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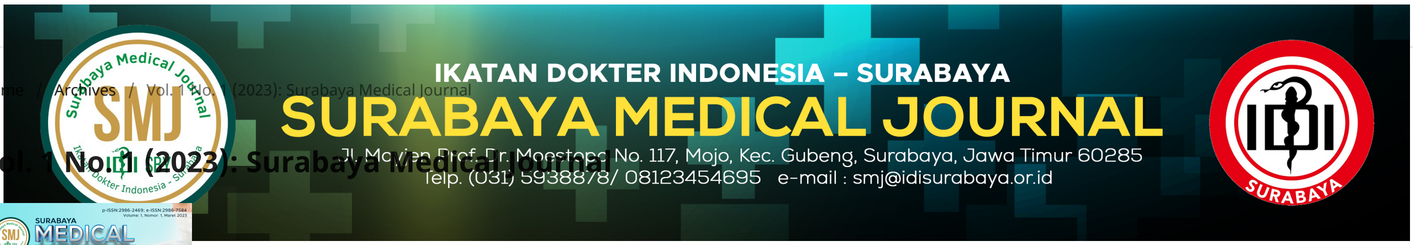

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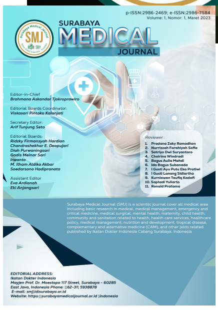

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ORIGINAL RE SEARCH REPORT

The effect of high-calorie formula on head circumference and body length on young children with stunted due to feeding problem

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ABSTRACT

Background: Feeding is a complex process that requires the coordination of several organ systems. However, special conditions lead to feeding problems which increase the risk of nutrition problems and growth retardation, resulting in undernutrition. **Objectives:** This study was performed to investigate young children's length and head circumference. More specifically, this study investigated children stunted due to feeding problems in their first two years and with over three months of nutritional and meditative intervention. **Methods:** A cross-sectional study was conducted from January 2019-December 2020 on healthy young children. These children were aged 6 to 24 months and brought in by their parents for nutritional consultations due to constant body weight or feeding problems. Subject numbers were determined using total sampling during the study period. The feeding problem diagnosis and physical examination were done by a pediatrician specialized in nutrition and metabolic syndromes. **Results:** There were 139 infants and young children recruited, of which 65 were boys and 74 were girls. Their mean age was 15.11, give or take 0.53 months. There were 32 subjects selected based on their experience with at least three months of nutritional intervention and medication. Microcephaly was detected in three subjects (23.08%). The nutritional intervention increased the head circumference-for-age z-score (HCAZ) from -0.77 ± 1.19 to -0.27 ± 1.05 (p = 0.012). After 90 days of intervention, there was no microcephaly detected despite no significant difference. The nutritional intervention also increased the height-for-age z-score. **Conclusion:** Feeding problcontributeutes to constant body weight gain and feeding problems. Nutritional intervention can be done by giving children hhigh-calorieformula to prevent growth faltering and restore growth during the first two years of life. The nutritional intervention improved the growth parameters, including head circumference z-scores.

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Highlights

1. Feeding problems in children due to multiple factors, such as infectious diseases. The most prevalent were tuberculosis (TB) and urinary tract infection (UTI).
2. Nutritional management increases length-for-age z-score and head circumference-for-age z-score.

BACKGROUND

Indonesian children still suffer from multiple malnutrition problems, including stunting, being underweight, and micronutrient deficiencies due to multiple factors (Dewi, 2016). Feeding problems are among the nutritional problems in infants and young children. This is caused by insufficient nutritional intake, especially in the first two years of life, in which cognitive and physical growth rates are at their fastest (Shim et al., 2020).

Feeding is a complex process requiring several organ systems to coordinate (central and peripheral nervous system, oropharyngeal mechanism, cardiopulmonary system, and gastrointestinal, craniofacial structure, and musculoskeletal system) (Goday et al., 2019). It is broken down into several main phases: the oral phase, the triggering phase, the pharyngeal phase, and the esophageal phase. These phases are under voluntary control in children and essential to masticate solid food. Masticating solid food, such as by biting and chewing, relies on sensory and cognitive processes (Dodrill and Gosa, 2015). Feeding difficulties are still a challenge for parents/caregivers and medical professionals.

To ensure optimal growth, health, and development in infants and young children, adequate nutrition intake is essential. However, approximately 20-30% of infants and toddlers tend to have feeding problems (Yang, 2017). This condition increases the risk of nutrition problems and growth retardation. Moreover, feeding or eating problems in young children increase the risk for eating disorders in young adulthood (Kotler et al., 2001).

OBJECTIVES

The study was conducted to investigate the body length and head circumference in young children stunted within the first two years of life due to feeding problems after more than three months of nutrition and medicative intervention from 2019 to 2020.

MATERIAL AND METHOD

Study Design

A cross-sectional study was conducted from January 2019 to December 2020. The subjects were healthy young children aged 6 to 24 months who were bought in by their parents for nutritional consultations due to constant body weight or feeding difficulties. Other criteria included being born as term infants, not having genetic disorders such as cerebral palsy or Down syndrome, breastfeeding as their main nutrition source during their first 6 months of life, and not having serious diseases

Data Collection

Subject numbers were determined using total sampling during the study period. Feeding problem diagnosis and physical examination were done by a pediatrician specialized in nutrition and metabolic syndromes, as well as by anamnesis from the parents/caregivers with a nurse as a helper. Laboratory investigations included a Mantoux test, thorax photo, urine culture, and ferritin levels. These were done in the same private hospital where the study was conducted. Thorax photo interpretation was done by a radiologist at the same hospital referred to by the aforementioned pediatricians enrolled in the study. Tuberculosis (TB) identification was done based on the TB scores designed by the Indonesian Ministry of Health (Kementrian Kesehatan Republik Indonesia, 2013). Urinary tract infections (UTI) were identified according to the urine culture results; if the count was below 100.000 cfu/ml, the patient was determined to have a urinary tract infection (Coulthard, 2019) and must receive antibiotic medication

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according to the Indonesian Child Health Association (Ikatan Dokter Anak Indonesia, 2011). The hypothyroid diagnosis was done based on TSH levels.

Recall diet, calorie needs, and diet planning for the subjects were done by the pediatrician who specialized in nutrition and metabolic diseases. Nutritional status (weight-for-age z-score or WAZ; length-for-age z-score or LAZ; weight-for-length z-score or WLZ; and head circumference-for-age z-score or HCAZ) was determined using World Health Organization's (WHO) Anthro software. The study has been considered ethically appropriate by the Health Research Ethics Committee of Universitas Airlangga, Surabaya with approval number 30/EC/KEPK/FKUA/2020, approved on November 16th, 2020.

Data Analysis

Statistical analysis conducted in this study was: Independent sample T-test for normal distribution and homogenous data (test of normality p>0.05 and homogeneity test p>0.05) or Mann-Whitney U test, with the level of significance of <0.05. Fischer exact test and Chi-square test were also conducted with a significancy of p<0.05.

RESULT

A total of 139 infants and young children visited the outpatient installation for nutritional counseling due to constant weight or not gaining weight and feeding difficulties. Of those, 65 were boys and 74 were girls, and their mean age was 15.11 $\pm$ 0.53 months. Only 32 subjects were selected with more than three months of nutritional and medication intervention.

Table 1. Subjects' characteristics (n = 32)

Subject`s characteristics	SG (n=13)	NG (n=19)	p
Age (months)	15.23 $\pm$ 3.67	11.73 $\pm$ 4.93	0.038[1*]
Gender, n(%)			1.000[2]
- boys	5 (38.46)	8 (42.11%)	
- girl	8 (61.54%)	11 (57.89%)	
Birth weight (g)	2,984.28 $\pm$ 320.25	3,111.00 $\pm$ 312.64	0.428[1]
Birth length (cm)	49.86 $\pm$ 1.77	49.30 $\pm$ 2.26	0.595[1]
Main complaints, n(%)			0.740[3]
- Constant weight or not gaining weight	7 (53.85)	13 (68.42)	
- Constant weight and feeding difficulties	2 (15.38)	2 (10.53)	
- Feeding difficulties	2 (15.38)	3 (15.79)	
- Feeding more than 30 minutes	2 (15.38)	1 (5.26)	
Feeding difficulties diagnosis, n(%)			0.336[2]
- Inappropriate feeding practice	4 (30.77)	5 (26.32)	
- Hyporesponsive feeding	9 (69.23)	14 (73.68)	
Feeding difficulties management, n(%)			1.000[2]
- Oral motor exercise	3 (23.08)	5 (2.63)	
- Rectifying feeding rules while receiving medication	10 (76.92)	14 (73.68)	

[1]Independent sample T-test; [2]Fischer exact test; [3]chi-square test; [*]significant if p < 0.05

The subjects were divided into two groups: the stunted/severely stunted group or SG (n = 13) and the normal group or NG (n = 19). Despite the term "normal group", the subjects already had faltering growth or slower growth than the expected weight gain based on age and sex (Shim et al., 2020). Subjects' characteristics are summarized in **Table 1**. There was a significant difference in the age distribution in both groups (15.23 $\pm$ 3.67 vs. 11.73 $\pm$ 4.93 months; p = 0.038). However, there was no significant difference in gender distribution. Boys made up 38.46% of the SG, and girls made up 61.54%. In the NG, 42.11% were boys and 57.89% were girls. There were no significant differences in birth weight (2,984.28 $\pm$ 320.25 vs. 3,111.00 $\pm$ 312.64 g; p = 0.428) and birth length (49.86 $\pm$ 1.77 vs. 49.30 $\pm$ 2.26 cm; p = 0.595) in both groups.

The main reason why parents visited pediatricians for consultations was due to constant weight and feeding difficulties (62.5%), and most children were diagnosed with hyporesponsive feeding (71.88%). The feeding difficulties were mainly managed by rectifying feeding rules with appropriate calories and scheduled feeding designed by the doctor. This was paired with receiving medication according to the cause of feeding difficulties (75%), while others needed physiotherapy or oral motor exercises (25%). Most of the feeding problems were due to TB with an incidence of 71.88%. TB had a mean score of 6.91 ± 0.95, Mantoux induration had a mean score of 11.89 ± 3.59 mm, and UTIs were found in 28.13% of participants.

All the subjects received nutritional interventions orally. Subjects' recall diets are summarized in **Table 2**. There was no significant difference in calorie needs (984.61 ± 68.87 vs 981.58 ± 86.94 kcal; p = 0.917), calorie deficits (373.08 ± 88.07 vs. 371.57 ± 88.07 kcal; p = 0.959), and additional calories by oral nutritional supplementation (ONS) or high-calorie formula as a nutritional intervention strategy (471.15 ± 179.07 vs. 462.61 ± 132.60 kcal; p = 0.878).

Table 2. Recall diet and nutritional intervention on subjects (n = 32)

Recall diet	SG (n=13) x ± SD	NG (n=19) x ± SD	p
Calorie needs (kcal)	984.61 ± 68.87	981.58 ± 86.94	0.917[1]
Calorie deficits (kcal)	373.08 ± 88.07	371.57 ± 88.07	0.959[1]
Nutritional intervention (ONS) (kcal)	471.15 ± 179.07	462.61 ± 132.60	0.878[1]

[1]Independent sample T-test *Significant if $p<0.05$

Table 3 summarizes the subjects' physical measurements, including body weight, body length, and head circumference before and after nutritional intervention. There was no significant difference in body weight before (8,053.85 ± 957.96 vs. 8,173.68 ± 1,217.39 g; p = 0.768) and after treatment in both groups (9,438.46 ± 1,277.72 vs. 9,302.63 ± 1,304.10 g; p=0.773). Body length showed similar results before treatment (71.61 ± 3.55 vs 71.87 ± 5.80 cm; p = 0.890) and after treatment (76.88 ± 4.04 vs. 77.00 ± 6.40 cm; p=0.955). There was no significant difference in head circumference before treatment (45.31 ± 1.74 vs. 44.84 ± 1.88 cm; p=0.281) and after treatment in both groups (46.54 ± 1.49 vs. 45.95 ± 1.47 cm; p=0.276). There was no significant difference in body weight increments (Δ body weight) in SG and NG (1,384.62 ± 629.61 vs. 1,128.95 ± 406.65 g; p=0.422). The body length increment (Δ body length) (5.27 ± 1.41 vs. 5.13 ± 2.96 cm; p=0.479) and head circumference increment (Δ head circumference) (1.58 ± 1.19 vs. 1.11 ± 0.93 cm; p=0.219) had similar results.

Table 3. Physical parameters after medical and nutritional intervention (n = 32)

Parameters	SG mean ± SD	NG mean ± SD	p
Body weight before treatment (g)	8,053.85 ± 957.96	8,173.68 ± 1,217.39	0.768[1]
Body weight after treatment (g)	9,438.46 ± 1,277.72	9,302.63 ± 1,304.10	0.773[1]
Δ Body weight (g)	1,384.62 ± 629.61	1,128.95 ± 406.65	0.422[2]
P	0.000[3]		
Body length before treatment (cm)	71.61 ± 3.55	71.87 ± 5.80	0.890[1]
Body length after treatment (cm)	76.88 ± 4.04	77.00 ± 6.40	0.955[1]
Δ Body length (cm)	5.27 ± 1.41	5.13 ± 2.96	0.479[2]
p	0.000[3]		
Head circumferences before treatment (cm)	45.31 ± 1.74	44.84 ± 1.88	0.484[1]
Head circumferences after treatment (cm)	46.54 ± 1.49	45.95 ± 1.47	0.276[1]
Δ Head circumferences (cm)	1.58 ± 1.19	1.11 ± 0.93	0.219[1]
p	0.000[3]		

[1]Independent sample T-test; [2]Mann-Whitney U test; [3]Paired sample T-test; Significant if $p<0.05$

Anthropometric measurements of the stunted/severely stunted groups are summarized in **Table 4**. In SG, after nutrition and medication intervention, the normal-weight increased from 8 to 11, and there were no underweight subjects. However, there was no significant statistical difference in WAZ after nutritional and medicative treatment (p = 0.288). The subjects who were underweight after nutritional and medicative intervention suffered from UTIs and TB at the same time (two subjects or 15.38%).

The number of stunted children dropped from 10 to 8, while the number of severely stunted children was reduced to zero. There was a significant difference in LAZ after treatment (p = 0.002). The subjects who were still stunted suffered from UTIs (one subject or 7.69%), TB (five subjects or 38.46%), and UTIs and TB at the same time (two subjects or 15.38%).

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Table 4. Nutritional status of subjects with stunting/severe stunting according to the WHO's child growth standards after the intervention (n=13).

Anthropometric measurement	SG (n=13) mean ± SD	p
WAZ before intervention	-2.996 ± 5.57	0.288[1]
WAZ after intervention	-1.236 ± 0.85	
Interpretation of WAZ before intervention		0.003[1]*
- Normal-weight, (n[%])	8 (61.54)	
- Underweight	4 (30.77)	
- Severely underweight	1 (7.69)	
Interpretation of WAZ after intervention		
- Normal-weight	11 (84.62)	
- Underweight	2 (15.38)	
LAZ before intervention	-2.65 ± 0.53	0.002[1]*
LAZ after intervention	-2.01 ± 0.74	
Interpretation of LAZ before intervention		0.032[1]*
- Stunted	10 (76.92)	
- Severely stunted	3 (23.08)	
Interpretation of LAZ after intervention		
- Normal	5 (38.46)	
- Stunted	8 (61.54)	
WLZ before intervention	-0.66 ± 0.95	0.096[1]
WLZ after intervention	-0.33 ± 0.88	
Interpretation of WLZ before intervention		0.161[1]
- Normal	11 (84.62)	
- Wasted	2 (15.38)	
Interpretation of WLZ after intervention		
- Normal	13 (100)	
HCAZ before intervention	-0.77 ± 1.19	0.012[1]*
HCAZ after intervention	-0.27 ± 1.05	
HCAZ interpretation before intervention		0.083[1]
- Normocephaly	10 (76.92)	
- Microcephaly	3 (23.08)	
HCAZ interpretation before intervention		
- Normocephaly	13 (100%)	

[1]Paired sample T-test; Significant if $p<0.05$

There was no significant difference in WLZ after the intervention (p = 0.288) although the number of wasted children was reduced from two to zero. On the other hand, there was a significant difference in HCAZ after the intervention (p = 0.012). The number of subjects with microcephaly before intervention who suffered from TB (two subjects) and/or TB and UTIs (one subject) dropped from three to zero.

DISCUSSION

Feeding problems occur in normal and healthy children (approximately 25%) or children with developmental disabilities (approximately 80%) (Steinberg, 2007). It is described as difficulty with adequate oral food intake (Yang, 2017). It causes weight gain failure or significant weight loss for at least one month without significant medical conditions (Benjasuwantep et al., 2013) before the age of six (Steinberg, 2007). Poor diets may be due to several causes such as impaired gastrointestinal, cardiorespiratory, and neurological structures/functions (Kovacic et al., 2021). This can be signified by symptoms such as recurrent vomiting/regurgitation; back arching; recurrent diarrhea/chronic diarrhea/bloody diarrhea; coughs lasting more than two weeks or coughs occurring more than three times during the period of three months; crying/looks in pain when fed; pale; fever with no apparent reason; enlarged lymphoid glands at the neck/inguinal/axilla; and shortness of breath when drinking (UKK Nutrisi dan Penyakit Metabolik, 2014). Feeding problems have several consequences such as nutritional issues, stunted emotional growth (Yang, 2017), infection, and even mortality (UKK Nutrisi dan Penyakit Metabolik, 2014).

According to a multicenter study in 2011, feeding problems were caused by inappropriate feeding practices which began during the weaning period or the complementary food introduction period (UKK

Nutrisi dan Penyakit Metabolik, 2014). In this study, after inappropriate feeding practices were corrected by setting feeding rules, most of the subjects engaged in hyporesponsive feeding. The main cause of feeding problems was TB and UTIs. Airway or lung diseases can be the cause of feeding problems that affect swallowing and feeding skill acquisition, while lower respiratory tract infections such as pneumonia cause aspiration (Goday et al., 2019). TB can contribute to malnutrition due to extensive nutritional depletion at the time of diagnosis, and this relationship is bidirectional (Beaumont et al., 1988). TB increases energy expenditure and causes reduced energy intake and wasting as a result of catabolism. TB uses substrates as amino acid sources for its protein synthesis and impaired pro-inflammatory cytokines (Jaganath and Mupere, 2012). This leads to acute phase stimulation and causes anorexia (Mexitalia et al., 2017). Nutritional repletion normally occurs during the TB medication period and must be fulfilled by increasing nutritional intake or improving energy intake. The nutritional repletion has been reported to take a long time (months) (Bhootra and Babu, 2019). TB is still prevalent in children, as it has been found to affect 11% of 9 million children in settings with limited resources. TB also had a high prevalence of causing malnutrition resulting in mortality (Jaganath and Mupere, 2012). This is especially true for wasting as a systemic clinical manifestation of TB (Mexitalia et al., 2017).

A study in Gambia (1988) noted two diseases had negative correlations with growth and contributed as the main causes of malnutrition. Those diseases are diarrhea (affected 50% of children; reduced weight gain by 14.4 g/day) and lower respiratory tract infections (LRTI) (affected 25% of children; reduced weight gain by 14.7 g/day; not correlated with length velocity). LRTIs can reduce body weight at four times the rate of diarrhea (Rowland et al., 1988); they are also more difficult to quantify (Black, 2017). LRTIs effectively activate the immune response and inflammation, and both have metabolic costs and may cause the host to lose the micronutrients needed for growth (Black, 2017).

For children with feeding difficulties and occasional infections or toxic injuries, urinalyses are needed to screen for concurrent infections and underlying medical conditions (Yang, 2017). UTIs are often found in children affected by health burdens. meaning They should be treated within three days in children aged under two years to reduce the risk of permanent renal scars (Coulthard, 2019).

UTIs in children during the first two years are non-specific and asymptomatic (Falcão et al., 2000; Leung et al., 2019). This is why urinalysis and urine culture should be done when the UTI is suspected through the presence of lethargy, poor feeding, increased sleeping, vomiting, decreased urinary output (Habib, 2012), irritability, recurrent abdominal pain, and failure to thrive (Leung et al., 2019). The main cause of UTIs is Escherichia coli from the bowel entering the urinary tract through the vaginal or periurethral route (Ma and Shortliffe, 2004). It migrates into the bladder, especially in the upper urinary tract, via the urethra, and colonizes with uropathogenic bacteria. As a result, the kidney generates an intense pro-inflammatory response which leads to renal scarring (Leung et al., 2019). UTIs are frequent, highly recurrent, and lead to chronic inflammation. Uropathogenic bacteria in acute episodes adhere to and invade the urothelium's superficial facet cells, which involves several lipid raft components (i.e., caveolin-1, Rac1, and microtubules). Due to this invasion, urothelial cells will activate TLR-4 as the innate host response to expel the bacteria by producing the pro-inflammatory cytokine (IL-6, IL8, G-CSF, IL-17A). The TLR-4 is activated through pattern recognition receptors (PRR) (Hannan et al., 2010).

The infection has a negative effect on nitrogen balance. During eight days of fever, nitrogen loss can amount to the equivalent of 2.5 kg in muscle due to toxic protein destruction. Chronic infections hurt protein metabolism, leading to hypoproteinemia. This can occur despite normal protein intake or dietary protein supplement intake (Scrimshaw et al., 1968). That is why frequent and chronic infections affect growth, are determinations of wasting and stunting, and accelerate acute malnutrition and complications (Black, 2017). Moreover, systemic, and single-organ infections can cause anorexia and reduce food intake by 25%. Children with diarrhea have been found to have 42% less energy intake than healthy children due to anorexia. However, breast milk (liquid) intake is not affected, meaning this route is a useful energy source (Farthing and Ballinger, 2001).

Reduced food intake when fasting leads to low levels of insulin circulation and leptin. This condition leads to anorectic hormone secretion by adipocytes, activating the central feeding pathways in the

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hypothalamus. The arcuate nucleus (ARC)-paraventricular nucleus (PVN) is activated through neuropeptide Y (ARC-PVN NPY) pathway increments released from the arcuate nucleus to the paraventricular nucleus. This serves to regulate energy homeostasis. NPY (via NPY receptors YI and Y5) can trigger hunger and feeding behavior. However, pro-inflammatory cytokines promote the release of corticotrophin-releasing hormones on PVN and inhibit ARC NPY gene expression. Thus, the ARC NPY levels are decreased, which promotes anorexia (Farthing and Ballinger, 2001). Linear growth retardation or stunting is a prominent feature of anorexia nervosa in both male and female adolescents (Modan-Moses et al., 2012, 2003).

Body weight and height (length) are important anthropometric indices of children's nutritional status (Varma et al., 1984). The deviations in growth, whether weight or length, are the greatest in the first two years of life and have serious implications for development, adult stature, and health. Infectious diseases are important determinants of wasting and stunting in children (Black, 2017). Inflammatory cytokines were higher in stunted children than in non-stunted children from the age of six weeks (Salam et al., 2015). Pro-inflammatory cytokines such as IL-1, IL-6, and TNF-α affect GH/IGF-1 (Spangelo et al., 1990) by suppressing several IGF-1 component pathways and *insu*lin-like growth factor binding protein-3 (IGFBP-3), and even suppressing the production locally (Hellgren et al., 2018). Infection and tissue damage also influenced nutrients and nutrient biomarkers, such as plasma retinol and plasma ferritin (Salam et al., 2015). Inflammation increases zinc homeostasis needs. This is caused by zinc redistribution into the cell compartments to prevent microbial infection, protein synthesis, and neutralized ROS. The inflammatory cytokines up- and down-regulate the expression of specific cellular zinc transporters via NF-kB pathways (Foster and Samman, 2012).

Growth faltering is caused by inadequate calorie intake to maintain rapid growth, especially during the first two years of life. This condition is accompanied by inflammation caused by infection (UTI and/or TB), causing the growth rate to slow above the usual rate at the respective child's age (Prader et al., 1963). In this condition, nutritional intervention can be done by increasing calorie density (Shim et al., 2020) due to the limited gastric capacity. Moreover, a high-quality diet is needed to mitigate growth disturbances due to infections (Black, 2017). High-calorie formula has been proven as effective and safe for short-term intervention. It is also good for promoting linear growth and weight gain in healthy prepubertal children (Modan-Moses et al., 2012).

After the infection is under control, children will begin to increase their appetite and dietary intake until they reach their expected weight for length/height. Their appetite will return to normal, causing the rate of weight gain to fall to their normal length/height. In this condition, calories (175 kcal/ kg bb) and protein (4 g) are required to initiate recovery and achieve optimal weight gain (Varma et al., 1984). Prader et al. (1969) stated that at the end of the growth retardation period due to illness or starvation, children grow more rapidly until they reach their original growth curve (Prader et al., 1963). Others have stated that growth retardation cannot be made up for during the short hospitality period of malnourished children (Varma et al., 1984). This means that stunted children need a longer time to catch up with their growth after three months of nutritional intervention. Other studies found that six-month nutritional supplementation on short and lean pre-pubertal children has improved both height and weight, but did not increase body mass index (BMI) (Lebenthal et al., 2014). Growth is not limited to the first six months of treatment but is extended to a year. Growth is stimulated by nutritional supplements (Yackobovitch-Gavan et al., 2016).

Strengths and Limitations

This study had a small sample size as only 32 children were enrolled. More biochemical analyses are needed as well, such as insulin-like growth factor-1 (IGF-1), inflammatory biomarkers, and others.

CONCLUSION

Feeding problems in children had deteriorative effects on growth, marked by constant body weight gain. Most feeding problems in Indonesia are hyporesponsive feeding cases caused by TB and UTIs. This contributes to constant body weight gain and feeding problems. Nutritional intervention can be done by giving children high-calorie formula to prevent growth faltering and restore growth during the first two years of life. The nutritional intervention improved the growth parameters, including head circumference z-scores.

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Conflict of Interest

All authors have no conflict of interest.

Ethics Consideration

The study has been examined and approved by the Health Research Ethics Committee Universitas Airlangga, Surabaya with approval number 30/EC/KEPK/FKUA/2020, approved on November 16th, 2020.

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Author Contribution

Ni Made Indah Dwijayanti Atmaja responsible for data collection, data analysis, and drafting. Roedi Irawan is responsible for supervising of the study and proofreads the manuscript.

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