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THE EFFECT OF GIVING FISH OIL ON INCREASING THE APPETITE OF PRESCHOOL CHILDREN IN PAUD AND KINDERGARTEN GRENDEN PUGER JEMBER

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ABSTRACT

Background: Optimal nutritional fulfillment during toddlerhood is an important determining factor in the process of child growth and development. One of the main challenges in fulfilling this nutrition is the low appetite of toddlers, which can impact inadequate nutritional intake and risk causing growth disorders such as malnutrition, wasting, and stunting. Low appetite in toddlers is often the main cause of children not getting enough energy and protein intake, even though at this age, the need for nutrients is very high to support optimal brain and physical development. Purpose: This study aims to determine the effect of fish oil administration on increasing toddlers' appetite. Method: This study used a quasi-experimental design with a post-test only control group design approach. The population in this study were all toddlers aged 3–5 years registered in Kindergarten (TK) in Puger District, Jember Regency. The sampling technique used purposive sampling. The number of samples in this study was 32 toddlers. Results: The group of toddlers given fish oil experienced an average weight gain of 0.70 kg with a standard deviation of 0.25 kg. Meanwhile, the control group that was not given fish oil only experienced an average weight gain of 0.20 kg with a standard deviation of 0.18 kg. Conclusion: Fish oil supplementation has been shown to be effective in increasing toddlers' appetite, as indicated by significantly higher weight gain.

Keywords: Fish Oil; Appetite; Toddler

INTRODUCTION

Adequate nutrition during infancy is a crucial factor in supporting optimal child growth and development. However, poor appetite in preschool children remains a major obstacle, leading to inadequate energy, protein, and other essential nutrient intake. This condition can increase the risk of wasting, malnutrition, and even stunting. Preschoolers have particularly high nutritional needs, as this is a crucial period for brain and nervous system development, as well as physical growth. Data from the 2022 Indonesian Nutritional Status Survey (SSGI) shows that the nation al stunting prevalence remains at 21.6%. In Jember Regency, the prevalence reached 34.9% before declining in the past two years. However, a 2023 report from the Jember Regency Health Office still noted that approximately 31% of toddlers are still at risk of nutritional problems. In Puger District, the stunting prevalence reached 39.9%, making this area among the districts with the highest stunting rates in Jember. The Grenden PAUD and Kindergarten areas, located in the coastal area of Puger District, are characterized by a predominantly fishing community. Despite the abundant potential of marine fish resources, some fishing families still face challenges in meeting their children's nutritional needs due to suboptimal consumption patterns and unstable household incomes. Yet, marine fish contain omega-3 fatty acids, such as EPA

and DHA, which are beneficial not only for brain and vision development but also have the potential to increase children's appetite.

One nutritional intervention that is quite effective and easy to implement is fish oil supplementation. The omega-3 content in fish oil is known to reduce gastrointestinal inflammation, improve digestive comfort, and stimulate the production of the hormone ghrelin, which functions as a hunger trigger. Several studies have proven these benefits. Zaid et al. (2012) in the Asia Pacific Journal of Clinical Nutrition showed that fish oil supplementation can significantly improve children's appetite scores and calorie intake. Wahyuni's (2021) study at the Cempaka Putih Integrated Health Service Post (Posyandu) also reported an increase in meal frequency and appetite in toddlers aged 1–3 years after 14 days of fish oil supplementation. Furthermore, research by Irawan and Dewi (2020) demonstrated a relationship between omega-3 supplementation and weight gain and nutritional status in preschool children. Another study by Sari (2022) stated that fish oil supplementation in malnourished toddlers can improve appetite and increase daily energy intake. Morigro ID (2023) also confirmed that omega-3 works through a neurohormonal pathway that plays a role in increasing hunger sensations in children, thus increasing daily food consumption.

Although various studies have shown that fish oil has significant potential for improving appetite, several research gaps remain, making this study crucial. Research on fish oil in coastal areas of East Java, particularly in Puger District, is still very limited, despite the region's distinct socioeconomic characteristics and consumption patterns. Furthermore, no research has specifically focused on preschool children attending formal educational institutions such as PAUD (Early Childhood Education) and Grenden Puger Kindergarten. The majority of previous research has been conducted at the integrated health post (Posyandu) or household level. Studies integrating local fisheries potential as a basis for nutritional interventions are also limited, despite Puger being the largest marine fish producing area in Jember. Furthermore, most previous research has focused on improving nutritional status or body weight, rather than specifically on appetite as the primary focus of analysis. The lack of empirical studies on the effectiveness of fish oil administration in populations at high risk of stunting, such as preschool children in Puger, strongly supports the need for this study. Based on this background, this study is crucial to determine the effect of fish oil administration on improving the appetite of preschool children attending PAUD and Grenden Puger Kindergarten in Jember. The research results are expected to form the basis for developing early childhood nutrition intervention programs and support more effective stunting prevention efforts in coastal areas.

METHODS

This study used a quasi-experimental design with a post-test only control group design. This design was used to determine the effect of fish oil supplementation on increasing toddlers' appetite by comparing the treatment group (fish oil) with the control group (not given fish oil).

The population in this study was all toddlers aged 3–5 years enrolled in kindergartens (TK) in Puger District, Jember Regency. The sampling technique

used purposive sampling, with inclusion criteria of toddlers aged 3–5 years who were generally healthy, not currently taking other supplements, and had received consent from their parents/guardians.

The sample size in this study was 32 toddlers, who were divided into two groups: 16 toddlers in the treatment group, who were given fish oil every day for 14 days, and 16 toddlers in the control group, who were not given fish oil.

Data were analyzed using statistical software, with a normality test (e.g., Shapiro-Wilk) performed first to ensure data distribution. If the data were normally distributed, an independent sample t-test was used to compare the mean weight change between the treatment and control groups. If the data were not normal, the Mann–Whitney U test was used.

RESULT

a. Distribution of Toddler Weight Gain Data

Table 1. Average Weight Gain of Toddlers After Treatment

Group	Number (n)	Body Weight Before (kg)	Weight After (kg)	Average Gain (kg)	Elementary School
Treatment (Fish Oil)	16	13.2	13.9	0.70	0.25
Control (No Treatment)	16	13.1	13.3	0.20	0.18

Source: Processed data (2025)

Based on the results of weight measurements before and after treatment, it was found that the group of toddlers given fish oil experienced an average weight gain of 0.70 kg with a standard deviation of 0.25 kg. Meanwhile, the control group that was not given fish oil only experienced an average weight gain of 0.20 kg with a standard deviation of 0.18 kg.

b. Statistical Test

Table 2. Independent Sample T-Test Results: Toddler Weight Gain

Group	N	Average Weight Gain (kg)	Elementary School	p-value	Information
Treatment (Fish Oil)	16	0.70	0.25		
Control (No Treatment)	16	0.20	0.18	0.001**	Significant ($p < 0.05$)

Source: Processed data (2025)

Based on the results of the Independent Sample T-Test, a p-value of 0.001 was obtained, indicating a statistically significant difference ($p < 0.05$) between the average weight gain of the group given fish oil and the group not given

treatment. This indicates that fish oil administration has a significant effect on increasing toddler weight.

The average weight gain in the treatment group (0.70 kg) was significantly higher than in the control group (0.20 kg), with an average difference of 0.50 kg. These results support the hypothesis that fish oil can increase appetite, as reflected in weight gain during the intervention period.

DISCUSSION

The results of the study showed that there was a statistically significant difference between the average weight gain in the group of toddlers given fish oil and the group that was not given it. The average weight gain in the treatment group was 0.70 kg, while in the control group it was only 0.20 kg, with a p value = 0.001 ($p < 0.05$) based on the Independent Sample T-Test. This indicates that the administration of fish oil has a significant effect on increasing toddlers' weight, which can be interpreted as an increase in appetite.

Fish oil contains essential omega-3 fatty acids, such as DHA (Docosahexaenoic Acid) and EPA (Eicosapentaenoic Acid), which have numerous benefits for children, particularly in improving metabolic function, appetite, and brain and nervous system development. Furthermore, fish oil also contains vitamins A and D, which support optimal growth and development in children.

Weight gain in children is often used as an indirect indicator of increased appetite, as a healthy appetite increases a child's daily nutritional intake. In the treatment group, significant weight gain indicates that toddlers who consumed fish oil had better dietary intake than those in the control group. This aligns with the theory proposed by Supariasa et al. (2016), which states that specific nutrient supplementation can improve nutritional status and increase dietary intake in young children.

In addition to physiological aspects, psychological factors also play a role. Fish oil is known to play a role in stabilizing mood and increasing activity through the neuroprotective effects of DHA and EPA. This can increase children's participation in mealtimes and create a more positive mealtime experience. However, this study has several limitations. First, appetite was assessed solely through weight indicators, without additional instruments such as dietary questionnaires or direct observation. Second, the intervention was only conducted for 14 days, so long-term effects cannot yet be determined. Third, other factors such as physical activity, sleep quality, or children's health status were not fully controlled.

Nevertheless, the results of this study provide an important contribution to the development of nutritional interventions based on natural supplements, such as fish oil, to improve children's nutritional status and health. Regular and measured administration of fish oil can be an effective non-pharmacological alternative to increase appetite and weight gain in toddlers, especially in areas with high rates of undernutrition or severe malnutrition.

CONCLUSION

Based on the results of research conducted on 32 toddlers aged 3–5 years at the Puger District Kindergarten, Jember, it can be concluded that: Fish oil supplementation for 14 dayssignificantly increased the weight of toddlers compared to toddlers who were not given fish oil.

The average weight gain in the group given fish oil was 0.70 kg, higher than the control group which only experienced an average weight gain of 0.20 kg.

The results of the statistical test using the Independent Sample T-Test showed a p value = 0.001 ($p < 0.05$), which means there is a significant difference between the two groups.

Thus, giving fish oil has been proven to be effective in increasing toddlers' appetite, which is indicated by a significantly higher increase in body weight.

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