Strategy Handling of Stunting Based on the Guidebook for Toddler Development in Bondowoso Regency, East Java

Strategi Penanganan Stunting Berdasarkan Buku Pedoman Tumbuh Kembang Balita Di Kabupaten Bondowoso Jawa Timur

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Abstract
Stunting is a form of growth faltering due to the accumulation of insufficient nutrition that lasts for a long time starting from pregnancy until the age of 24 months. Data from the Bondowoso District Health Office, there are 24.16% or as many as 620 stunting toddlers at the Pujer Health Center in 2020. This number is the highest number of stunting cases in Bondowoso, and the stunting locus village in 2021 is in Alassumur Village, Pujer District. The purpose of this community service is to find out what factors are related to the incidence of stunting and to make a guidebook for toddler growth and development which is intended for health workers, posyandu cadres, and mothers of toddlers. The method used in this community service program is by measuring and interviewing. Measurements were made using anthropometric measurements including height or body length, weight, head circumference, arm circumference, triceps fat thickness, and subscapular fat thickness. Subjects were 128 children, the results showed that 22% or 28 children had stunting or short nutritional status and 13% or 16 children had very short nutritional status. The results of community service that have been carried out show that there are still stunting cases, the main cause being the high cases of early marriage and poor sanitation.

Keywords: Stunting; early marriage; sanitation; guide book

Abstrak
Stunting merupakan bentuk kegagalan pertumbuhan (growth faltering) akibat akumulasi ketidakcukupan nutrisi yang berlangsunglama mulai dari kehamilan sampai usia 24 bulan. Data dari Dinas Kesehatan Kabupaten Bondowoso, terdapat 24,16% atau sebanyak 620 balita stunting di Puskesmas Pujer pada tahun 2020. Jumlah tersebut merupakan angka tertinggi kasus stunting di Bondowoso, dan desa lokus stunting tahun 2021 berada di Desa Alassumur, Kecamatan Pujer. Tujuan dari pengabdian masyarakat ini untuk mengetahui faktor apa saja yang berhubungan dengan kejadian stunting dan pembuatan buku pedoman tumbuh kembang balita yang diperuntukkan bagi tenaga kesehatan, kader-kader posyandu, dan ibu-ibu balita. Metode yang digunakan dalam program pengabdian masyarakat ini adalah dengan melakukan pengukuran dan wawancara. Pengukuran dilakukan dengan pengukuran antropometri meliputi tinggi badan atau panjang badan,berat badan, lingkar kepala, lingkar lengan, tebal lemak trisep, dan tebal lemak subscapula. Subjek berjumlah 128 anak, hasil menunjukkanbahwa sebesar 22% atau 28 anak memiliki status gizi pendek atau stunting dan 13% atau 16 anak memiliki status gizi sangat pendek. Hasil pengabdian masyarakat yang telah dilakukan menunjukkan bahwa masih ada kasus stunting, penyebab utamanya adalah tingginya kasus perkawinan usia dini dan sanitasi yang kurang baik.

Kata kunci: *Stunting, perkawinan dini, sanitasi, buku pedoman*

Introduction

Stunting is a form of growth faltering due to the accumulation of insufficient nutrition that lasts for a long time starting from pregnancy until the age of 24 months (Bloem, Pee SD, Hop LT, Khan NC, Laillou A, Minarto, Pfanner RM, Soekarjo D, Soekirman, Solon JA, Theary, Wasantwisut E. 2013). According to WHO (2013), stunting conditions can be seen through height according to age below the median standard -2 of the child's growth curve caused by chronic malnutrition problems since 1,000 HPK. Stunting conditions are an important concern in the health sector throughout the world, the World Health Organization (WHO) states that the prevalence of stunting under five is a public health problem if the prevalence is 20% or more than 20% (Kemenkes RI 2016). Based on the latest WHO publications, it shows that the number of stunting globally reaches 154.8 million children under five. Stunting problems that occur in developing countries such as Indonesia will become a public health problem that must be handled seriously and continuously. Indonesia is ranked 17th out of 117 countries in the world that face stunting problems. Riskesdas (2018) states that the prevalence of stunting under five in Indonesia reaches 30.8%, and the prevalence of stunting in East Java has increased from 26.7% in 2017 to 32.8% in 2018. East Java is the province with the highest number of stunting. still above the WHO standard of 27.1% or 1,074,510 children under five (Trihino, Tjandrarini DH, Irawati A, Utami NH, Tejayanti T. 2015).

Districts in East Java that are included in the category of severe stunting are Bondowoso District. Bondowoso Regency is a district or city that is a priority for stunting intervention with the prevalence of stunting in children based on the results of nutritional monitoring of toddlers in 2015 of 34.8% and experienced an increase in 2017 of 38.3% (Kemkes RI 2017). Data from the Bondowoso District Health Office, there are 24.16% or 620 stunting toddlers at the Pujer Health Center in 2020. This number is the highest number of stunting cases in Bondowoso, and the stunting locus village in 2021 is in Alassumur Village, Pujer District. This fact is certainly a problem for the Bondowoso community (Pusdatin Kemkes RI 2018). Stunting is a multifactorial problem so it cannot be seen from a single causal factor. Risk factors for stunting in toddlers can be seen from nutritional status, genetics, parenting, clean and healthy living behavior (PHBS) (Lestari, Margawati A, Rahfiludin Z. 2014).

Based on information from Pujer Health Center health workers, stunting problems in Alassumur Village include: 1) many women marry at an early age; 2) The Clean and Healthy Living Program in using MCK still goes to the river, out of 813 heads of families, only 117 families have latrines with a total of 2,145 people; 3) although there has been Provision of Community-Based Drinking Water and Sanitation, the water does not flow smoothly, and 259 households own wells; 4) the majority of education graduated from elementary school; 5) pregnant women with Chronic Energy Deficiency in 2020 as many as 16.13%; 6) the largest livelihood is as agricultural laborers as many as 700 people, then 150 people as construction workers and 25 people as traders; 7) the village is not yet ODF; 8) exclusive breastfeeding is still 60%; and 9) during the last four months there has been no Supplementary Feeding (PMT) Posyandu, meanwhile since the Covid-19 pandemic there has been no recovery PMT from the village government, because supplies from the Indonesian Ministry of Health or East Java Province during the pandemic have become very limited. This situation has indirectly resulted in many stunting toddlers in Alassumur Village. This is in line with research conducted by Ni'mah & Nadhiroh (2015) which states that the factors that cause stunting include birth length, history of exclusive breastfeeding, family income, mother's education, and knowledge of maternal nutrition. Based on the data obtained, the high rate of

stunting is something that needs to be watched out for. The purpose of this community service is to find out what factors are related to the incidence of stunting and to make a guidebook for toddler growth and development which is intended for health workers, Integrated Healthcare Center cadres, and mothers of toddlers.

Methods

The method used by measuring and interviewing. The measurements in question are anthropometric measurements such as nutritional status in infants and toddlers which include height or body length, weight, head circumference, arm circumference, triceps fat thickness, and subscapular fat thickness. The samples obtained were 128 children. Furthermore, the calculation of the anthropometric index using the standard z-score from WHO (2007), then processed using Microsoft Excel. The second method is by conducting interviews with mothers of children under five related to reproductive health knowledge, knowledge about nutritious eating habits, clean and healthy living behavior, sanitation.

Result and Discussion

The results of anthropometric measurements taken include height or body length, weight, head circumference, arm circumference, triceps fat thickness, and subscapular fat thickness. The results of the calculation obtain the results of nutritional status data as follows:

Table 1
Category of Nutritional Status Based on Indicator Z-score PB/U or TB/U

Category of Nutritional Status	*Z-score* PB/U or TB/U	Total	Persentase
Severely stunting	< -3	16	13%
Stunting	≥ -3 s/d < -2	28	22%
Normal	≥ -2 s/d 2	84	66%
High	> 2	0	0%
Total		128	100%

Source: Community Service Results Data

Table 1 above, nutritional status based on the z-score indicator of Body Length by Age or Height by Age shows that toddlers who are classified as very short with z-score < -3 are 16 children or 13%. Toddlers included in the stunting category with a z-score -3 to < -2 were 28 children, with a percentage of 22%. Toddlers with normal nutritional status with z-score -2 to 2 as many as 84 children 66%. There are no children under five who are classified as high or with a z-score > 2 based on the total number of children measured in Alasumur Village. Body length or height is a physical measurement that describes the state of bone growth. Under normal circumstances, body length or height grows with age based on the sex of the child. This measurement is used to identify the presence or absence of stunting in children (Chasin & Oot 2018). Stunting is caused by

malnutrition or chronic disease for a long time, it is also important to note that a child can be malnourished or poor due to having a short body length or height (stunting) (WHO 2008b).

Table 2
Category of Nutritional Status Based on Indicator *Z-score* BB/U

Category of Nutritional Status	*Z-score* BB/U	Total	Persentase
Malnutrition	< -3	3	2%
Undernourished	≥ -3 s/d < -2	9	7%
Good Nutrition	≥ -2 s/d 2	116	91%
More Nutrition	> 2	0	0%
Total		128	100%

Source: Community Service Results Data

Table 2 shows on the nutritional status of body weight by age, it is known that children under five who are classified as having malnutrition status with a z-score < -3 are 3 children or 2%. Toddlers belonging to the category of undernourished with z-score -3 to < -2 were 9 children or 7%. Toddlers with good nutritional status with z-score -2 to 2 were 116 children or 91%. There were no children under five who were overweight or with a z-score > 2 based on the total number of children measured. Body weight describes the nutritional status at the present time or at the time of measurement, which informs the amount of protein, fat, water and minerals in the bones (Susilowati 2008). Weight/Age can also be used to see the rate of physical growth and nutritional status by looking at graphs according to the age and sex of the child which is carried out periodically, about whether the child has a good, poor, or poor nutritional state (Permenkes RI 2014).

Table 3
Category of Nutritional Status Based on Indicator *Z-score* IMT/U

Category of Nutritional Status	*Z-score* IMT/U	Total	Persentase
Very Thin	< -3	1	1%
Thin	≥ -3 s/d < -2	5	4%
Normal	≥ -2 s/d 2	122	95%
Overweight	> 2 s/d 3	0	0%
Obese	> 2	0	0%
Total		128	100%

Source: Community Service Results Data

Nutritional status of Body Mass Index by Age of toddlers in table 3, shows that one child is classified as very thin with a z-score < -3 or with a percentage of 1%. Toddlers who are classified

as thin with z-score -3 to < -2 are 5 children or with a percentage of 4%. Toddlers who have normal nutrition with z-score -2 to 2 are 122 children or 95%. There are no children under five who are classified as having overweight or obese nutritional status. Body Mass Index / Age can be used as an indicator that shows the nutritional status of thin and fat or obese (Chasin & Oot 2018).

Table 4
Category of Nutritional Status Based on Indicator *Z-score* LIKA/U

Category of Nutritional Status	*Z-score* LIKA/U	Total	Persentase
Acute Microcephaly	< -3	4	3%
Microcephaly	≥ -3 s/d < -2	9	7%
Normal	≥ -2 s/d < 2	111	90%
Macrocephaly	≥ 2 s/d 3	0	0%
Total		124	100%

Source: Community Service Results Data

In table 4, based on the nutritional status indicators of Head Circumference by Age, 3% or 4 children are classified as acute microcephaly with z-score < -3. 7% or 9 children classified as microcephaly with z-score -3 to < -2. 90% or 111 children were considered normal with z-score -2 to < 2. There were no children under five who were classified as macrocephaly. Head circumference measurements are related to the size of the brain and skull (Susilowati 2008). LIKA/U is used to see whether the size of the Head Circumference is in accordance with the age and sex of the child. This measurement is carried out to determine the potential for neurological disorders or developmental delays, which can also indicate Protein Energy Deficiency (PEM) in children under 2 years of age (Chasin & Oot 2018). This condition is related to brain volume, namely head circumference which is affected by nutrition during pregnancy (in utero) and during the first months of life. Head circumference must be measured for the first time in the first 24 hours of birth and continue to be measured until at least 2 years of age, because this is the period of the most rapid growth (Permenkes RI 2014).

Table 5
Category of Nutritional Status Based on Indicator *Z-score* LILA/U

Category of Nutritional Status	*Z-score* LILA/U	Total	Persentase
Severe Acute Malnutrition	< -3	0	0%
Moderate Acute Malnutrition	≥ -3 s/d < -2	3	3%
Malnutrition Risk	≥ -2 s/d < 1	15	16%
Normal	≥ 1	75	81%
Total		93	100%

Source: Community Service Results Data

Table 5 shows the categories of nutritional status based on the Upper Arm Circumference indicator according to the age of toddlers. These results indicate that there are no children under five who

are classified as severe acute malnutrition with z-score < -3. There were 3 children or 3% who included moderate acute malnutrition with a z-score -3 to < -2. A total of 15 children or 16% are classified as having a risk of malnutrition with a z-score -2 to < 1. The remaining 75 children or 81% have normal nutritional status with a z-score value 1. Measurement of Upper Arm Circumference provides an overview about the state of muscle tissue and fat layers under the skin (Susilowati 2008). LILA reflects energy reserves, so it can identify the status of Protein Energy Deficiency (PEM) in toddlers. Moderate Acute Malnutrition occurs when the child has a thin nutritional status or low Upper Arm Circumference, and does not have edema (swelling) on both sides. Children with moderate acute malnutrition are three times more susceptible to infectious diseases that cause death. The condition of Moderate Acute Malnutrition can be identified with the measurement index of BB/TB and or LILA/U (Chasin & Oot 2018). Meanwhile, Severe Acute Malnutrition occurs when a child is very thin or has a very low Upper Arm Circumference or has edema (swelling) on both sides (Chasin & Oot 2018). Children with severe acute malnutrition are nine times more likely to die than children who are well cared for. Children under 6 months of age are at low risk of severe acute malnutrition due to exclusive breastfeeding.

Table 6
Category of Nutritional Status Based on *Z-score* Thick Fat Trisep/U

Category of Nutritional Status	*Z-score* Thick Fat Trisep/U	Total	Persentase
Very Low Nutrition	< -3	1	1%
Low Nutrition	≥ -3 s/d < -2	19	21%
Optimal Range	≥ -2 s/d < 2	72	78%
High	≥ 2 s/d < 3	0	0%
Very High	≥ 3	0	0%
Total		92	100%

Source: Community Service Results Data

Table 6 shows nutritional status based on indicators of Triceps Fat Thickness by Age. These results show that there is 1 child or 1% of toddlers classified as having very low nutritional status with a z-score < -3. Toddlers who have low nutritional status are 19 children or 21% with a z-score value -3 to < -2. Toddlers who have nutritional status in the optimal range are 72 children or 78% with a z-score value of -2 to < 2. There are no toddlers classified as having high or very high nutritional status. The triceps fat fold is located in the vertical crease at the back of the upper arm, halfway between the shoulder and elbow (Baty 2021). Measurement of Triceps and Subscapular Fat Thickness assesses the thickness of the subcutaneous tissue (home of sweat glands, fat, and collagen cells) and primarily reflects obesity (WHO 2007). Measurement of Triceps Fat Thickness is not only used to measure body fat, but also the distribution of fat storage in obesity or to measure obesity in children (Anastasia 2011).

Table 7
Category of Nutritional Status Based on *Z-score* Thick Fat Subscapular/U

Kategori status gizi	*Z-score* Thick Fat Subscapular/U	Total	Persentase
Very Low Nutrition	< -3	0	0%
Low Nutrition	≥ -3 s/d < -2	0	0%
Optimal Range	≥ -2 s/d < 2	75	82%
High	≥ 2 s/d < 3	14	15%
Very High	≥ 3	3	3%
	Total	92	100%

Source: Community Service Results Data

Table 7 above shows nutritional status based on indicators of Subscapular Fat Thickness by Age. The results of the data obtained are known that there are no children under five who are classified as having low or very low nutritional status. Toddlers classified as having nutritional status in the optimal range were 75 children or 82% with a z-score value -2 to < 2. Toddlers belonging to high nutritional status were 14 children or 15% with a z-score 2 s /d < 3. There are 3 children in very high nutritional status or 3% with a z-score 3. Subscapular fat folds are located on the bottom sideways on the edge of the scapula/scapula/wingbone (Baty 2021) . Measurement of deep fat thickness is used as an indicator of obesity, especially in the subscapular and triceps parts (Harjatmo, Par'i HM & Wiyono SU. 2017). In children, the Triceps Fat Thickness measurement is better than the Subscapular Fat Thickness measurement to predict the percent body fat, while the Subscapular Fat Thickness measurement is better than the Triceps Fat Thickness measurement to predict total fat.

The results of interviews with representatives of mothers of toddlers and babies were conducted on the sidelines of the measurement activities carried out on 26 – 27 September 2021. The interviews took about half an hour per informant with the number of informants being interviewed as many as 12 people. Interviews were conducted using in-depth interview techniques to find problems openly using the Interview Guide. Broadly speaking, the contents of the Interview Guidelines are related to the age of marriage for parents of infants or toddlers, family members who live in the same house, occupation, education, food taboos, lifestyle routines, disease history, PHBS, and sanitation. From these points, of course, it was developed into several more questions according to the answers of the informants to obtain detailed and holistic information. The results of the interview show some information, namely the high number of cases of early marriage, access to latrines is still in the river, and there are still uninhabitable houses in Alassumur Village, Pujer District, Bondowoso Regency. The high number of cases of early marriage is caused by the encouragement of parents to get married immediately because they are afraid of getting pregnant before marriage, by getting married all responsibilities shift to the husband and no longer to the parents. Zyn says that:

> "Yes, that's right, sis, I'm afraid and worried that the elementary school is usually engaged, so usually the people here when they get engaged, they want to take them to their in-laws to stay where they want to go, they are free, and they are afraid of getting pregnant out of wedlock, so they get married. If you are not old

> enough to unregistered marriages, Ms. later when she is 17, she will take care of the legal marriage certificates."

Maternal gestational age is too young (under 20 years) at risk of giving birth to babies with low birth weight (LBW). LBW infants affect about 20% of the occurrence of stunting. The results of the 2017 Susenas data survey, for women aged 15-49 years, it was found that 54.01% had their first pregnancy over the age of 20, which is the ideal age for pregnancy. The remaining 23.79% had their first pregnancy at the age of 19-20 years, 15.99% at the age of 17-18 years, and 6.21% at the age of 16 years and under (Pusdatin Kemkes RI, 2008). This condition shows that half of women who have ever been pregnant have their first pregnancy at a young age or in their teens as a result of the high number of cases of early marriage, as is often the case in Alassumur Village. In addition to the high cases of early marriage, another indicator that causes stunting is poor sanitation.

Furthermore, the behavior habits in using MCK in Alassumur Village still go to the river as explained by Yn's informant who said that:

> "If you see in the river, you usually take a bath in the river."

Clean and healthy living behavior in the household is to empower household members to know, be willing and able to practice clean and healthy living behaviors and play an active role in the health movement in the community (Maryunani, 2013). The results of research from Apriani (2018) in Surakarta there is a relationship between the implementation of PHBS (Clean and Healthy Living Behavior) with the incidence of stunting in Baduta. The occurrence of stunting caused by multiple factors requires prevention and mitigation efforts through approaches from various aspects of disciplines, because stunting prevention and control is not enough to improve nutrition interventions alone but there are other factors, namely lifestyle, sanitation and environmental hygiene.

So far, measurements made during the weighing month at the Posyandu have only been measurements of height and weight. Because based on what is in the Maternal and Child Health Book (KIA) which is owned by every mother who has a baby or toddler, it only contains these two measurement indicators. Therefore, with the presence of the Toddler Growth Guidebook launched by the Community Service Team of the Department of Anthropology, FISIP Universitas Airlangga, it can complete the indicators for measuring the nutritional status of toddlers, which so far have only focused on height and weight. In addition, the Manual which is packaged in a simple and informative form is expected so that mothers of toddlers can easily measure, fill out, and know the growth and development of their children's nutritional status independently. The results achieved in Community Service activities are that the understanding of the community, especially the participants who are the frontliners of this stunting management program, has increased and the capacity or involvement of health workers and Posyandu cadres in Alassumur Village, Pujer District, Bondowoso Regency has increased. The participants have understood and understood the importance of stunting management programs and they are capable and worthy to be frontliners of stunting handling programs. For the next result, health workers and Posyandu cadres are willing to study the manual provided, implement the knowledge that has been obtained during training or lectures in this Community Service activity and share their knowledge with all mothers of toddlers in Alassumur Village.

Conclusion

The results of the Community Service that have been carried out in Alassumur Village, Pujer District, Bondowoso Regency conclude that there are still stunting cases in Alassumur Village, Pujer District, Bondowoso Regency. People in general do not understand how to live clean and healthy, as well as poor sanitation because people are more comfortable defecating in the river than in the latrine. The most crucial thing is the high rate of early marriage in Alassumur Village. All of these problems are indicated to be the cause of the high number of stunting cases in Alassumur Village. The purpose of this Community Service activity is to generally increase the active role of mothers of children under five in self-recording in the Toddler Development Guidebook as an early effort to find out whether there are health problems in their children, especially those that are at risk of stunting. In addition, there is a need for socialization or training and guidance carried out by the relevant agencies regarding stunting handling programs so that the public can know about stunting handling programs in a holistic, detailed, and in-depth manner.

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