Low	63	84
High	12	16
<b>History of CED during Pregnancy</b>		
Yes	19	25,3
No	56	74,7
<b>Supplementary Feeding in CED during Pregnancy</b>		
Yes	4	21
No	15	79
<b>History of Consuming Iron Supplementation during Pregnancy</b>		
Yes	60	80
No	15	20
<b>Exclusive Breastfeeding</b>		
Yes	59	78,7
No	16	21,3
<b>Complementary Feeding</b>		
Yes	60	80
No	15	20
<b>Growth and Development Monitoring in Integrated Health Post</b>		
Yes	57	76
No	18	24
<b>Complete Basic Immunizations</b>		
Yes	43	57,3
No	32	42,7
<b>Family Planning</b>		
Yes	45	60
No	30	40
<b>Unintended Pregnancy</b>		
Yes	30	40
No	45	60
<b>National Health Insurance Membership</b>		
Yes	32	42,7
No	43	57,3
<b>Cash Assistance</b>		
Yes	7	9,3
No	68	90,7
<b>Social and Food Assistance</b>		
Yes	17	22,7
No	58	77,3

Based on Table 1, the profile of families with stunted children can be observed according to the father's education. The predominant group, consisting of 48 children, has fathers with a secondary education level (64%), whereas 26 children have fathers with a lower level of education (34.7%). As for the mothers, 43 children have mothers with a secondary education level (57.3%), and 29 children have mothers with a low education level (38.7%). The majority of families with stunted children have low incomes (84%).

Furthermore, 19 children have mothers with chronic energy deficiency (CED) during pregnancy, and only 4 of them received supplementary feeding (21%). A significant number of stunted children, precisely 60, had mothers who took iron tablets during pregnancy (80%). Among the 75 stunted children, 59 were exclusively breastfed (78.7%), and 60 were introduced to complementary feeding starting from 6 months to 2 years old (80%). A total of 57 children were taken to integrated health posts (Posyandu) for regular growth and

development monitoring (76%). The immunization history shows that 43 children received complete immunization (57.3%). Additionally, 60% of families with stunted children participate in family planning programs. Furthermore, 40% of stunted children were born as a result of unintended pregnancies. The findings also reveal that 43 families with stunted children do not have national health insurance coverage (57.3%). Regarding assistance received, only 7 families receive cash aid (9.3%), and 17 families receive food-based social assistance (22.7%).

## **Discussion**

### **Education Profile of Parents with Stunted Children**

This study showed that, most of the stunted children's parents have a middle-level education, which was a level of formal education that follows primary education and usually includes middle and high school in Indonesia, with 64% of fathers having a middle-level education and 57.3% of mothers having a middle-level education. The second most common result is fathers with a low level of education at 34.7% and mothers with a low level of education at 38.7%. These research findings align with a study conducted in South Jakarta, which reported that the majority of parents of stunted children had a middle-level education (48.5%) [6]. The study also suggested a correlation between the parent's education level and the occurrence of stunting. These findings are consistent with research in Ecuador, South America, which indicated that 60.69% of mothers of stunted children had a low level of education, 35.83% had a middle-level education, and 3.46% had a high level of education [7].

Education levels are divided into three categories based on Law No. 20 of 2003 regarding the national education system: low, middle, and high. The low education level includes primary and junior secondary education (elementary, junior high, or equivalent). The middle level includes senior secondary education (senior high school, vocational high school, or equivalent), while the high level includes a diploma and bachelor's degree or equivalent. Education plays a significant role in an individual's ability to receive and process information. The parent's education level also influences their knowledge regarding the nutritional needs of their children [8]. Mother's education is one of the factors that impact her level of knowledge. A broad knowledge base is crucial for ensuring that the nutritional needs of both the household and the child are met. This, in turn, affects the choice of food, food variety, identification of the child's nutritional needs, and feeding practices. Mothers with higher education and good nutritional knowledge are expected to be capable of providing the right types and amounts of food to meet their child's nutritional requirements and prevent the risk of stunting [9].

### **Economic Profiles of Parents with Stunted Children**

This study showed that, the majority of parents with stunted children have low incomes (below the minimum wage in Pekanbaru). This result is consistent with a study in Semarang, which reported that 69% of families with stunted children have income below the minimum wage and also indicates an association between family income and the occurrence of stunting, with families earning below the minimum wage being 2.547 times more likely to have a stunted child compared to families with income above the minimum wage [10].

Family income or economic status is also influenced by the parent's level of education. Higher parental education provides opportunities to secure sufficient income to meet food availability [11]. Economic status also affects access to healthcare services, as families with higher economic status are more likely to access healthcare facilities, while those with lower economic status face constraints in healthcare access due to financial issues [12]. Family income is one of the primary causes of stunting as it is related to the availability or fulfillment of children's nutritional needs. Higher family income can also fulfill the nutritional needs of mothers during pregnancy, the introduction of complementary feeding (MPASI), and the completion of basic immunizations. Insufficient income or low family economic status leads to decreased purchasing power for food items, resulting in unmet nutritional needs for children. Consequently, children may experience malnutrition, and over the long term, they may be at risk of stunting [13]-[14].

### **Profile of Stunted Children's Mother with a History of Chronic Energy Deficiency (CED) during Pregnancy**

This study showed that, the majority of mothers with stunted children do not have a history of Chronic Energy Deficiency (CED), accounting for 74.7%. This result is consistent with a study in Klaten, where 28 out of 30 mothers with stunted children did not experience Chronic Energy Deficiency (CED) [15]. It also consistent with a study in Surakarta, which similarly found that 69.4% of mothers with stunted children did not have a history of Chronic Energy Deficiency [16].

The factors causing Chronic Energy Deficiency (CED) in pregnant women may be related to family income, parity, age, dietary patterns, maternal knowledge, and infectious diseases. Families with low income may struggle to meet the nutritional needs of pregnant women, increasing the risk of CED. Dietary patterns and maternal knowledge also influence the incidence of CED, as a mother's understanding of whether consumed foods contain sufficient nutrients, unbalanced dietary patterns, and inadequate nutrition can contribute to CED over the long term. Infectious diseases are also a factor in the incidence of CED due to decreased appetite and disruptions in nutrient absorption in the digestive tract [17].

The health condition of a mother during pregnancy, such as Chronic Energy Deficiency (CED), affects the growth and development of the fetus in the womb. Chronic Energy Deficiency can occur due to insufficient intake of macro and micronutrients from adolescence to pregnancy. Inadequate energy intake during pregnancy results in reduced nutrient intake for the fetus, as the nutritional intake is used to fulfill the mother's needs, thereby hindering fetal growth and development. Impaired fetal growth and development pose a risk of low birth weight, which is one of the risk factors for stunting in children. Low birth weight babies face challenges in catching up with growth and development, potentially leading to stunting. The status of CED can be determined after measuring the upper arm circumference (UAC) during pregnancy, and it is considered CED if less than 23.5 cm [15].

### **Profile of Stunted Children's Mother with a History of Chronic Energy Deficiency (CED) during Pregnancy and Receiving Supplementary Feeding**

This study showed that, most pregnant mothers with a history of Chronic Energy Deficiency (CED) are not provided with supplementary feeding during pregnancy, accounting for 78.9%. The purpose of supplementary feeding is to fulfill the nutritional needs of pregnant women during the pregnancy period, especially for those at risk of CED [18].

The provision of supplementary feeding for pregnant women to address CED is one of the health ministry's programs aimed at reducing and preventing stunting incidents in Indonesia. Supplementary feeding is also an approach to handling CED and a strategy for preventing maternal malnutrition by providing additional calories and protein without substituting regular daily meals. When pregnant mothers with CED do not receive supplementary feeding, there is no additional total energy intake to address CED. As a result, when mothers with CED experience reduced nutrient intake for the fetus, fetal growth is impaired, and mothers with CED are at risk of giving birth to low birth weight (LBW) or premature infants with higher risk of experiencing stunting [18].

### **Profile of Stunted Children's Mother with a History of Consuming Iron Supplementation during Pregnancy**

This study showed that, the majority of stunted children's mothers consumed iron supplementation during pregnancy. This result differs from a study in Palangkaraya, which stated that 67.9% of stunted children's mothers did not take or consume iron supplement tablets during pregnancy [19].

The distribution of iron supplementation tablets is one of the programs carried out by the health department. The aim is to prevent anemia in pregnancy because it is one of the risk factors for stunting. Anemia due to insufficient iron in the first and second trimesters doubles the risk of premature birth and triples the risk of low birth weight. Premature and low birth weight babies are one of the risk factors for stunting [20].

Anemia is a condition when the hemoglobin (Hb) level in red blood cells is lower than normal. Pregnant women are considered anemic if their Hb level is lower than 11 g/dl. The consumption of iron supplementation is mandatory for pregnant women, with a minimum of 90 tablets during pregnancy, as the need for iron increases to form new cells and tissues, including the brain tissue in the fetus. The level of education can also influence the consumption of iron supplement tablets, as higher education correlates with broader knowledge and a higher level of nutritional knowledge. Mothers with higher education are more likely to understand the importance of compliance in taking iron supplementation tablets during pregnancy and the benefits of these tablets for optimal fetal nutrition [20].

According to the author's perspective, the absence of iron supplementation during pregnancy increases the risk of anemia due to the lack of micronutrient nutritional intake for pregnant women. Anemia in pregnancy can lead to fetal malnutrition, resulting in premature or low birth weight infants and ultimately leading to stunting.

### **Profile of Exclusive Breastfeeding and Complementary Feeding Practices in Stunted Children**

This study showed that it was discovered that more than half of the children who were stunted had received exclusive breastfeeding and complementary feeding. This finding is consistent with a study conducted in Bogor, which reported that 70.3% of stunted children had received exclusive breastfeeding and 73.4% were given complementary feeding [21]. However, some studies show different results. For instance, in West Sulawesi, 91.7% of stunted children did not receive exclusive breastfeeding [22]. Similarly, research conducted in Jakarta indicated that 66.6% of stunted children did not receive exclusive breastfeeding. Additionally, the study mentioned that 53.3% of stunted children had received appropriate complementary feeding [23].

Exclusive breastfeeding refers to the practice of providing only a mother's milk to an infant for the first six months, without any other food or drink, except for medicine. Breast milk is an excellent source of nutrition for infants, as it is easier to digest than formula milk, and contains colostrum that is rich in antibodies and secretory IgA, providing local protection to the gastrointestinal tract [24]. Moreover, exclusive breastfeeding is known to strengthen the emotional bond between a mother and her baby, improve child intelligence, and help the baby achieve ideal weight [24]. In contrast, infants who do not receive exclusive breastfeeding may suffer from nutritional deficiencies and are more likely to get infections due to the absence of natural antibodies in breast milk. Prolonged nutritional deficiencies and susceptibility to infections can lead to the incidence of stunting in children [25].

Complementary feeding is a type of feeding practice with food that can be easily consumed and digested by infants. Introducing complementary feeding has numerous benefits, including providing the baby with a more complete source of nutrition as their nutritional needs increase as they grow, and breast milk alone may not be sufficient [26]. WHO guidelines suggest seven recommendations for complementary feeding, which include continuing breastfeeding until the child reaches two years of age. For infants aged 6-11 months who are not breastfed, formula or animal milk can be given, while for infants aged 12-23 months who are not breastfed, pure animal milk is recommended and formula milk is not encouraged. It is also recommended to introduce complementary feeding at six months (180 days) while continuing breastfeeding, avoiding unhealthy foods and drinks, providing nutritional supplements and fortified food products, and promoting diversity in complementary feeding [26].

The differences in results found in this study may be due to existing intervention programs for stunting by healthcare professionals in primary healthcare, such as exclusive breastfeeding and complementary feeding.

### **Profile of Health Services Received by Families with Stunted Children**

The study found that 76% of stunted children are taken to integrated health posts (Posyandu) for regular growth and development monitoring. This percentage is markedly higher than the 6.6% reported in a study conducted in Bali [27]. Monitoring growth and development at Posyandu is a specific intervention aimed at accelerating the reduction of stunting. The Posyandu program is designed to prevent and reduce stunting by including fortification of iron in supplementary foods, regular checking of height and weight, deworming medication, diarrhea prevention, and basic sanitation. Additionally, Posyandu helps monitor the nutritional status of children under five. However, the effectiveness of Posyandu is reduced due to factors such as some mothers being unwilling to bring their children and some cadres needing more understanding of stunting management and programs. When children are not brought to Posyandu, it becomes difficult to detect stunting risk when there is a prolonged lack of weight or height gain since their height and weight are not measured [28].

The study also found that 57.3% of children who suffered from stunting received complete basic immunizations according to age. This result is similar to another study conducted in Bandung, which reported that 53.3% of stunted children received complete basic immunizations [29]. However, a study conducted in Jakarta showed contrasting results, where 86.6% of stunted children did not receive complete basic immunizations [23]. Immunization is an important measure to strengthen the body's defense against diseases. It helps individuals to either not get sick or experience mild symptoms when exposed to a disease. Immunization can also prevent stunting by boosting the body's defense system and preventing children from getting infected. Children who do not receive basic immunizations become more vulnerable to infections or diseases. Children who experience infections or illnesses for a long term are at risk of stunting, either due to the disease itself or malnutrition resulting from a decreased appetite during illness.

Based on the result, it was observed that 60% of families participate in family planning programs, and 40% of stunted children are unintended or unplanned births. This result is consistent with a study conducted in the Cikunir Village, Singaparna Subdistrict, which found that 73.5% of mothers with stunted children participated in family planning programs [30]. The study also highlights that adequate birth spacing and interventions to minimize unintended pregnancies can reduce the prevalence of stunting [30]. Family planning programs play a crucial role in stunting prevention efforts, as the World Health Organization (WHO) has initiated a global action to reduce high stunting rates. Reducing both birth rates and the still-high prevalence of stunting can be achieved through family planning programs [31].

The differences in the results obtained from this research may be attributed to the existing interventions for stunting programs by healthcare professionals, such as routine monitoring of child growth and development in integrated health posts (Posyandu) and participation in family planning programs in the primary healthcare center.

### **Profile of Health Insurance Participation and Government Assistance Obtained by Families with Stunted Children**

This study showed that, it was discovered that most families with stunted children do not participate in the national health insurance program. The findings are consistent with those in Depok, which reported that 71.1% of families with stunted children do not have health insurance [32]. However, several results are inconsistent with this study, as indicated by a study in Sukabumi, where only 37.25% of families lacked health insurance, and the remaining 62.75% were PBI, KIS, and private BPJS users [33]. In Tasikmalaya, a study also observed that most families with stunted children have health insurance such as BPJS and KIS [34]. National health insurance program membership also provides health protection through health maintenance benefits to fulfill basic health needs. When not participating in health insurance, leaving a child suffering from a prolonged illness or infection can pose a risk of stunting, either due to the illness or malnutrition resulting from a decreased appetite during illness. According to the author's perspective, having a health insurance program is essential for easy accessibility to healthcare services. It also provides benefits like regular nutritional check-ups and immediate assistance in case of children's illnesses.

This study also found that the majority of families with stunted children do not receive government assistance, either in the form of cash or social and food assistance. This assistance may come in the form of the Family Hope Program and the Family Social Security Program. These programs not only help meet basic needs and ensure food availability but also encourage access to health care facilities, education facilities, and social welfare services for economically disadvantaged families, especially those with pregnant women and toddlers. These programs are expected to help reduce the prevalence of stunting [35].

Improving nutritional intake can reduce the risk of stunting in children [36]. Families with stunted children, if not assisted, may experience a decrease in purchasing power and consumption of nutritious food, which may lead to inadequate nutrition for the child, increasing the risk of stunting [35]. According to the author's perspective, government assistance in the form of cash or food can help increase the consumption of nutritious food, especially in economically disadvantaged families. This ensures that the child's nutritional needs are fulfilled and reduces the prevalence of stunting.

### **4. Conclusion**

This study found that the majority of parents with stunted children have completed secondary education. Most families still have incomes below the city of Pekanbaru's minimum wage. Only a small portion of mothers have a history of chronic energy deficiency (CED) during pregnancy, and a similarly small percentage of CED mothers receive supplementary feeding. The majority of mothers with stunted children have taken iron supplements during pregnancy.

Additionally, most stunted children have received exclusive breastfeeding, complementary feeding, and routine growth and development monitoring at the integrated health post (Posyandu). A large portion of families with stunted children have also participated in family planning programs. The number of stunted children resulting from unwanted pregnancies is low. However, a considerable number of families with stunted children have not enrolled in the national health insurance program, and only a small percentage receive assistance this should be a point that need emphasized. Further research needs to be carried out by examining other variables from stunting reduction indicators and need correlation analysis tests to determine the association between these variables and the incidence of stunting.

**Ethics Approval:** Sumatera Medical Journal (SUMEJ) is a peer-reviewed electronic international journal. This statement below clarifies ethical behavior of all parties involved in the act of publishing an article in Sumatera Medical Journal (SUMEJ), including the authors, the chief editor, the Editorial Board, the peer-reviewer and the publisher (TALENTA Publisher Universitas Sumatera Utara). This statement is based on COPE's Best Practice Guidelines for Journal Editors.

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