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OPTIMIZATION OF MINIMUM CONSUMPTION DURATIONS FOR STUNTING TODDLER IN AN EFFORT TO OVERCOME STUNTING USING LINEAR PROGRAM

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ABSTRACT
Stunting is a serious problem in Indonesia. One of the factors that there are still many stunted toddlers in Tlogosari village, Sumbermalang, Situbondo, is the lack of knowledge in the community, especially teenagers, about the importance of maintaining a balanced nutritional diet and the old-fashioned way of thinking about wanting to get their daughters married immediately. This research activity aims to overcome and reduce the problem of stunting in Tlogosari village, Sumbermalang, Situbondo. By holding socialization regarding balanced nutrition and making processed Arema foods such as spinach, Moringa leaves and peanuts, it is hoped that this can be a solution for the samples in this study, namely toddlers aged 1-2 years. From research using linear programming calculations, with the brach and bound method, it was obtained that P1 (Arem-arem spinach) = 1, P2 (Arem-arem moringa) = 1, P3 (Arem areem peanuts) = 1 with the duration that stunted toddlers need to To overcome this problem, it was found that it takes 74 days for a stunted toddler to consume 1 spinach fruit, 1 moringa fruit and 1 peanut tree every day to avoid the problem of stunting.
Keywords: Stunting Prevention, Arem-arem, Linear Program

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PRELIMINARY

Nutrition is a problem that always occurs in every human development, nutritional problems start from the time they are a fetus until humans reach old age (Hatimah et al., 2022). Nutritional problems that are currently widely discussed and are becoming a threat in Indonesia are nutritional problems including malnutrition which occurs due to lack of protein energy, lack of vitamin A > Anemia and other health problems due to lack of iodine. Meanwhile, overnutrition is a health problem related to the emergence of degenerative diseases such as diabetes mellitus, heart disease, hypertension, and so on (Fitriyaningsih et al., 2021). The problem of malnutrition is one of the causes and factors causing stunting

which is currently a threat in Indonesia (Dian et al., 2021). In the problem of stunting that occurs in Indonesia, public knowledge of the importance of maintaining diet and the importance of consuming nutritious food is very low, which is one of the factors causing the difficulty of stunting to be overcome (Nuryami et al., 2022). To overcome this problem requires balanced nutrition because the body requires certain amounts of nutritional components. A healthy and varied diet can create balanced nutrition. Therefore, eating patterns must be regulated and portioned by considering balanced nutrition. This is done so that the body gets the various types of nutrients the body needs so that the body gets adequate nutrition (Picauly et al., 2023).

Marriages carried out by women who are not yet old enough will also result in first pregnancies in mothers who are underage, this will make mothers giving birth and the children born have a greater risk of malnutrition problems such as stunting (Suryadi et al., nd 2024). This stunting problem is a serious problem for Indonesia because it attacks toddlers who act as the nation's successors. According to the World Health Organization (WHO), in 2020, Indonesia has the second highest number of countries in Southeast Asia, reaching 31.8% of children under five suffering from stunting (Hasanah et al., 2023).

Tlogosari Village, Sumbermalang District, Situbondo Regency, has a fairly high level of stunting for toddlers. Being in a mountainous area cannot be denied as a reason for the low level of public knowledge regarding the importance of providing balanced nutrition for children's bodies. Apart from that, the mindset of ancient people is still deeply embedded in the mindset of the people of Tlogosari village, where girls were married off as soon as possible and boys were directed to work as soon as possible to help the family economy. Marriage at an early age makes pregnancies when the pregnant mother is not old enough to have a high risk of having a baby at risk of stunting. This is what happened in Tlogosari Village, Sumbermalang District, the large number of babies born to mothers who were not yet old enough resulted in many stunted toddlers in Tlogosari Village, Sumbermalang District. Inappropriate parenting patterns and marriage at an early age are the causes of the stunting problem. Apart from that, the knowledge and understanding of society, especially the younger generation and parents, is the cause of the problem (Suryadi et al., 2024).

In the case of stunting, the tactics and knowledge of parents, especially mothers, in providing food to children to fulfill the nutrition of the child's body is very important. Mother's knowledge about good nutrition will encourage mothers to practice maintaining and providing a nutritionally balanced diet to their children (Athiah et al., 2022). Children's improper diet will cause malnutrition, which can increase the risk of various diseases,

especially nutritional problems, one of which is stunting (Bukari et al., 2020). As a form of prevention of stunting that occurs in Tlogosari Village, Sumbermalang District, Situbondo Regency, it is necessary to provide counseling and practice of providing food with balanced nutrition to toddlers, especially those experiencing malnutrition or stunting. Children under five whose protein, nutritional intake and fat are low will experience stunting where these three components are lower than children under five who do not experience stunting (Sirajuddin et al., 2020). Apart from that, the interest of toddlers/children in consuming vegetables is also an important influence on the occurrence of malnutrition in children/toddlers. Based on the problems that occur, researchers will make Arem-arem food with basic ingredients of rice and sea fish and innovative variations of fillings in the form of spinach, peanuts and moringa, each of which has high and balanced nutritional content. Consuming innovative foods that are rarely found and have forms that are rarely found will help children under five to be interested and willing to consume foods that contain many balanced nutritional components (Hastuti et al., 2023).

With innovation and modification of processed vegetables in other, more interesting forms, it can increase the appetite of toddlers who do not like or are interested in vegetables (Ramadhani et al., 2022). Arem-arem is a food that is a combination of rice and sea fish seasoned with spices so it is in great demand for consumption by children/toddlers in Tlogosari Village, Sumbermalang subdistrict, Situbondo Regency. The innovation in processing Arem-arem by adding spinach, Moringa leaves, and peanuts as a variety of additional fillings in Arem-arem can help children/toddlers become interested in consuming vegetables so that the nutrition in the child/toddlers' body will be fulfilled and have balanced nutrition.

The source of carbohydrates that are widely consumed in Indonesia is rice, where rice is a raw material that can be made and reactivated into various kinds of preparations. Rice preparations that are widely spread in Indonesia include lemper nasi, ketupat, arem-arem and also pepes nasi. Likewise with various rice preparations, there are also various ways of processing rice, including cooking it by steaming or grilling, adding various kinds of cooking spices and mixing vegetables to complement nutritional needs in order to achieve balanced nutrition in this rice preparation. The Moringa plant is a plant that has been nicknamed a plant that is rich in nutrition and benefits for the human body (Ramadhani et al., 2022).

This research activity was carried out with the aim of finding out how long it takes for stunted toddlers to consume Arem-arem to achieve adequate nutrition. For this reason, researchers will use linear programming, precisely the simplex method, as a method for

determining the optimization of the duration needed for toddlers to consume arem-arem so that the nutrition in the toddler's body is adequate and balanced, which is carried out in the village. Tlogosari Sumbermalang Situbondo (Nuryami et al., 2022).

The simplex method linear program is a data processing method that can solve problems with many constraints and variables (Aningke et al., 2020). Likewise, research conducted by Ong et al., (2019) used the simplex method as a method to seek maximum profits from their martabak business and there are many more researchers who use the simplex method to find solutions to their problems.

METHODS

This research activity was carried out in Tlogosari Village, Sumbermalang, Situbondo Regency, to be precise, on October 23 - November 25. The type of research carried out is a case study with a series of activities as follows:

1. Preparation phase
   a. Observations were carried out at the Sumbermalang health center involving medical crew, especially the nutrition department and also village cadres, as well as collecting data on stunted toddlers and KEK (Chronic Energy Lack) pregnant women.
   b. Evaluate the problem by determining the problems related to toddler stunting that occurs in Tlogosari village, Sumbermalang, then determine the conclusions that will be applied to the implementation of the research.
   c. Preparation of materials and all types of preparation and equipment needed during research activities.
2. Implementation Stage
   a. Outreach to pregnant women with KEK (Chronic Energy Deficiency) and mothers of stunted toddlers involving local medical crew and village cadres. This outreach was carried out with the aim of sharing information, knowledge and public awareness of the importance of maintaining a balanced nutritional diet for children's growth. This socialization also explains the benefits and how to make vegetable arem-arem.
   b. Making and providing PMT (Arem-arem) to stunted toddlers and pregnant women with KEK (Chronic Energy Deficiency) together with village cadres.
   c. The evaluation was carried out by interviewing pregnant women and mothers of stunted toddlers regarding the results and changes after it was carried out. study. The purpose of this evaluation is to determine the results of research activities from start to finish.

3. Final Stage
   a. Collecting data on the development of toddlers' height and weight.
   b. Preparation of mathematical models of data on the development of toddlers' height and weight.
   c. Completion of calculations using methods in linear programming.
   d. Draw conclusions from research.

RESULTS AND DISCUSSION

Research activities began on October 23 2023, namely with observations at the Sumbermalang health center to request data on KEK pregnant women and also stunting toddlers as follows:

Table 1. Number of Pregnant Women with KEK and Toddlers with Malnutrition in Tlogosari Village

Stunted toddler		KEK pregnant women
Man	**Woman**	
4	4	6

Based on the results of these observations, it is known that there are 8 toddlers in Tlogosari Sumbermalang village who have malnutrition and 6 pregnant women who experience KEK (Chronic Energy Deficiency). With this data, researchers focused research activities on 8 toddlers as samples.

1. Socialization

   The socialization activity was carried out on October 24 2023 at the Tlogosari Sumbermalang Situbondo village hall. This socialization activity was carried out in the hope of opening up the ancient thought patterns that were embedded in parents in Tlogosari village that it was better for girls to be married off immediately when they reached the age of 12, which could result in pregnant women giving birth to babies with malnutrition. Apart from that, in this socialization, researchers provided material on how to prevent stunting, one way is by maintaining a balanced nutritional diet for pregnant women and toddlers.

   The socialization material also includes providing tricks and tips for mothers of toddlers whose toddlers do not like and are not interested in consuming vegetables, where vegetables play an important role in forming balanced nutrition, namely by processing vegetables into attractive food, for example Arem-arem filled with vegetables.

2. Making and giving PMT (Vegetable Arem-arem)

   Sustained malnutrition can often cause death and low intellectual abilities. For this

reason, in this research activity, researchers invite village cadres to make balanced nutritional preparations that will be distributed to nutritionally challenged toddlers less and also pregnant women with CED. Researchers will provide new innovations in processed arem-arem, namely by adding fillings in the form of spinach, moringa leaves and nuts which contain lots of energy, iron, fat and protein. Research by Muliawati and Sulistyawati (2019) explains the importance of Moringa leaf extract, including that it can increase the height growth of children under five by up to 0.342 cm with an estimated percentage of 16.2%. Therefore, making arem-arem with vegetable filling is not only aimed at getting toddlers interested in eating vegetables, it is also an alternative to tackling stunting in Tlogosari village, Sumbermalang, Situbondo. Making processed arem-arem which uses rice, sea fish and spinach, Moringa leaves and peanuts as the basic ingredients has received great enthusiasm from the community, especially pregnant women with KEK and also malnourished toddlers so that this research activity runs smoothly and there is an increase in development of malnourished toddlers and CED pregnant women.

3. Evaluation

   This was carried out after one month of conducting research activities and providing arem-arem, namely by interviewing KEK pregnant women and mothers of undernourished toddlers regarding appetite and changes in weight and height of KEK mothers and undernourished toddlers where the results experienced positive changes.

4. Data collection

   After conducting an evaluation with interviews with KEK pregnant women and mothers of stunted toddlers aged 1-2 years, data was obtained where KEK pregnant mothers and stunted toddlers experienced an increase in height and weight development due to regularly consuming vegetable arem-arem.

Table 2. Data on vegetables consumed by stunted toddlers during research activities.

Constraints/ consumers	Arem-aremspinach (X1)	Arem-aremMoringa (X2)	Arem-arempeanuts (X3)	Availability
GZ	65	16	90	163
AG	28	16	30	75
A	56	16	30	103
RJ	28	48	60	136
FF	28	32	60	121
N	56	32	60	148
KY	28	16	30	75
AN	56	64	60	181
Day consumption	28 days	16 days	30 days	

1. Changing the shape of data in mathematical modeling of linear programs.

   Researchers will look for the duration needed for stunted toddlers. For this reason, researchers will use the simplex method which is included in linear programming to find the minimum duration required (Faridah et al., 2024).

a. Formulate data into mathematical form.

   P1 = Number of Arem − spinach arem P2 = Number of Arem − Moringa arem

   P3 = Number of Arem − Peanut Arem Fmin = Minimum total days required Then, based on the data that has been obtained, the following control mathematical model will be produced;

$$65P1 + 16P2 + 90P3 \leq 163$$
$$28P1 + 16P2 + 30P3 \leq 75$$
$$56P1 + 16P2 + 30P3 \leq 103$$
$$28P1 + 48P2 + 60P3 \leq 136$$
$$28P1 + 32P2 + 60P3 \leq 121$$
$$56P1 + 32P2 + 60P3 \leq 148$$
$$28P1 + 16P2 + 30P3 \leq 75$$
$$56P1 + 64P2 + 60P3 \leq 181$$

With objective function: $Fmin = 28P1 + 16P2 + 30P3$

b. Converting constraints and objective functions into canonical form.

$$65P1 + 16P2 + 90P3 + P4 = 163$$
$$28P1 + 16P2 + 30P3 + P5 = 75$$
$$56P1 + 16P2 + 30P3 + P6 = 103$$
$$28P1 + 48P2 + 60P3 + P7 = 136$$
$$28P1 + 32P2 + 60P3 + P8 = 121$$
$$56P1 + 32P2 + 60P3 + P9 = 148$$
$$28P1 + 16P2 + 30P3 + P10 = 75$$
$$56P1 + 64P2 + 60P3 + P11 = 181$$

With objective function:

$$Fmin = 28P1 + 16P2 + 30P3 + 0.\ P4 + 0.\ P5 + 0.\ P6 + 0.\ P7 + 0.\ P8 + 0.\ P9 + 0.\ P10 + 0.\ P11$$

2. Problem solving using the simplex linear programming method.

Table 3. Simplex table iteration 1

	Cj	28	16	30	0	0	0	0	0	0	0	0	Ms	Ri
Ci	Pi/Pj	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11		
0	P4	65	16	90	1	0	0	0	0	0	0	0	163	1.81
0	P5	28	16	30	0	1	0	0	0	0	0	0	75	2.5
0	P6	56	16	30	0	0	1	0	0	0	0	0	103	3.43
0	P7	28	48	60	0	0	0	1	0	0	0	0	136	2.26
0	P8	28	32	60	0	0	0	0	1	0	0	0	121	2.01
0	P9	56	32	60	0	0	0	0	0	1	0	0	148	2.46
0	P10	28	16	30	0	0	0	0	0	0	1	0	75	2.5
0	P11	56	64	60	0	0	0	0	0	0	0	1	181	3.01
	Zj	0	0	0	0	0	0	0	0	0	0	0	0	
	Zj- Cj	-28	-16	-30	0	0	0	0	0	0	0	0		

Got it from results calculation n method simplex on linear programming Obtained a number of results still $Zj - Cj$ negative so required exists iteration 2 or calculation return use linear programming method .

Table 4. Iteration 2 simplex table

	C_j	28	16	30	0	0	0	0	0	0	0	0	Bi	Ri
C_i	P_i/P_j	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11		
30	P3	0,72	0,17	1	1/90	0	0	0	0	0	0	0	1,81	10,64
0	P5	6,4	10,9	0	-0,3	1	0	0	0	0	0	0	20,7	1,89
0	P6	34,4	10,9	0	-0,3	0	1	0	0	0	0	0	48,7	4,46
0	P7	-15,2	37,8	0	-0,6	0	0	1	0	0	0	0	27,4	0,72
0	P8	-15,2	21,8	0	-0,6	0	0	0	1	0	0	0	12,4	0,56
0	P9	12,8	21,8	0	-0,6	0	0	0	0	1	0	0	39,4	1,80
0	P10	6,4	10,9	0	-0,3	0	0	0	0	0	1	0	20,7	1,89
0	P11	12,8	53,8	0	-0,6	0	0	0	0	0	0	1	72,4	1,34
	Z_j	21,6	5,1	30	0,3	0	0	0	0	0	0	0	54,3	
	Z_j- C_j	-6,4	-10,9	0	0,3	0	0	0	0	0	0	0		

After implemented iteration 2 is obtained the results are still negative section P2 or $Zj - Cj$ nso necessary There is iteration the 3rd.

Table 5. Iteration 3 simplex table

	C_j	28	16	30	0	0	0	0	0	0	0	0	Bi	Ri
C_i	P_i/P_j	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11		
30	P3	0,83	0	1	0,01	0	0	0	-0,006	0	0	0	1,71	2,06
0	P5	13,92	0	0	-0,08	1	0	0	-0,43	0	0	0	14,59	1,04
0	P6	41,92	0	0	-0,08	0	1	0	-0,43	0	0	0	42,59	1,01
0	P7	10,88	0	0	0,15	0	0	1	-1,51	0	0	0	6,23	0,57
16	P2	-0,69	1	0	-0,02	0	0	0	0,04	0	0	0	0,56	-
0	P9	27,84	0	0	-0,16	0	0	0	-0,87	1	0	0	27,19	0,97
0	P10	13,92	0	0	-0,08	0	0	0	-0,43	0	1	0	14,59	1,04
0	P11	49,92	0	0	0,47	0	0	0	-2,15	0	0	1	42,27	0,84
	Z_j	13,86	16	30	-0,02	0	0	0	0,46	0	0	0	60,26	
	Z_j- C_j	-14,14	0	0	-0,02	0	0	0	0,46	0	0	0		

Iteration 3 still obtained negative values $Z_j - C_j$ so that necessity There is iteration 4 inside calculation method simplex simplex program necessity value that is not negative

Table 6. Iteration 4 simplex table

	C_j	28	16	30	0	0	0	0	0	0	0	0	Bi	Ri
C_i	P_i/P_j	$P1$	$P2$	$P3$	$P4$	$P5$	$P6$	$P7$	$P8$	$P9$	$P10$	$P11$		
30	$P3$	0	0	1	0,001	0	0	-0,07	0,07	0	0	0	1,23	17,57
0	$P5$	0	0	0	-0,21	1	0	-1,25	0,96	0	0	0	6,65	6,92
0	$P6$	0	0	0	-0,49	0	1	-3,77	3,76	0	0	0	18,69	4,97
28	$P1$	1	0	0	0,01	0	0	0,09	-0,10	0	0	0	0,57	-
16	$P2$	0	1	0	-0,01	0	0	0,06	-0,02	0	0	0	0,95	-
0	$P9$	0	0	0	-0,43	0	0	-2,50	1,91	1	0	0	11,32	5,92
0	$P1$	0	0	0	-0,21	0	0	-1,25	0,96	0	1	0	6,65	6,92
0	$P1$	0	0	0	-0,02	0	0	-4,49	2,84	0	0	1	13,81	4,86
	Z_j	28	16	30	0,15	0	0	1,38	-1,02	0	0	0	68,06	
	Z_j- C_j	0	0	0	0,15	0	0	1,38	-1,02	0	0	0		

If several negative Z_j- C_j results are found, 5 iterations are required.

Table 7. Iteration 5 simplex table

	C_j	28	16	30	0	0	0	0	0	0	0	0	Bi	Ri
C_i	P_i/P_j	$P1$	$P2$	$P3$	$P4$	$P5$	$P6$	$P7$	$P8$	$P9$	$P10$	$P11$		
30	$P3$	0	0	1	0,001	0	0	0,04	0	0	0	-0,02	0,88	
0	$P5$	0	0	0	-0,20	1	0	0,26	0	0	0	-0,33	1,98	
0	$P6$	0	0	0	-0,46	0	1	2,17	0	0	0	-1,31	0,41	
28	$P1$	1	0	0	0,009	0	0	-0,06	0	0	0	0,03	1,05	
16	$P2$	0	1	0	-0,009	0	0	0,09	0	0	0	-0,007	0,85	
0	$P9$	0	0	0	-0,41	0	0	0,51	0	1	0	-0,66	2,03	
0	$P10$	0	0	0	-0,20	0	0	0,26	0	0	1	-0,33	1,98	
0	$P8$	0	0	0	-0,007	0	0	-1,58	1	0	0	0,35	4,86	
	Z_j	28	16	30	0,13	0	0	0,96	0	0	0	0	69,4	
	Z_j- C_j	0	0	0	0,13	0	0	0,96	0	0	0	0		

The optimal simplex table above shows that to increase the weight and height of toddlers you need 1.05 spinach vegetables (P1), 0.85 moringa vegetables (P2) and 0 peanuts (P3). .88 pieces of fruit that toddlers should consume every day. So to achieve growth in both height and weight of a toddler it takes 69.4 days. To make portioning easier, researchers will carry out advanced calculations using the branch and bound method in linear programming.

3. Completion of the branch and bound method using Matlab software.

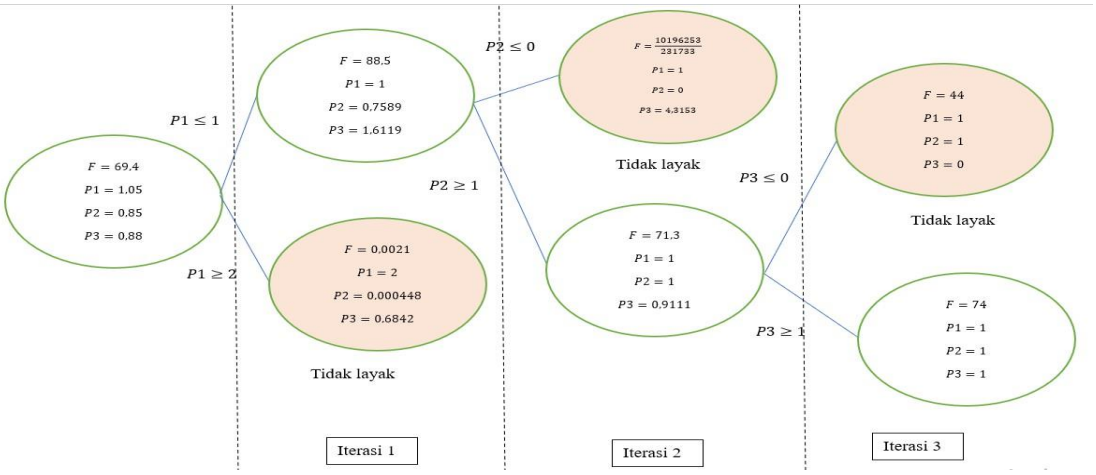

Figure 1. Branch And Bound Calculation Results

It is known from solving the problem using the branch and bound method that P1 (Arem-arem spinach) = 1, P2 (Arem-arem moringa) = 1, P3 (Arem-arem peanuts) = 1 with the duration that stunted toddlers need to overcome stunting as following:

$F = 28P1 + 16P2 + 30P3$

$F = 28(1) + 16(1) + 30(1)$

$F = 74$ days

CONCLUSION

Lots of stunting that is the main factor among them caused by wedding early and the main factors that is Lack of public knowledge regarding the importance of maintaining a balanced nutritional diet Saah One method guard gisi balanced with optimization in consume arems that are made by parents Alone in tackling stunting with proper nutrition with within a period of 74 days with stunted toddlers each consume 1 spinach arem-arem, 1 moringa arem-arem and 1 ask bean arem-arem every day Making arem-arem with an innovative filling of spinach, moringa leaves and peanuts which not only contains a lot of energy intake, but also contains a lot of fat, protein and iron. From the results calculation with help linear program calculations . Linear programming method simplex is used For manage power obtained finish problem with look for maximum time in solution obtained results duration optimization arem-arem obtained as many as 74 days to toddlers in the village Tlogosari Sumbermalang Situbondo.

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REFERENCES

Aningke, T., Hartama, D., Andani, S.R., Tata, J., 2020. Linear Programming Metode Simpleks Dalam Optimasi Keuntungan Produksi Makanan Ringan. *Prosiding Seminar Nasional Riset Dan Information Science (Senaris).* Vol. 2, Juli (2020), Pp. 365-375. https://Tunasbangsa.Ac.Id/Seminar/Index.Php/Senaris/Article/View/184/185.

Athiah, M., Kurniati, A.M., Sarahdeaz, S.F.P., Zanaria, R., Husin, S., Lestari, H.I., Yusnita, H., Sari, P.M., Yulistiana, S., 2022. Penyuluhan Pentingnya Pengukuran Status Gizi Dalam Upaya Pencegahan Stunting. J. Pengabdi. Masy. Humanity Med. Vol.3, 71–83. https://doi.org/10.32539/Hummed.V3i1.79

Bukari, M., Abubakari, M.M., Majeed, M., Abizari, A.-R., Wemakor, A., Atosona, A., 2020. Effect Of Maternal Growth Monitoring Knowledge On Stunting, Wasting And Underweight Among Children 0–18 Months In Tamale. *Bmc Research Note*. 10.1186/S13104-020-4910-Z

Bukari, M.M, Abubakari, M.Majeed, A.R Abizari, A. Wemakor And A. Atosona. *Bmc Res. Notes*. 13, 45. https://doi.org/10.1186/S13104-020-4910-Z

Dian, L., Sari, K., Idayani, D., Munawwir, Z., Hasanah, N., & Noervadila, I. (2021). *01 Kelurahan Ardijero Kecamatan Panji Situbondo Di Tengah Pandemi Covid-19*. *2*, 560–564. https://doi.org/10.47668/join.v2i2.990

Faridah, S., Irawan, W. H., & Mukti, T. S. (2024). *Influence Self-Efficacy On The Mathematical Communication Ability Of Students In Material*. *9*(May), 305–318.

Nuryami, N., Janan, T., & Hasanah, N. (2022). The Influence Of Realistic Mathematics Education On Year 8 Students' Spatial Ability Of Cuboids And Cubes. *Kalamatika: Jurnal Pendidikan Matematika*, *7*(1), 69–84. Https://Doi.Org/10.22236/Kalamatika.Vol7no1.2022pp69-84

Hastuti, D.W.B., Ekasanti, A., Nugrayani, D., Listiowati, E., 2023. Pelatihan Variasi Produk Olahan Ikan Untuk Program Pemberian Makanan Tambahan Balita Bagi Kader Posyandu Di Desa Sawangan Wetan, Kecamatan Patikraja. *Icon: Indonesian Journal Of Community Enggegment.* Vol. 3, No. 1 2023, Hal. 16-21. Doi: Https://Doi.Org/10.52436.

Hatijar, H., 2023. The Incidence Of Stunting In Infants And Toddlers. J. *Ilm. Kesehat. Sandi Husada*. Vol 12, 224–229. Https://Doi.Org/10.35816/Jiskh.V12i1.1019.

Hasanah, N., Surur, M., Seituni, S., & Mukholid, A. (2023). *The Influence Of Lesson Study For Learning Community Based Learning On Students ' Creative Thinking Ability The Influence Of Lesson Study For Learning Community Based Learning On Students ' Creative Thinking Ability*. *050025*(January). https://doi.org/10.1063/5.0112718

Hatimah, I., & Lutfiansyah, D. Y. (2022). Pendampingan Keluarga Melalui Program Parenting Untuk Menekan Angka Stunting Di Kabupaten Cirebon. *Juurnal Ilmiah Abdimas*, *3*(1), 123–133. https://Journal.Ikopin.Ac.Id/Index.Php/Ecoopsday/Article/View/1419/1125

Khasanah, D.P., Hadi, H., Paramashanti, B.A., 2016. Waktu Pemberian Makanan Pendamping Asi (Mp-Asi) Berhubungan Dengan Kejadian Stunting Anak Usia 6-23 Bulan Di Kecamatan Sedayu. J. Gizi Dan Diet. Indonesia. Vol. 4, Nomor 2. Doi Http://Dx.Doi.Org/10.21927/Ijnd.2016.4(2).105-111

*Khasanah D. P., Hamam Hadi, Bunga Astria Paramashanti*waktu Pemberian Makanan Pendamping Asi (Mp-Asi) Berhubungan Dengan Kejadian Stunting Anak Usia 6-23 Bulan Di Kecamatan Sedayu. *Jurnal Gizi Dan Dietetik Indonesi*. Vol. 4, No. 2, Mei 2016: 105-111. Doi: http://dx.doi.org/10.21927/Ijnd.2016.4(2).105-111

Fitriyaningsih, Naibaho, F., Simanihuruk, R., & Simbolon, M. (2021). Penyuluhan Dan Demonstrasi Pemberian Makanan Tambahan Dalam Upaya Peningkatan Kreativitas Ibu Dalam Pemberian Menu Makanan Tambahan Pada Bayi Usia 6 Bulan - 2 Tahun Di Poskesdes Desa Suanae Wilayah Puskesmas Eban. *Krida Cendekia: Jurnal Pengabdian Masyarakat. 1*(2). https://Kridacendekia.Com/Index.Php/Jkc/Article/View/36.

Muliawati, D., Sulistyawati, N., 2019. The Use Of Moringa Oleifera Exctract To Prevent Stunting In Toddler. *Jurnal Kesehatan Madani Medika*. Vol 10. No. 2. Doi: Https://doi.org/10.36569/Jmm.V10i2.81

Ong, R., Maran, A.N.R., Lapik, A.R., Andita, D.M.B., Kadir, M.F., Kindangen, R.V., Latul, V.B., Rumetna, M.S., Lina, T.N., 2019. Maksimalisasi Keuntungan Pada Usaha Dagang Martabak Sucipto Menggunakan Metode Simpleks Dan Pom-Qm 6. *Jurikom Jurnal Riset.* Vol 6 No. 4. Doi: Http://Dx.Doi.Org/10.30865/Jurikom.V6i4.1350

Picauly, I., Sakke Tira, D., Pellokila, M.R., 2023. Pentingnya Pola Makan Beragam, Bergizi, Seimbang, Dan Aman Dalam Upaya Percepatan Penurunan Stunting Di Wilayah Kerja Puskesmas Sumlili Kecamatan Kupang Barat Kabupaten Kupang. *J. Pengabdi. Pada Masy. Kepul. Lahan Kering* Vol. 4, 9–17. Https://Doi.Org/10.51556/Jpkmkelaker.V4i1.235

Ramadhani, F.N., Djuwarno, E.N., Yusuf, N.A.R., 2022. Upaya Peningkatan Status Gizi Anak Sebagai Pencegahan Stunting Di Desa Mongiilo Utara Bone Bolango. *J. Pengabdi. Masy. Farm. Pharmacare Soc*., 85–91. https://Doi.Org/10.37905/Phar.Soc.V1i3.18286

Satriawan, E., 2018. Strategi Nasional Percepatan Pencegahan Stunting 2018-2024.

Sirajuddin, S., Rauf, S., Nursalim, N., 2020. Asupan Zat Besi Berkorelasi Dengan Kejadian Stunting Balita Di Kecam Atan Maros Baru. *Gizi Indonesia*. Vol 43, 109–118. https://doi.org/10.36457/Gizindo.V43i2.406

Suryadi, A. F., Husain, H., Hasbul, W., Hamid, N., Ekawati, M., 2024. Pencegahan Pernikahan Dini Dan Cegah Stunting Dengan Pola Asuh Anak Di Kelurahan Bontotangnga Kabupaten Jeneponto. Proficio: Jurnal Pengabdian Kepada Masyarakat. Vol.5 No.1. https://Ejournal.Utp.Ac.Id/Index.Php/Jpf/Article/View/2983/520521818