

Monitoring Child Growth and Development in Families at Risk of Stunting Using the Elsimil (Elektronik Siap Nikah dan Hamil) Application

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Abstract

Bondowoso Regency have 14 priority communities by 2023 to accelerate stunting reduction, and Tamanan District is host to three of the fourteen villages. The objective of this community service is to implement the Elsimil application to track the growth and development of children from families at risk of stunting. This activity is an implementation of the Contextual Learning Model for Building Villages which integrated into the Pediatric Nursing Course. The team consists of 2 pediatric nursing lecturers and 34 nursing students. The methods used including monitoring children's growth and development, performing analyses, and educating families. Interviews, weight and height checks, developmental checks, and examination of family card records and KIA books are data collecting methods which then entered into the Elsimil program. This activity's population of interest is 31 families with children under the age of two in Tamanan District, divided into 3 villages: 9 children in Sumber Anom village, 11 children in Sumber Kemuning village, and the remaining 11 children in Kemirian village. This community service was held in July-August 2023. Descriptive analysis is used in data analysis. Based on weight per age, 3.2% were severely underweight, 6.5% were underweight, 87.1% were normal weight, and 3.2% were at risk of being overweight. According to body length per age, 29% were severely stunted, 19.4% were short, and 51.6% were normal. A calculation of body weight per body length, 6.5% are extremely wasted, 3.2% are wasted, 64.5% are normal, 6.5% are at risk of being overweight, 3.2% are overweight, and 16.1% are obese. The results obtained based on body mass index per age were 3.2% severely wasted, 3.2% wasted, 64.5% good nutrition (normal), 16.1% at risk of overweight, 3.2% overweight, and 9.7% obesity. We conclude that this community service could optimize children's monitoring and development by assisting stunted families through Elsimil application.

Keywords: Stunting; Under Two Years; Growth and Development; Nutritional status; Elsimil

Abstrak

Kabupaten Bondowoso pada tahun 2023 memiliki 14 Desa prioritas percepatan penurunan stunting. Tiga dari 14 desa tersebut berada di Kecamatan Tamanan. Tujuan pengabdian ini untuk melakukan pemantauan pertumbuhan dan perkembangan anak pada keluarga berisiko stunting melalui aplikasi Elsimil (Elektronik Siap Nikah dan Hamil). Pengabdian ini merupakan implementasi dari Model Belajar Kontekstual Membangun Desa (MBKM Desa). Metode pengabdian yang dilakukan antara lain: melakukan pemantauan pertumbuhan dan

perkembangan anak, melakukan analisis, memberikan edukasi pada keluarga. Teknik pengumpulan data melalui wawancara, pemeriksaan berat badan dan tinggi badan, pemeriksaan perkembangan, dan studi dokumen Kartu Keluarga dan buku Kesehatan Ibu dan Anak. Data diinput ke dalam aplikasi Elsimil. Sasarannya adalah Keluarga yang memiliki anak bawah dua tahun (Baduta) di Kecamatan Tamanan sejumlah 31 anak. Sasaran terbagi dalam tiga Desa. Desa Sumber Anom sejumlah 9 Baduta. Desa Sumber Kemuning sebanyak 11 Baduta, dan Desa Kemirian sebanyak 11 Baduta. Pelaksanaan pengabdian pada bulan Juli-Agustus 2023. Analisis data menggunakan analisis deskriptif. Berdasarkan berat badan per umur hasil pengabdian menunjukkan sebanyak 3.2% berat badan sangat kurang, 6.5% berat badan kurang, 87.1% berat badan normal, dan 3.2% risiko berat badan lebih. Berdasarkan panjang badan per umur 29% sangat pendek, 19.4% pendek, dan 51.6% normal. Berdasarkan berat badan per panjang badan, 6.5% gizi buruk, 3.2% gizi kurang, 64.5% normal, 6.5% berisiko gizi lebih, 3.2% gizi lebih, dan 16.1% obesitas. Berdasarkan Indeks Massa Tubuh per Umur, didapatkan hasil 3.2% gizi buruk, 3.2% gizi kurang, 64.5% gizi baik, 16.1% berisiko gizi lebih, 3.2% gizi lebih, dan 9.7% obesitas. Kesimpulan: bahwa kegiatan pengabdian ini dapat mengoptimalkan pemantauan dan perkembangan anak dalam rangka pendampingan keluarga berisiko stunting melalui Elsimil.

Kata Kunci: Stunting; Bawah Dua Tahun; Pertumbuhan dan Perkembangan; Status gizi; Elsimi

INTRODUCTION

Stunting is a persistent nutritional issue caused by intrauterine malnutrition, also described as a growth problem in which height does not correlate to age (Nasution, 2022). Stunting is also characterized as a failure to develop normally that occurs in toddlers, or children under the age of five (Nadhiroh *et al.*, 2022). Stunting is a major threat to Indonesia's human resource quality. Stunting harms children's IQ and cognitive development. Childhood malnutrition and stunting impair physical and mental abilities, as well as cognitive ability and academic accomplishment. Child malnutrition can impair the function of the central nervous system (Anwar, Winarti and Sunardi, 2022). Malnutrition generates a lack of nutrition in the neurological system, and as a result, brain cell production cannot develop effectively, causing children to get sick easily, and their cognitive abilities and IQ to suffer (Rahman, Rahmah and Saribulan, 2023). Stunting allows children to seem to be disproportionately short for their age. Toddler growth failure can be caused by insufficient nutrition intake and poor health circumstances (Nadhiroh *et al.*, 2022). Stunting has biological consequences for the brain's and neurological development. This implies that stunting lowers cognitive value. The brain adjusts to the external environment during periods of rapid change and growth. Long-term alterations in the prefrontal cortex could have an impact on attention and memory. Furthermore, dendritic density in the hippocampus is decreasing, interfering with memory formation and consolidation. Another impact of malnutrition leads to reduced axon myelination, which may delay the transmission of neurological signals (Sumartini, 2020). Stunting is becoming less common worldwide, yet it remains a public health issue. Several studies have revealed that the major causes of stunting include teenagers and prospective brides who experience chronic lack of energy, low nutritional intake during pregnancy and inadequate parenting. The availability and accessibility of clean water and drinking water have a major impact on the prevalence of stunting in children under the age of five (Novianti and Padmawati, 2020). Stunting can be caused by repeated infections, as well as issues with the mother, education, socio-culture, environmental sanitation (Nasution, 2022) (Rahman, Rahmah and Saribulan, 2023), and "Society's mindset is still wrong about a

healthy and clean lifestyle". In 2016, the global prevalence of stunting was 22.9%, and the nutritional status of stunted toddlers was responsible for 2.2 million of all under-five mortality worldwide. Public health concern occurs when the prevalence of stunted toddlers exceeds 20%. As a result, the number of stunted toddlers in Indonesia remains high, posing a public health issue that must be addressed (Apriluana, 2018). According to Basic Health Research (Riskesmas) statistics from the Ministry of Health of the Republic of Indonesia in 2018, the prevalence of stunting in Indonesia is 8.7 million, or 30.7% of children under the age of five. Based on the Indonesian Nutritional Status Study, the frequency of stunting in Indonesia gradually reduced to 24.4% in 2021 and 21.6% in 2022 (Fenny Alvionita and Ledyawati, 2023). Even if the numbers are declining, this condition remains concerning since it exceeds the WHO non-public health guideline of 20%. (UNICEF Indonesia, 2012). In 2018, the prevalence of stunting in East Java was 32.81% and exceeds the national stunting rate of 30.8%. In response to the Electronic Citizens Nutrition Reporting and Registration, the prevalence of infant with stunting in East Java was 26.9% as of July 20, 2019 (Rahayu, Yunariyah and Jannah, 2022) while in Bondowoso Regency in 2022 the prevalence will be 32% (SSGI, 2022). The Indonesian Ministry of Health and the Global Alliance for Improved Nutrition GAIN have agreed on the Moment of Mutual Understanding program to promote access to nutritious foods in the first 1000 days of life and among teenagers. The partnership program has two key goals. First, both private and public maternal and child health institutions must apply the 10 steps to successful breastfeeding. Second, interventions employing the emotional demonstration module to change the practice of exclusive breastfeeding and nutritious snacks. Posyandu cadres conduct this module at several intervention locations. The Bondowoso District Health Service is in charge of conducting the stunting reduction program and dealing with sanitary issues (Januarfitra, 2022). The Elsimil application is a screening, assistance and stunting prevention application for prospective brides and grooms which is implemented nationally by the Family Assistance Team (FAT) for prospective brides, pregnant mothers, postpartum mothers and breastfeeding mothers, toddlers aged two years and toddlers aged five years. Throughout Bondowoso Regency, there are 1791 people working as FAT. The FAT Team consists of health workers, family planning cadres and Family Welfare Development (FWD) from their respective villages. Next explanation, this application was designed as a stunting prevention approach, automatically scoring data to determine whether their data is ideal (green) or risky (red). These findings will help medical personnels deliver reproductive health and nutrition education. The benefit of this application is also find out the results of potential couples' medical examinations and remind them to improve their health quality in order to prevent having stunted children (Sumantri, Rahmat and Dermawan, 2023). Elsimil is used on a continuing basis to monitor the health of women throughout pregnancy, breastfeeding, and the health of children until they reach the age of two years, as well as the growth and development of babies under two years old. The Child Development Card was used to collect data such as body weight, length, and development. With regard to this situation, the goal of this community service is to support families at risk of stunting in the community of Tamanan District by improving the monitoring of children's growth and development through the use of the Elsimil application.

GENERAL DESCRIPTION OF THE COMMUNITY, PROBLEMS AND TARGET SOLUTIONS

General description

Village communities are civilizations that prioritize unity and kinship as distinctive features in their social interactions, while humility serves as a bonding and harmonizing shield. It is crucial to understand the culture and features of rural communities in order to properly recognize their potential (Husein, 2021). Tamanan Village is one of the settlements designated as Tourism Village by the Tourism, Youth, Sports, and Transportation Directorate of Bondowoso Regency since *glindeng*, *terbheng*, and *pencak silat* are among of the cultures found there (Hasanah and Prilosadoso, 2020). Furthermore, there is a culture in Tamanan that believes like fiancé ("tunangan") and "dushok", pregnant women have restrictions against particular foods as well as those who has an injury or is recovering from surgery must fast and is not allowed to eat anything other than white food. The culture of "fiancé" and "dhusok" is a perception that is believed to mean that a fiancé is allowed to bring his partner and is allowed to stay overnight at the house of his future partner's parents, and it is even considered unsuitable for marriage if his partner does not take him to the house of other relatives. Tamanan people are mostly Muslim and they believe that someone who must work or earn a living must be male.

Tamanan District have a population of 39,999 citizens in 2021, with 19,783 male residents and 20,216 female residents. Agriculture is the leading sector which makes the majority of Tamanan District population working as farmers. Food crops, horticulture or vegetable commodities, fruit crops, plantation, and farm have high potential in the agricultural sector whereas small and medium industrial centers, such as the food industry, textile industries such as embroidery and batik, wood goods industry, and forest products, dominate the industrial sector's potential. Bondowoso Regency is located in the eastern part of East Java Province, approximately 200 kilometers from Surabaya, the province's capital city and is located at position 7°50'10" to 7°56'41" South Latitude and 113°48'10" to 113°48'26" East Longitude. Mountains and hills 44.4%, highlands 24.9%, and lowlands 30.7% cover the total territory of Bondowoso Regency. This region governs 1,560.10 km², or approximately 3.26% of East Java Province's total area (BPS Kabupaten Bondowoso, 2022). Tamanan is a district in Bondowoso Regency, East Java Province, Indonesia. The term Tamanan itself originates from an ancient Dutch story about a garden in the the village (Hasanah and Prilosadoso, 2020). Tamanan village's main product is tofu. Monitoring the growth and development of children under the age of two in families at risk of stunting in Tamanan District using the Elsimil application.

Table 1. Target of Community Service Monitoring Child Growth and Development in Families at Risk of Stunting Using the Elsimil Application 2023

No	Location of target	Characteristics of target	Amount	General problem or targets
1	Sumber Anom Village	Family	9	At risk of stunting
2	Sumber Kemuning Village	Family	11	At risk of stunting
3	Kemirian Village	Family	11	At risk of stunting

Problem

The targets' issues are health-care problems and table 2 displays the list of issues, and flow activity in figure 3.

Table 2 Problem and Solution of Community Service

Problem	Solution	Indicators of goal
Insufficient of growth and development monitoring of children under two years old	Monitoring growth and development of children through the Elsimil application	The increasing number of children under two years receiving growth and development monitoring services

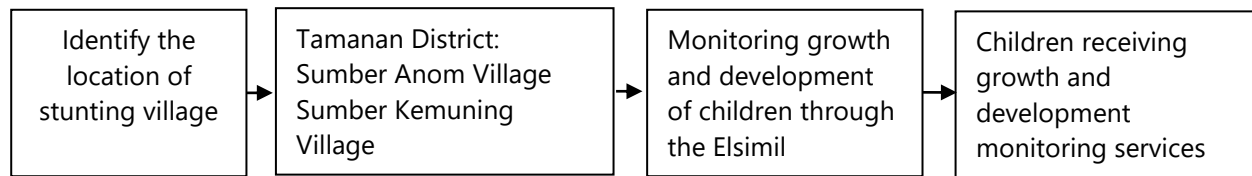


Figure 3. Flow of Activity of Community Service Monitoring Child Growth and Development in Families at Risk of Stunting Using the Elsimil Application 2023

Solution

Table 3. The Stages of solution

1.	Implementation	
a.	Monitoring children growth and development	Monitoring results
2.	Evaluation	
a.	Reflection and follow-up	Report
b.	Report	Scientific article

METHOD

This activity is an implementation of the Contextual Learning Model for Building Villages. The outcome of this model is a learning strategy that is directly integrated into public health services (Rohmah, Azza and Dewi, 2023). This approach by Monitoring children's growth and development through Elsimil Application through Verify the identify of the family and child, as well as the data on the Family Card and Maternal Health book, Weighing and measuring Height, Assessing children's development with the Child Development Card, Data entry into Elsimil program, Data analysis by Elsimil program, Making and introducing Elsimil as a family companion media. This concept is implemented in such a way that nursing students enrolled in pediatric nursing courses are directly involved in the child health program. The program integrated in this community service is monitoring children's growth and development through the Elsimil application. Its kind of learning takes the form of community service, which is a student activity supervised by a pediatric nursing lecturer (Kemendikbud RI., 2020). This community service will assist individuals recognize and assess children's growth and development by utilizing contextual learning frameworks. The service method involves observing the growth and development of children under the age of two years. Interviews, weight and height checks, developmental checks, and examination of family card records and KIA books are data collecting methods which then entered into the Elsimil program. The instrument for measuring accomplishment is a sheet of observations. Partners in this community service are the Directorate of Social Service for Empowerment of Women, Child Protection and Family Planning with supporting team of family planning instructors and five Family Assistance Team cadres. This activity located in three villages of Tamanan District, Bondowoso Regency, that is around 28-30 kilometers from Muhammadiyah University of Jember, including Sumber Anom village, Sumber Kemuning village, and Kemirian village which were chosen based on the emphasis location of priority communities for accelerated stunting reduction (Arifin, 2023). Village is potential area for mobilizing community empowerment (Rohmah and Kholifah, 2022). This community service employs the use of descriptive data analysis. Quantitative data was analyzed for frequency distribution, whereas qualitative data investigated both supporting and inhibiting factors. The Regulation of the Minister of Health of the Republic of Indonesia Number 2 of 2020 about Child Anthropometric Standards is used to analyze the outcomes of growth and development monitoring (Putranto, 2020).

RESULTS AND DISCUSSION

Table 5. Characteristic Children of Community Service Monitoring Child Growth & Development in Families at Risk of Stunting Using the Elsimil Application August 2023 (n=31)

Category	f	%	Category	f	%
Gender					
Male	22	71.0			
Female	9	29.0			
Age (Month)			Number of living children		
Mean	12.26		Modus	2	
Minimum	0		Minimum	1	
Maximum	24		Maximum	4	
Weight/Age			Body length/Age		
Severely underweight	1	3.2	Severely stunted	9	29.0
Underweight	2	6.5	Stunted	6	19.4
Normal weight	27	87.1	Normal	16	51.6
Risk of overweight	1	3.2			
Weight/Body length			BMI/Age		
Severely wasted	2	6.5	Severely wasted	1	3.2
Wasted	1	3.2	Wasted	1	3.2
Normal	20	64.5	Normal	20	64.5
Possible risk of overweight	2	6.5	Possible risk of overweight	5	16.1
Overweight	1	3.2	Overweight	1	3.2
Obese	5	16.1	Obese	3	9.7

According to table 5, the majority of children under the age of two who received growth and development monitoring services were males, and the typical kid was the second child. Only 9.6% of children are underweight or very underweight, but when we look at body length/age, over half of children under the age of two (48.4%) are stunted or severely stunted.

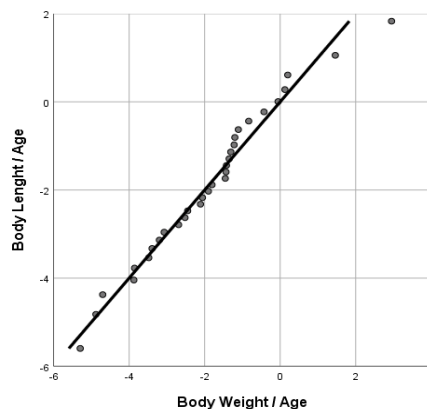


Figure 4. Relationship between weight/age and body length/age

Figure 4 shows that there is a positive association between weight/age and body length/age growth. The shorter your child is, the slimmer you are, and vice versa.

Table 6. Results of Monitoring Child Growth and Development Based on Location/Region of Community Service in Families at Risk of Stunting Using the Elsimil Application August 2023 (n=31)

Category	Sumber Anom	Sumber Kemuning	Kemirian	Total
Body weight/age				
Severely underweight	1 (100%)	0 (0.0%)	0 (0.0%)	1 (100.0%)

Underweight	2 (100%)	0 (0.0%)	0 (0.0%)	2 (100.0%)
Normal weight	6 (22.2%)	11 (40.7%)	10 (37.0%)	27 (100.0%)
Risk of overweight	0 (0.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)
Body length/age				
Severely stunted	2 (22.2%)	3 (33.3%)	4 (44.4%)	9 (100.0%)
Stunted	3 (50.0%)	3 (50.0%)	0 (0.0%)	6 (100.0%)
Normal	4 (25.0%)	5 (31.3%)	7 (43.8%)	16 (100.0%)
Body weight/Body length				
Severely wasted	1 (50.0%)	1 (50.0%)	0 (0.0%)	2 (100.0%)
Wasted	0 (0.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)
Normal	6 (30.0%)	7 (35.0%)	7 (35.0%)	20 (100.0%)
Possible risk of overweight	0 (0.0%)	1 (50.0%)	1 (50.0%)	2 (100.0%)
Overweight	1 (100.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)
Obese	1 (20.0%)	2 (40.0%)	2 (40.0%)	5 (100.0%)
Body Mass Index/Age				
Severely wasted	1 (100.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)
Wasted	0 (0.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)
Normal	6 (30.0%)	7 (35.0%)	7 (35.0%)	20 (100.0%)
Possible risk of overweight	1 (20.0%)	2 (40.0%)	2 (40.0%)	5 (100.0%)
Overweight	0 (0.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)
Obese	1 (33.3%)	1 (33.3%)	1 (33.3%)	3 (100.0%)

According to Table 6, the thin and extremely thin categories are all in Sumber Anom Village. Short and very short of children under the age of two are scattered evenly among all villages, with a percentage ranging from 44.4% to 50%. Meanwhile, nutritional instances of potential risk of overweight-obesity occur in three (3) cases, but if nutritional status is determined by BMI/age, the majority of cases are in the Sumber Kemuning Village. Monitoring child growth is used to inform parents, and they can use the data to track their child's growth and development status. Parents can also examine their children's nutritional status and promote exclusive breastfeeding for the first six months. Parents can conduct timely supplemental feeding and continued breastfeeding for at least two years (Amaliah *et al.*, 2018). The sooner nutritional status and stunting are identified, the better children's health conditions will be in the long-term. If malnutrition and stunting are detected before the age of two, the child might get prompt attention (Wahyuni, 2020). Early growth and development abnormalities in children might be detected with regular monitoring. The development process is tied to intellectual and emotional maturation functions, whereas the growing process is related to physical characteristics. Development follows a set pattern, with varying rates (Julizal, Lukman and Sunoto, 2019). As the primary parental caregivers for their children, parents must monitor their children's growth and development and determine whether there are any deviations (Rasyidah, Wahid and Widi, 2022). The toddler years are the golden period. Toddlers who are not adequately cared for will struggle with their emotional, social, mental, intellectual, and moral development which will have an impact on the attitudes and behavior in the future. Therefore, parents must employ suitable parenting methods based on their child's age and development. Parental counseling will improve the function of family education (Dwinandia and Hilmi, 2022). The knowledge delivered will alter a person's attitude and behavior. Health education delivered by nurses using a modeling method is beneficial in expanding knowledge and abilities via practice and will be able to optimize child growth and development (Irwan and Risnah, 2021).

The ELSIMIL application is a screening, education, and support tool for prospective brides and grooms to help prevent stunting in the community. The ELSIMIL system will automatically perform calculations to assess if the bride and groom's questionnaire will result in the ideal (green) or risky (red) findings. The questionnaire findings will be used as a tool for guidance to upcoming brides and grooms (Dermawan *et al.*, 2023). The benefits of the ELSIMIL application include: 1) reducing risk factors in potential brides and grooms; 2) connecting the prospective bride and groom with the accompanying family team; and 3) connecting the prospective bride and groom with the accompanying family team. 3) as an educational medium for menstruation and pregnancy preparedness, including risk factors for stunting; 4) supervise the prospective bride and groom in carrying out a program to prepare for a healthy pregnancy. During the three months of marriage, it is expected that the application would identify the risk factors for having a stunted kid from the start, reducing the occurrence of stunting and providing education, advice, and assistance to the newlyweds (Winarni, 2023). ELSIMIL is also used on a continuing basis to monitor the growth and development of newborns under two years old since early abnormalities in children can be detected with regular monitoring.

CONCLUSIONS AND SUGGESTIONS

Males make up the majority of children under the age of two who receive growth and development monitoring services, and the average kid is the second child. Only 9.6% of children are underweight or extremely underweight, but when we look at body length/age, over half of children under two years old (48.4%) are stunted or severely stunted. Growth in weight/age and body length/age have a favorable association. The thinner your child is, the shorter he or she will be, and vice versa. Sumber Anom Village includes the thin and extremely thin categories. Short and very short children under two years old are scattered evenly among all villages, with a percentage ranging from 44.4% to 50%. Meanwhile, there are nutritional indicators of probable risk of overweight-obesity in three villages, but if nutritional status is determined by BMI/age, Sumber Kemuning Village has the most cases. Elsimil educational activities should be optimized. Early detection of child growth and development abnormalities allows the impact of these disorders to be assessed, allowing for enhanced children growth and development.

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