

Nutritional Status Overview of Toddler Development in the Coastal Region of Bengkulu City, Indonesia

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ABSTRACT

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The problem of delays in toddler development can be caused by nutritional status. Good nutritional status can affect a person's development. A person's nutritional status depends on nutritional intake and individual needs, if nutritional intake and needs are balanced then the nutritional status will be good otherwise poor nutritional status in toddlers can cause developmental delays. The purpose of this study was to determine the characteristics of toddlers, characteristics of mothers who have toddlers, frequency distribution of nutritional status and development of toddlers in the coastal area of Bengkulu City. This research method is descriptive-analytic, sampling technique using incidental sampling technique, the analysis used in univariate analysis. The results showed the characteristics of toddlers, namely, the age of the dominant toddler was 36 months old 22.0%, the gender of the dominant toddler was female 52.4%, toddlers had a history of exclusive breastfeeding 75.6%, the last month toddlers suffered from infectious diseases 86.6%. The average age of the mother is 26-35 years old as much as 64.7%. The last education of the mother is the majority senior high school (58.5%), and the majority of the mother's work is housewife (84.1%). Low family income is 58.5%, the number of family members is dominant 4 people 41.5%. Toddlers in the Coastal Region of Bengkulu City have appropriate development with a percentage of 100% accompanied by good nutritional status dominated by toddlers aged 36 months 94.4%, malnutrition dominated by toddlers aged 30 months 11.8%, at risk of overnutrition dominated by toddlers aged 24 months 9.1%. There are no toddlers who experience malnutrition, overnutrition, and

obesity. This study concludes that toddlers in the Coastal Region of Bengkulu City have appropriate development and predominantly good nutritional status.

Keywords

Development
Healthcare
Nutritional Status
Toddlers

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**Introduction**

Toddlers are one of the most vulnerable groups in the human population, toddlers must get attention and protection wherever the child is. Children must receive continuous protection to achieve the child's right to grow and develop. A child's cognitive, emotional, and social capacities develop rapidly throughout childhood [1]. During development, body structure and function become more complex in terms of abilities in areas such as speech, language, motor skills, and coordination. According to the Indonesian Ministry of Health [2], socialization and monitoring of growth and development is conducted every three months in children aged 0-12 months, and every six months in children aged 12-72 months.

The problem of delays in development can be caused by nutritional status. Good nutritional status can affect the improvement of a strong immune system, increase intelligence levels, and make a person develop normally [3]. A person's nutritional status depends on nutritional intake and individual needs, if the nutritional intake and needs are balanced then the nutritional status will be good. Poor and insufficient nutritional status in toddlers can cause delayed development in toddlers. The delayed development includes fine motor development, language, and children's personality [4].

Low nutrient levels cause low body weight in children under five so nutrient reserves cannot meet the needs and activities of the developing body. Insufficient intake of nutrients from food can result in the use of the body, rather than tissue decline. This tissue failure can be seen from the failure of files and also motor development [5]. According to Siscadarsih and Widyasih [4], toddlers with poor nutritional status are 13.8 times more likely to experience dubious development compared to toddlers with good nutritional status. Research by Papotot et al [7] found that malnourished children have a greater impact on the development of their central nervous system as well as their motor and cognitive abilities.

Bengkulu City is a coastal area directly facing the Indian Ocean with dominant livelihoods as fishermen. The average Indonesian lives below the poverty line. Data from the

Bengkulu City Health Office [8] stated that the number of toddlers who weighed and measured their height was 10,237. In the coastal area of Bengkulu City, three Puskesmas (*Pusat Kesehatan Masyarakat* or Public Health Center) have the highest number of toddlers weighed and measured for height: Puskesmas Kandang with 762 toddlers, Puskesmas Padang Serai with 543 toddlers, and Puskesmas Pasar Ikan with 330 toddlers. Among these toddlers, 81 (0.8%) were categorized as underweight, 66 (0.6%) were classified as short, 83 (0.8%) had moderate wasting, and 11 (0.1%) had severe wasting [8]. Weighing and measuring height are essential initial steps in nutrition improvement programs, as they help monitor the growth and development of children under five. An increasing percentage of children meeting growth standards reflects the success of parents and local health services.

The purpose of this study was to determine the frequency distribution of characteristics of toddlers, the frequency distribution of characteristics of mothers who have toddlers, the frequency distribution of nutritional status of toddlers, and the frequency distribution of toddler development in the Coastal Region of Bengkulu City. This study is expected to provide an overview of the nutritional status of toddlers in the Coastal Region of Bengkulu City. Thus, this can expand the knowledge of researchers, provide references, and become a reference for monitoring the nutritional status of the development of toddlers both from home and for the level of health services.

Material and Methods

This study used a descriptive-analytic method with a cross-sectional approach. This research was conducted in the working areas of Puskesmas Kandang, Puskesmas Padang Serai, and Puskesmas Pasar Ikan in Bengkulu Province, Indonesia and the research time started from November 30, 2023, to January 30, 2024. The population in this study was 1,635 toddlers who lived in the working areas of those three public health centers.

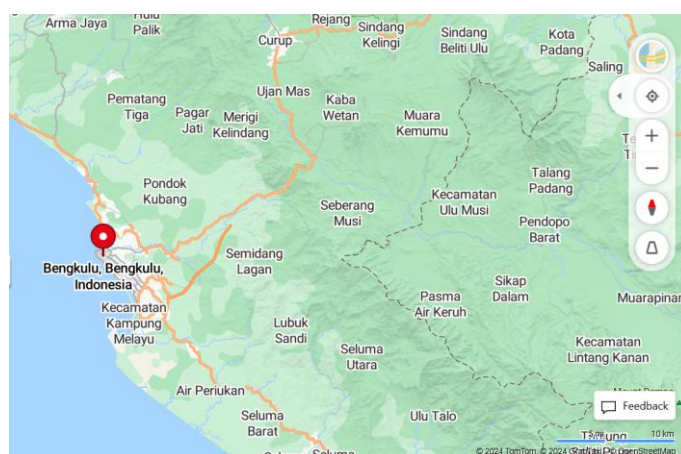


Fig. 1. The working area of three public health centers (Map: <https://www.bing.com/maps?q=bengkulu&FORM=HDRSC6&cp=-3.769598%7E102.619551&lvl=10.0>)

The sample in this study was 82 toddlers in the working area of Kandang Health Center, Padang Serai Health Center, and Fish Market Health Center of Bengkulu City. Sampling was selected using the incidental sampling technique and the calculation of the sample of this study using the Slovin formula. The variables in this study were nutritional status and toddler development. The analysis used was univariate analysis including factors of the age of toddlers, gender of toddlers, exclusive breastfeeding history, history of infectious diseases, mother's age, mother's occupation, mother's last education, number of family members, family income, nutritional status, and development of toddlers.

The inclusion criteria in this study were toddlers aged 1-5 years, mothers of toddlers who were willing to be respondents and permitted their toddlers to become the object of research. Exclusion criteria in this study are toddlers who suffer from chronic diseases, toddlers who are sick or being hospitalized, and toddlers outside the coastal area of Bengkulu City. Drop-out criteria in this study were mothers of toddlers and toddlers who did not follow the full research flow from start to finish and mothers of toddlers and toddlers who were not willing or left during the study.

This research followed a series of systematic and comprehensive steps, including preparation and implementation. During the preparation phase, researchers conducted a literature review, carried out a preliminary study using initial data from the Bengkulu City Health Office, and developed research questionnaires. The study utilized the Developmental Pre-Screening Questionnaire (DPSC) as its primary tool.

In the implementation phase, the process began with obtaining a research permit from the Faculty of Mathematics and Natural Sciences at Bengkulu University, followed by approval from the National and Political Unity Institution. Subsequently, the researchers secured permission from the Bengkulu City Health Office and submitted research letters to the Kandang Health Center, Padang Serai Health Center, and Pasar Ikan Health Center.

Researchers then attended Posyandu (integrated health service centers) in the working areas of the three Puskesmas. During these visits, they explained the research objectives to potential respondents. If the respondents agreed to participate, they signed an informed consent form, and a discussion was held to schedule the research activities.

Nutritional status was assessed using weight-for-height measurements in toddlers, and child development was monitored using the DPSC. The researchers completed evaluations using the DPSC forms, analyzed the data, and compiled the results for the study.

The data processing technique of this study is that the researcher will carry out correction activities for the data, and the data is confirmed to be correct without any doubtful data. Then the researcher will code the existing data using a number code after that the researcher will enter the data into the Excel master table which contains all the respondents' answers. Furthermore, the researcher will carry out data processing using SPSS (Statistical Program For Social Science).

Results and Discussion

This research was conducted at three Puskesmas in the Coastal Region of Bengkulu City, namely Kandang Puskesmas, Padang Serai Puskesmas, and Pasar Ikan Puskesmas with a total sample of 82 respondents.

Fig. 2 describes the frequency distribution of the characteristics of toddlers in the coastal area of Bengkulu City, the results showed that the age of toddlers according to the distribution of the Pre-Screening Development Questionnaire dominantly had an age of 18 months (22.0%), the dominant gender was female as many as 43 toddlers (52.4%), and toddlers who had a history of exclusive breastfeeding as many as 62 toddlers (75.6%) and the last 1 month as many as 71 toddlers (86.6%) had a history of infectious diseases.

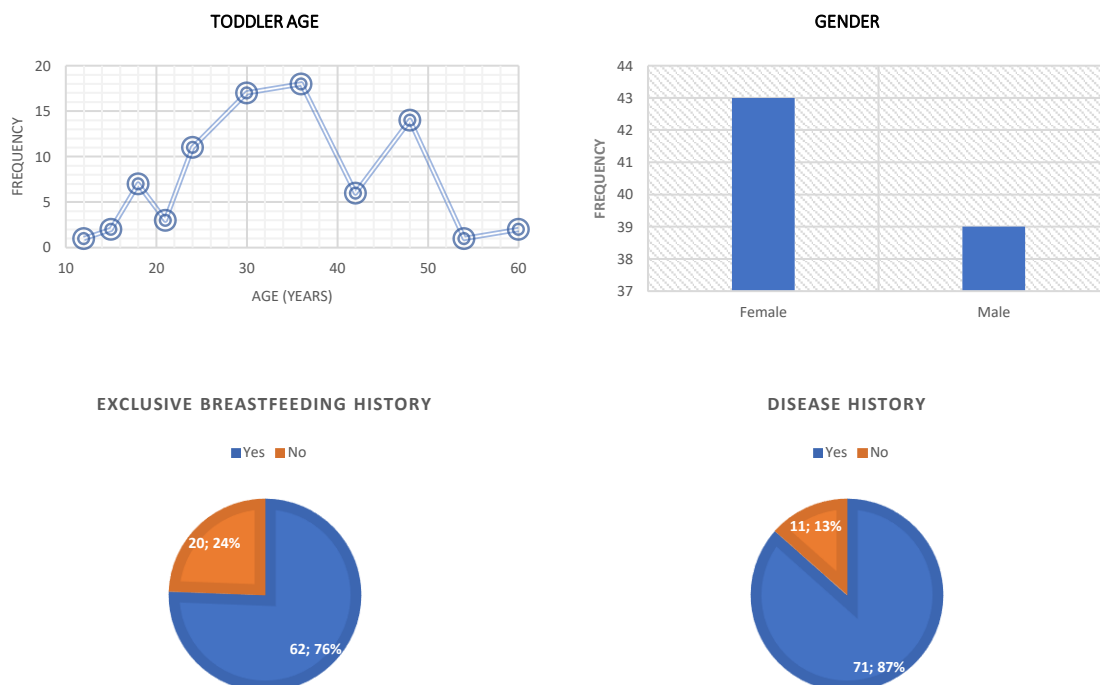


Fig. 2. Frequency distribution of characteristics of toddlers

Table 1 explains the frequency distribution of characteristics of mothers who have toddlers in the Bengkulu City Coastal Region, the results show that the dominant mother's age

is 26-35 years as many as 53 respondents (64.7%). The dominant mother's occupation was housewife, totaling 69 respondents (84.1%). The last education of the mother is dominant senior high school as many as 48 respondents (58.5%). The dominant family income was low as many as 48 respondents (58.5%). The number of family members predominantly amounted to 4 with a frequency of 34 respondents (41.5%).

Table 1. Frequency distribution of characteristics of mothers

Characteristics	Freq.	Percentage (%)
Age (Years)		
• 17-25	16	19.5
• 26-35	53	64.7
• 36-45	13	15.8
• 46-55	0	0
Occupation		
• Housewife	69	84.1
• Honorer	3	3.7
• Civil Servant	7	8.5
• Trader	3	3.7
Latest education		
• Elementary	9	11
• Junior High School	14	17.1
• Senior High School	48	58.5
• University	11	13.4
Family income		
• Low	48	58.5
• High	34	41.5
Total family members		
• Three	26	31.7
• Four	34	41.5
• Five	17	20.7
• Six	5	6.1
Total	82	100

Fig. 3 explains the nutritional status of toddlers in the Bengkulu City Coastal Region, normal nutritional status is dominated by toddlers aged 36 months as many as 17 toddlers (94.4%). Malnutrition status is dominated by toddlers aged 30 months as many as 2 toddlers (11.8%). Toddlers at risk of overnutrition are dominantly experienced toddlers aged 24 months as many as 1 toddler (9.1%) and there are no toddlers who experience malnutrition, overnutrition, and obesity. The results show that the development of toddlers (82 or 100%) has appropriate development, and there are no toddlers who experience dubious and deviant development. Based on the study results, the majority of toddlers in the coastal area of Bengkulu City were aged 36 months, with 18 toddlers (22.0%).

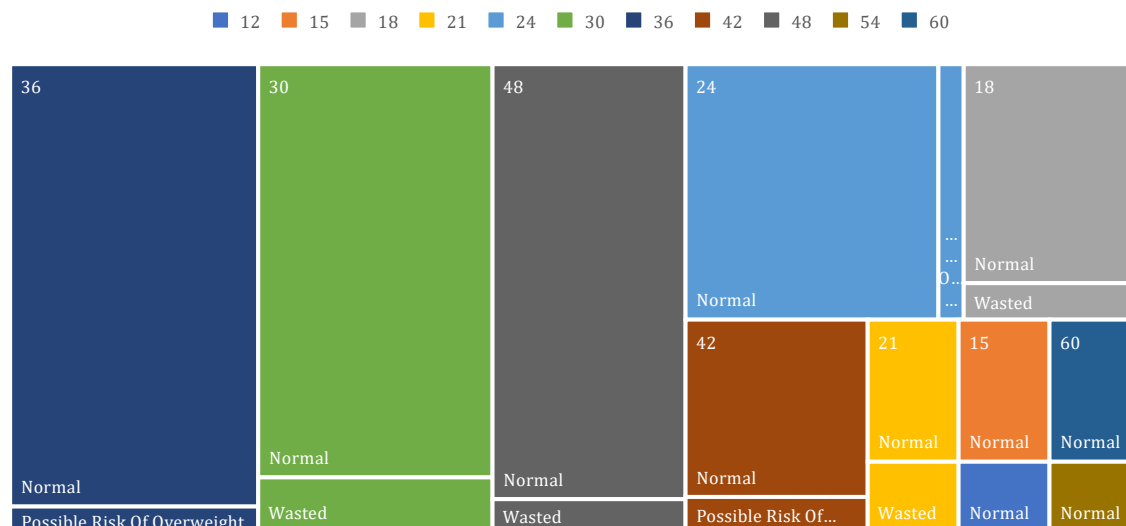


Fig. 3. Frequency distribution of nutritional status of toddlers

This was followed by 17 toddlers (20.8%) aged 30 months, 14 toddlers (17.0%) aged 48 months, 11 toddlers (13.4%) aged 24 months, and 7 toddlers (8.6%) aged 18 months. Additionally, 6 toddlers (7.3%) were aged 42 months, 3 toddlers (3.7%) were aged 21 months, and 2 toddlers (2.4%) each were aged 15 and 60 months. Finally, 1 toddler (1.2%) each was aged 12 and 54 months. Research by Kurniawati and Yulianto [9] explained that toddlers aged 13 months to 24 months were more at risk of malnutrition as much as 5.827 times compared to toddlers aged 25 months to 36 months. This research is in line with the research of Sujianti and Pranowo [10] which states that toddlers aged 24-59 months are at risk of having a 5.44 times chance of experiencing stunting.

The gender of toddlers in this study was predominantly female gender as many as 43 toddlers (52.4%) and male gender as many as 39 toddlers (47.6%). Research by Kurniawati and Yulianto [9] explained that the male sex is more at risk of experiencing the incidence of malnutrition as much as 4.377 times compared to the female sex. This research is not in line with the research of Anggrae and Smanaob [11], where from the measurement of male and female gender there is no significant difference between gender and nutritional status with the results of 17.40% and 19.80%.

Exclusively breastfed toddlers were 62 toddlers (75.6%), not exclusively breastfed as many as 20 toddlers (24.4%). The results of previous studies obtained toddlers who were exclusively breastfed as many as 104 toddlers (82%) and as many as 22 toddlers (18%) were not exclusively breastfed. According to Zulmi [12], 8.04 toddlers who are not exclusively breastfed will be at 8 times greater risk of experiencing poor and poor nutritional status, breast milk contains nutrients that are quite complete, breast milk also contains antibodies or

immune substances that will protect toddlers against infections. This study is different from Carolin et al [13] found that exclusive breastfeeding is not a factor that determines nutritional status. Nutritional status can be provided if good parenting, especially towards nutritional needs. Proper complementary feeding at the age of 6 months to 2 years will reduce the risk of malnutrition because children's nutritional needs can only be met through breast milk.

Toddlers who experienced a history of infectious disease in the past month were 62 toddlers (75.6%), and those who did not experience infectious disease were 20 toddlers (13.4%). Based on the results of previous studies, it was found that toddlers who suffered from infectious diseases in the past month were 103 toddlers (81.8%), and those who did not suffer from infectious diseases 23 toddlers (18.2%). Research by Carolin et al [13], states that the history of infectious diseases is one of the determining factors of nutritional status in toddlers, due to the history of infectious diseases in toddlers where toddlers have suffered from respiratory infections and diarrhea. All diseases that have been experienced by toddlers are due to bacterial factors caused by poor food sources and environmental sanitation. The history of infectious diseases will disrupt the nutritional status of toddlers and will disrupt the absorption of nutrients in toddlers, making the nutritional status of toddlers poor.

A history of infectious disease, according to the researcher's assumption, is one of the factors of nutritional status that is not too significant. This is related to research conducted in Russia which found that infectious diseases do not always hurt nutritional status in toddlers because the ability of parents to communicate with their children in a timely and effective manner is related to the mother's ability to make decisions quickly and accurately so that toddlers who experience infectious diseases are quickly treated and also the infections experienced are mild [14].

The dominant maternal age was 26-35 years as many as 53 respondents (64.7%) and mothers aged 17-25 years as many as 16 respondents (19.5%), and ages 36-45 years as many as 13 respondents (15.8%). Research by Utami and Azizah [15] found that the largest age group of mothers was between 20 to 35 years old, with as many as 60 participants (96.8% of the total). For young parents, especially mothers, there is still a lack of understanding and experience in parenting, this comes from the experience of older parents. At the same time, young mothers tend to prioritize their own needs over the needs of their children, resulting in substandard care and attention to their children. This study is in line with the research of Sukanada and Noviyanto [16] also stated that there were 28 respondents (65.1%) who were mothers in an early adult age group with the majority aged 26-33 years. The age of the mother greatly affects the growth and development of toddlers because the productive age of the

mother makes it very easy to find information about the growth and development of her toddler.

The mother's work in this study was dominated by housewives totaling 69 respondents (84.1%), civil servants as many as 7 respondents (8.5%), honorary as many as 3 respondents (3.7%), and traders as many as 3 respondents (3.7%). Khofiyah [17] states that mothers who do not work spend more time than mothers who work, this greatly affects the development of toddlers' child development in terms of working and non-working mothers.

The results of this study obtained the last education of the dominant mother with senior high school background as many as 48 respondents (58.5%), junior high school as many as 14 respondents (17.1%), university as many as 11 respondents (13.4%), and elementary school as many as 9 respondents (11.0%). Previous research found that the dominant mother's last education was senior high school with a frequency of 72 respondents (57%), university (35%), junior high school, and elementary school (4%). According to research by Khofiyah [17], most children who experience normal development are children whose mothers attend high school or high school. Parents' level of education and knowledge about child nutrition is very important, especially about nutrition.

The results of this study showed that the average family income was low, namely 48 respondents (58.5%), and 34 respondents (41.5%) had high income. The results of previous research stated that the average family income was high, namely 70 respondents (55.6%), and low income as many as 56 respondents (44.4%). Respondents who have low economic status have a 15.3 times greater risk than respondents born with high economic status [18].

One of the important factors affecting children's financial well-being is the family's socioeconomic status, which relates to the ability to purchase goods and services within the family. This study follows in the footsteps of Sukanada and Noviyanto [16] who stated that a person's economic status can reveal the presence or absence of a necessary facility, which in turn can affect their knowledge and the income their family receives, which in turn depends on the job their family has. Family income can also determine the nutritional status of toddlers because of the ability to fulfill family food needs.

The number of dominant family members was 4 with a frequency of 34 respondents (41.5%), 3 with a frequency of 26 respondents (31.7%), 5 with a frequency of 17 respondents (20.7%), and 6 with a frequency of 5 respondents (6.1%). According to research by Makrufiyani et al [19], there is a correlation between the number of children in a family and the level of socioeconomic stress, which in turn affects the amount of attention and affection shown to each child, as well as the level of need for their care. Based on the researcher's

assumption, there is no significant difference between the number of horse owners and the state of horse growth in the Coastal Region of Bengkulu City.

The results showed that the nutritional status of toddlers in the Bengkulu City Coastal Region was 74 toddlers (90.2%) with good nutritional status, 5 toddlers (6.1%) with malnutrition status, and 3 toddlers (3.7%) at risk of overnutrition. Good nutritional status is dominantly experienced by toddlers aged 36 months to 17 toddlers (94.4%). Malnutrition status was dominated by toddlers aged 30 months as many as 2 toddlers (11.8%). Toddlers at risk of overnutrition are dominantly experienced toddlers aged 24 months as many as 1 toddler (9.1%) and there are no toddlers who experience malnutrition, overnutrition, and obesity. Previous research obtained that as many as 108 toddlers (85.7%) were well-nourished, 14 toddlers (11.1%) were malnourished and 4 toddlers (3.2%) were malnourished [20].

Nutritional status is a reflection of the state of nutrition in a society [21] seen from the condition of a person's body, the condition of the body with a state of balance between the nutrients consumed daily with the needs of nutrients for the body's metabolic processes normally. Adequate nutritional intake is one of the things that must be considered in supporting the growth and development process during the critical period of children, at this time children experience growth and development and are also pursued by growth. Kofiyah [22] states that based on the results of research on the nutritional status of BB / U and BB / TB of 160 respondents, the p-value is $0.000 < 0.05$, with these results it can be concluded that the better the nutritional status of children, the better the assessment of child development [17].

This study is in line with the research of Holt et al [22], stating that children with good nutritional status have 13.303 times the ability to experience normal growth and development compared to children with more nutritional status, poor nutritional status, or poor nutritional status. Toddlers who are at risk of overnutrition are toddlers who are prone to excessive overweight. Toddlers who are overnourished occur due to a lack of maternal knowledge about nutrition, improper feeding patterns, and a history of not exclusively breastfeeding toddlers. Conversely, toddlers who are malnourished will have an impact on growth limitations, are susceptible to disease, and ultimately hinder the growth and development of children.

Utami and Azizah [15] stated that undernutrition status in toddlers aged 1-5 years mostly had dubious toddler development by 25% while toddlers with good nutritional status mostly had appropriate development by 88.6% (Utami and Azizah, 2023). This research was strengthened by the research of Siscadarsih and Widyasih [4], who stated that undernourished toddlers are at risk of 13.8 experiencing dubious development compared to toddlers with good

nutritional status. Toddlers who experienced malnutrition before can still be improved with good intake so that they grow according to their development, but if the intervention is too late, the child cannot continue the development process and cause developmental deviations.

The development of toddlers in the Coastal Region of Bengkulu City found that 82 toddlers (100%) had appropriate development, and there were no toddlers who had questionable or deviant development with a frequency of 0 (0%). Based on the results of the study children who have good nutritional status, undernutrition, and are at risk of overnutrition can experience appropriate development. Development in toddlers is not solely influenced by the nutritional status of the toddler, several other factors influence the development of toddlers besides nutritional status. According to Yunita et al [23], one of the factors that can affect development in toddlers is early stimulation in toddlers. Children who have normal or appropriate development are caused by child stimulation, child stimulation is not only given by parents but also given by the environment. The role of the environment is very important in shaping development, if the child's environmental conditions are healthy it can cause the toddler to develop well so that the child gets full of affection which makes the child's stimulation good [24].

Stimulation in children can be provided through activities, such as play activities to stimulate what is needed by toddlers to grow and develop. Every child must get routine stimulation as early as possible and must be continued by the mother and father who are the closest people the child knows, maybe by the child's caregiver, other family members and community groups, and daily life. Research by Aryani et al [18], states that children have a 4.950-fold risk of experiencing delays in motor development due to a lack of maternal knowledge and early stimulation in children.

Another thing that can affect development in toddlers is the age of the toddler's mother, according to the results of research on toddlers who experience malnutrition status (6.1%) and are at risk of overnutrition (3.1%) in the Coastal Region of Bengkulu City, the dominant mother's age is 25-35 years where the age is a middle adult age group, age greatly affects the growth and development of toddlers because the productive age of the mother is very easy to find information about the growth and development of her toddler. The more age, the level of maturity and strength of a person will be more mature in thinking and working. This is a result of the experience and maturity of his soul.

Development is also influenced by the mother's education level and mother's occupation. The results of research on toddlers who experience malnutrition status (6.1%) and overnutrition risk status (3.1%) in the Coastal Region of Bengkulu City found that the dominant mother's education level is senior high school and the dominant mother works as a

housewife. This study is in line with the research of Khofiyah [17], on 160 respondents, most of the children who experienced normal development were children whose mothers had the last senior high school education with a frequency of 61 children because the level of education affects the mother's knowledge, namely the higher the mother's education level, it will be easier to accept new things and easy to adjust to new changes [17]. The higher the education of mothers of toddlers, the broader the knowledge, and this will affect the attitude and behavior of mothers of toddlers in stimulating the development of toddlers according to their age. Khofiyah [17] also states that mothers who do not work spend more time than mothers who work, this greatly affects the development of their toddlers.

Conclusion

The findings of this study indicate that the characteristics of toddlers in the Coastal Region of Bengkulu City are, the age of the dominant toddler has an age of 36 months as much as 22.0%, the gender of the dominant toddler is as much as 52.4%, toddlers who have a history of exclusive breastfeeding as much as 75.6%, and in the last month many toddlers suffered from infectious diseases as much as 86.6% toddlers. The characteristics of mothers who have toddlers in the Coastal Region of Bengkulu City are, that the average mother's age is 26-35 years as much as 64.7%, the last education of the dominant mother is SMA / SMK as much as 58.5% and the dominant mother's job as a housewife (Housewife) as much as 84.1%. The average family income is low at 58.5% with a dominant number of family members of 4 people with a percentage of 41.5%. Nutritional status in the Bengkulu City Coastal Area, namely good nutritional status is dominantly experienced by toddlers aged 36 months as much as 94.4%. Malnutrition status was predominantly experienced by toddlers aged 30 months, 11.8%. Children at risk of overnutrition were predominantly under 24 months of age at 9.1% and there were no children under five who were malnourished, overnourished, or obese. Of the development of toddlers in the Bengkulu City Coastal Region 82 toddlers (100%) have appropriate development and 0 toddlers (0%) have dubious or deviant development. Therefore, it is hoped that this research can be continued more broadly by other researchers. Institutions are expected to make this research a reference material, the practice area is expected to increase maximum counseling, and respondents are expected to get information that can be used as a reference in monitoring their toddlers to be able to create quality human resources.

Conflict of Interest

The authors declare that there is no conflict of interest.

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