

The Effect Of Giving The RASTTLE Formula (Beras Tempe ToloLele) Towards The Recovery Of Nutritional Status Of Malnutrition Toddlers In Tasikmalaya Sub-District

Sulistyoningsih H¹, Fitriani S¹, Susanti S²

¹Program Studi Kesehatan Masyarakat, STIKes Respati, Jl. Raya Singaparna Km 11 Cikunir Singaparna, Tasikmalaya, Jawa Barat, Indonesia

²Program Studi Kebidanan, STIKes Respati, Jl. Raya Singaparna Km 11 Cikunir Singaparna, Tasikmalaya, Jawa Barat, Indonesia

Email addresses: yanstia_77@yahoo.co.id

Abstract. Tasikmalaya District Health Service noted that in 2014, more than 6,000 children under the age of five (toddlers) had been diagnosed to have dystrophy, and there were 169 toddlers who were suffering from malnutrition. An untreated malnutrition can increase toddlers and children death rates, decreasing quality of life, disruption of growth, and mental development disorders. For this reason, efforts are needed to restore the nutritional status of malnourished children through appropriate high nutritional feeding. The formula for giving the formula consists of rice, tempeh, tolo beans and catfish (or RASTTLE in Indonesian acronym) towards the recovery of nutritional status of malnutrition toddlers in Tasikmalaya sub-district. The study was conducted in four sub-districts in Tasikmalaya sub-district. The study sample consists of 20 toddlers with poor nutrition divided into case and control groups. As many as 10 toddlers got PMT recovery and also got the RASTTLE formula (case group) and 10 toddlers only got PMT recovery without the RASTTLE formula (control group). Respondents in this study were all mothers or caregivers of toddlers who were sampled. The variables measured include the nutritional status of children by using weight / height index. The results showed that before getting treatment, the mean weight and height index of the case group was -2,344 while the index mean of weight and height in control group toddlers was -2.8640. After three months of treatment, the average changes in weight and height index for toddlers who got the RASTTLE formula (case) is up to 1.611, while the in group that doesn't get the RASTTLE formula (control) is up to 0.244. Thus, there is the effect of giving RASTTLE formula for the recovery of nutritional status of malnourished children in Tasikmalaya Regency ($p = 0.001$). RASTTLE formula can be developed as an alternative formula to help restoring nutritional status in malnourished children. In order for foods made from RASTTLE basic ingredients can be received and consumed by food suppliers, the creation is needed in the food making process and presentation.

1.Introduction

Malnutrition is one of the main nutritional problems in Indonesia that needs to be addressed. Nutritional deficiency is one of the causes of high mortality in infants and children, and can reduce quality of life, disruption of growth, reduce workforce and impair mental development of children [1]. Nutritional deficiencies that are not handled quickly can cause nutritional status to deteriorate and ultimately life threatening due to various dysfunctions experienced. Threats that arise include hypothermia (easily cold) because the fat tissue is thin, hypoglycemia (blood sugar levels below normal levels) and lack of important electrolytes and body fluids. The prevalence of high malnutrition is found in children under 5 years old (toddlers), pregnant women, and nursing mothers [2]. Data from Riskesdas (2010) shows that the prevalence of malnutrition in children under five is 17.9%, compared to 2007 at 18.4%. The prevalence of malnutrition in children under five in West Java based on the BB / TB index is 11%, although this figure is lower than the national figure but malnutrition still remains one of the health problems in West Java Province. The prevalence of malnutrition in Tasikmalaya District also increased,

the prevalence of malnutrition and malnutrition in 2010 was 8.07% and increased to 10.09% in 2011 [3][4].

2. Materials and methods

The research method used is a quantitative method with a quasi method of experimental one-group pre-test post-test design. The two difference test on average was used to determine the effect of the results of giving RASTTLE Formula (Catfish Tolo Rice) to toddlers' body weight with poor nutrition by comparing the body weight index compared to the toddler's height before and after getting the RASTTLE Formula. The sample in this study was a group of toddlers aged 6-59 months in the Tasikmalaya Regency region who were recovering nutritional status because based on a January 2017 report it was identified malnutrition based on the BB / TB index [5]. The sample was divided into two groups including a case group of 10 people and control of 10 people. The case group is a malnourished toddler who in addition to getting biscuits from the malnutrition recovery program also gets the RASTTLE formula 1 time in 1 day for 90 days, while the control group only gets biscuits as food to restore nutritional status. The variable measured was the nutritional status of toddlers before and after getting the RASTTLE Formula (Tempe ToloLele Rice). Nutritional status was measured using the BB / TB index, through measurement of body weight and height [6]. The two difference test on average is used to determine the nutritional status of toddlers before getting the RASTTLE formula and after getting the RASTTLE formula. To find out the differences in the two averages in each group using the Wilcoxon Test, and the average difference between the case and control groups was done by a one-party test (U Mann Whitney).

3. Results and Discussions

Toddler nutritional status was obtained by calculating the standard deviation value based on the BB / TB index then comparing the BB / TB index between before and after treatment, in the case and control groups. The results of calculation of BB / TB index can be seen in the following table.

Table 1. Index of BB / TB of Toddler Study Samples

Sample Group	Index Average BB / TB Before	Index Average BB / TB After	Average Index Change BB / TB
Cases	-2,3440	-0,7330	1,611
Control	-2,8640	-2,62	0,244

The average BB / TB index of the case group was -2.3440, higher than the average BB / TB index in the control group (amounting to -2.8640). The results of measurements carried out in the following 4 months showed that the average BB / TB index in the case and control groups experienced an increase of -0.7330 in the case group and -2.62 in the control group. This shows that the average BB / TB index change in the case group (which gets the RASTTLE formula) is greater than the average BB / TB index change in the control group (which does not get the RASTTLE formula).

Analysis using the Wilcoxon Test was conducted to see differences in nutritional status in each case group and controls, the results are as follows.

**Table 2. Differences in Nutritional Status in Each Group
Based on the Wilcoxon Test**

Group	Decreased in SD grades	Increased in SD grades	There is no change in SD grades	P value
Cases	1	9	0	0,007
Control	2	7	1	0,214

There were 9 children under five in the case group (getting the RASTTLE formula) had an increase in nutritional status, and 1 person experienced a decrease in nutritional status, and statistically this value was significant ($p = 0.007$). Whereas in the control group (did not get the RASTTLE formula) there were 2 people experiencing a decrease in nutritional status, 7 people experienced an increase, and 1 person did not experience changes, and this result was not statistically significant ($p = 0.214$).

The difference in nutritional status between the groups that got the RASTTLE formula (Case) and the group that did not get the RASTTLE formula (Control) was obtained after doing the analysis using the Mann Whitney Test. The results obtained are as follows

**Table 3. Differences in Nutritional Status in Case Groups and Controls
Based on the Mann Whitney Test**

Group	Average ranking	P value
Cases	13,90	0,001
Control	7,10	

The rank average in the case group (13.90) was higher than the ranking average in the control group (7.10) and was statistically significant ($p = 0.001$).

The results showed that there were differences in the average nutritional status based on the BB / TB index in the toddler group who received the RASTTLE formula with the toddler group who did not get the RASTTLE formula.

The provision of the RASTTLE formula in this study had a significant influence on the nutritional status of children who arrived until. This formula has a high nutrient content that helps speed up the process of nutrition recovery. Additional formula in this study uses local food consisting of rice, tempeh, tolo beans, and catfish. Every 100 grams of tempeh contains 193 calories, 10.6 grams of fat, and 18.54 proteins, and in every 100 grams of tolo beans contains 331 calories, 1.9 grams of fat, and 24.4 grams of protein, whereas every 100 grams of catfish contains 80 calories, 0.5 grams of fat and 16.2 proteins [7]. Every 100 grams of this formula contains 413.3 calories, 17.37 grams of protein, and 2.885 grams of fat [8].

Provision of additional food needs to be done to help restore the nutritional status of children with malnutrition or malnutrition. Giving supplementary food to malnourished toddlers aims to provide a high carbohydrate intake, high protein, and enough vitamins and minerals in stages to achieve optimal nutritional status [9]. There is an increase in the mean index of BB / TB at the group that received RASTTLE showed a significant difference in the two groups after being given the intervention. The results obtained were in accordance with Maria's (2011) study which stated that there was a significant effect of supplementary feeding on changes in body weight of 0.74 kg. This change in body weight is due to the additional food provided has met the requirements, namely both the type, amount and nutritional value of each supplementary food [10].

The influence of the modified formula PMT on changes in body weight in this study can be supported by Sugeng, who stated that PMT-recovery with WHO formula / modification for 90 days of child feeding had a significant influence on the nutritional status of KEP toddlers. Elisabeth Kristiamsson's research, et al., Showed that based on the results of analysis of data from 31 countries, the provision of food supplementation showed weight gain in poor families. Weight gain was also shown in children aged 6 - 23 months who received additional food for 6 months. Weight gain is greater when additional food is given along with nutrition education and local food-based interventions [11].

The provision of food for the restoration of malnutrition, among others, is supplementary food recovery, which is based primarily on food or local food, meets the nutritional needs of target toddlers, and is prioritized in the form of animal and vegetable protein sources (e.g. fish / eggs / meat / chicken, beans-nuts) [12]. RASTTLE formula is made from local food ingredients and is very potential to be used as an alternative food ingredient given in helping to restore the nutritional status of children because the

manufacture follows the conditions for supplementary feeding. RASTTLE formula can be alternative food for restoring nutritional status of poor nutrition toddlers, especially in Tasikmalaya.

4. Conclusion

The RASTTLE formula provides significant changes to the nutritional status of malnourished children. The average BB / TB index change in the group that received the RASTTLE formula was 1.611, while in the group that did not get the formula it was 0.244 ($p = 0.001$).

5. Acknowledgments

The authors would like to thank the West Java Provincial Research and Development Agency (BP2D) which has funded this research, as well as the Tasikmalaya District Health Office which has helped facilitate the data collection process.

6. References

- [1] Almtsier, S. 2003. *Prinsip Dasar Ilmu Gizi*. Jakarta: P.T Gramedia Pustaka Utama.
- [2] Arisman, 2004. *Gizi dalam Daur Kehidupan*. Jakarta: Penerbit Buku Kedokteran EGC.
- [3] Departemen Kesehatan RI Provinsi Jawa Barat. 2012. *Profil Kesehatan Jawa Barat Tahun 2012*. Bandung.
- [4] Departemen Kesehatan RI Provinsi Jawa Barat. 2014. *Profil Kesehatan Jawa Barat Tahun 2014*
- [5] Dinas Kesehatan Kabupaten Tasikmalaya. 2014. *Laporan Dinas Kesehatan Kabupaten Tasikmalaya*, Tasikmalaya.
- [6] Supriasa I.D.N. Bakri B. Dan Fajar, I. 2005. *Penilaian Status Gizi*. Jakarta: Penerbit Buku Kedokteran EGC.
- [7] Departemen Kesehatan RI. 1995. *Daftar Komposisi Zat Gizi dan Pangan Indonesia*. Jakarta.
- [8] Widjanarka, Agus. 2012. *Beras Tempe, Tolo, Lele*. <http://agus-widjanarka.blogspot.co.id/2012/08/rasttle-beras-tempe-tolo-lele.html>, diunduh 23 September 2017
- [9] Retnowati DH, Syamsianah A, Handarsari E. *Pengaruh Pemberian Makanan Tambahan Pemulihan Terhadap Perubahan Berat Badan Balita Bawah Garis Merah Kecacingan Di Wilayah Puskesmas Klambu Kabupaten Grobogan*. Jurnal Gizi. 2015;4(1).
- [10] Rikantasari S. *Perilaku Pemberian Makanan Terhadap Batita Di Pemukiman Tanah Kalikedinding, Kecamatan Kenjeran, Surabaya*. 2012.
- [11] Kementerian Kesehatan RI. 2017. *Petunjuk Teknis Pemberian Makanan Tambahan (Balita, Ibu Hamil, Anak Sekolah)*.
- [12] Ditjen Bina Gizi dan Kesehatan Ibu dan Anak. 2012. *Panduan Penyelenggaraan Pemberian Makanan Tambahan Pemulihan Bagi Balita Gizi Kurang dan Ibu Hamil KEK*. Jakarta.