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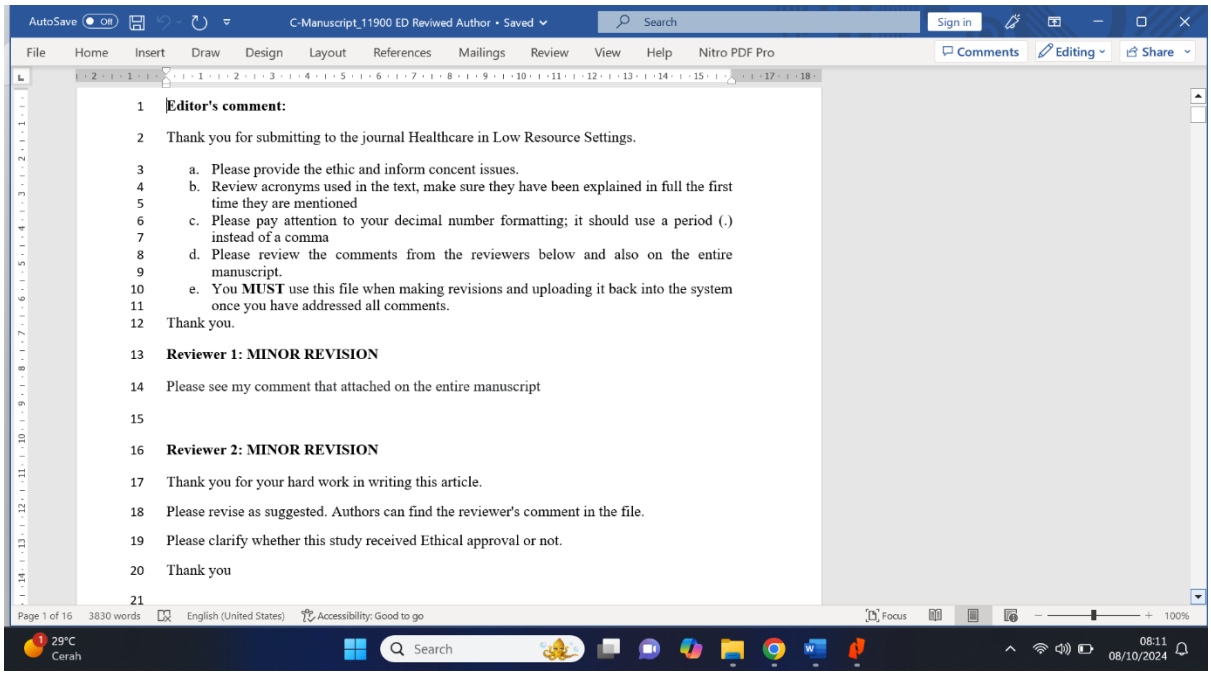

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Please clarify whether this study received Ethical approval or not.

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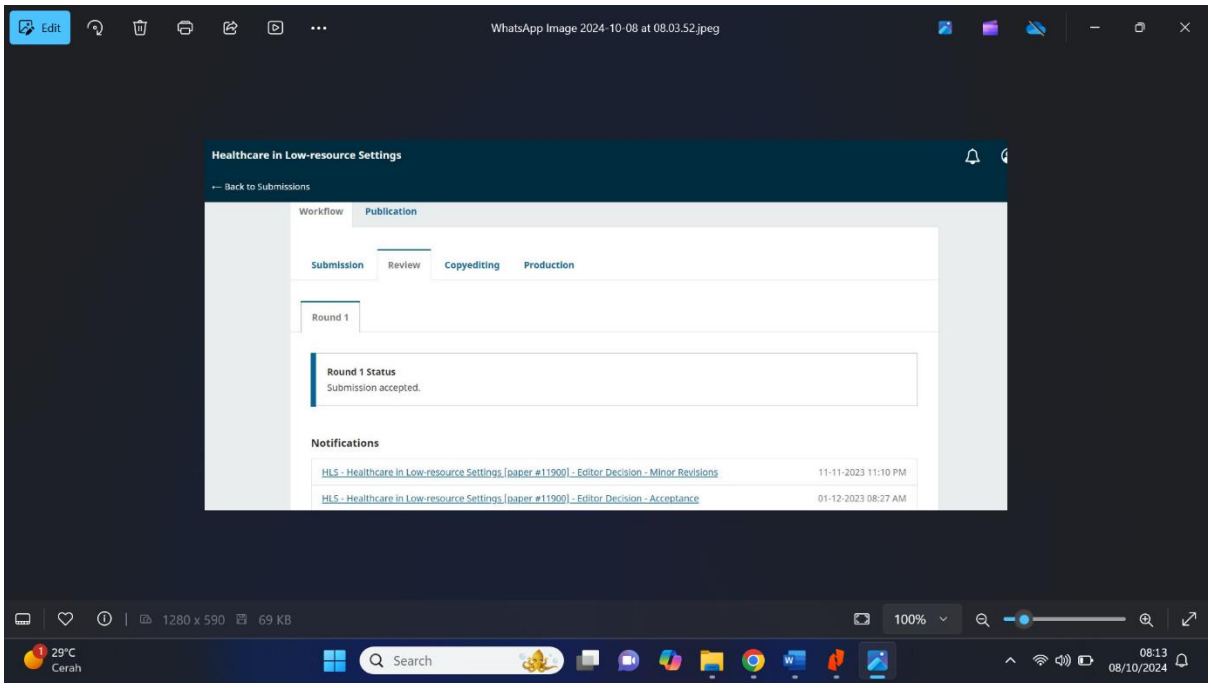

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The Effect of Giving Koya Nate on Appetite of Stunting Toodlers

Diyah Arini[1], Muh Zul Azhri Rustam[1*], Liana Windia[1]

[1]Sekolah Tinggi Ilmu Kesehatan Hang Tuah Surabaya, Surabaya, Indonesia

*Corresponding Author:

Muh Zul Azhri Rustam

Sekolah Tinggi Ilmu Kesehatan Hang Tuah Surabaya, Surabaya, Indonesia

Email: zul.azhri@gmail.com

Keyword: Koya Nate; Appetite; Stunting

Commented [GU1]: Write in alphabetical order

Contributions:

DA Conceptualization, Investigation, Methodology, Validation, and Writing – Original Draft, Review & Editing; MZAR Conceptualization, Methodology, Formal Analysis, Validation, and Writing – Original Draft, Formal Analysis, Validation ,Review & Editing; LW Conceptualization, Data Curation, Formal Analysis, Methodology, Validation, Visualization, Writing – Original Draft, Review & Editing;

Conflict of interest:

The authors declare no conflict of interest.

Ethics approval and consent to participate:

This research did not Ethics approval

Patient consent for publication:

Written informed consent was obtained for anonymized patient information to be published in this article.

Funding:

This research did not receive external funding.

Availability of data and materials:

All data generated or analyzed during this study are included in this published article.

Akcnowledgement:

None

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Commented [GU5]: Thanks can be given to institutions or parties who have contributed

ABSTRACT

Background: The appetite experienced by toddlers is at risk of causing nutritional disorders and will have a negative impact on health, one of which is stunting. Efforts are being made to overcome the appetite of toddlers through innovation in the form of Koya Nate. The aim of the research was to analyze the effect of giving koya nate on the appetite of stunted children in the city of Surabaya.

Methods: Method research used is a quasi experiment with a two-group pre-post design approach. The samples used were toddlers aged 1 – 5 years, who were included in the stunting criteria who lived in Kenjeran District, Surabaya City. The sample size was taken using a formula federer There were 8 samples obtained from the treatment group and 8 samples from the control group. When selecting samples using techniques, simple random sampling takes into account the inclusion and exclusion criteria. The data analysis used is by paired t-test and independent t-test.

Results: the results of this study show that there is an influence on the appetite of toddlers in the group before and after being given the intervention (Sig. 0.000) and there is no influence on the appetite of toddlers before and after being given no intervention in the control group (sig. 157), while after being tested from both The group found that there was an influence on appetite in the treatment group compared to the control group (sig. 0.000)~~hasil penelitian ini menunjukkan bahwa terdapat pengaruh selera makan balita pada kelompok sebelum dan setelah diberikan intervensi (Sig. 0.000) dan tidak terdapat pengaruh selera makan balita sebelum dan setelah tanpa diberikan intervensi pada kelompok kontrol (sig. 157), sedangkan seteleh diuji dari kedua kelompok di peroleh terdapat pengaruh selera makan pada kelompok perlakuan dibandingkan dengan kelompok kontrol (sig. 0.000).~~

Commented [GU6]: No need to write abstract into *Introduction*, *Methods*, *Results,* and *Conclusion* sections **separately**. Make it clear and concise.

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Conclusion: Conclusion of this study was that there was an influence on appetite in the group given Koya Nate compared to the group not given Koya Nate. This is caused by toddlers being picky about food, so innovation in presenting food menus to toddlers is needed.

Keyword: Koya Nate; Appetite; Stunting

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INTRODUCTION

The problem of malnutrition is still one of the main public health problems in the world, especially the prevalence of malnutrition in Indonesia which is still quite high [1]. One of the nutritional problems that children often experience is a decrease in appetite or difficulty eating, because at this age children begin to choose the foods they like[2,3]. Children who experience a lack of appetite for a long time can cause the child's height to become stunted [4,5].

United Nations International Children's Emergency Fund (UNICEF) shows the prevalence of stunting in the world reaches 28%, in Eastern and Southern Africa it is 40%, and in South Asia it is 38% [6]. The results of the Indonesian Nutrition Survey Study in 2022 showed that the prevalence of stunting in Indonesia had decreased by 3% since 2021 [7]. The prevalence rate of stunting in East Java Province has also decreased quite significantly in age, especially in children < 30 days old, it has decreased by around 30% from the previous year and in children aged 12-23 months it has also experienced a quite significant decrease of 7 % from the previous year [8]. The stunting rate in various cities and districts in Indonesia has also experienced a large reduction in stunting, one of which is the city of Surabaya which recorded a stunting prevalence rate in 2022 of 4.8% and is the second city with the lowest stunting prevalence rate [9].

Incidents of stunting children influenced by several important factors, one of which is nutritional factors, namely animal and vegetable protein[10,11]. The high nutritional value of animal and vegetable protein contained in each food ingredient is available and in sufficient quantities, however if the child does not want to eat or the wrong feeding pattern can result in a lack of nutritional intake received by the toddler [12–14]. Appetite problems experienced by children are at risk of causing nutritional disorders and will have a negative impact on the health, growth and development of toddlers[15–17]

Handling toddlers who have no appetite needs attention to achieve optimal growth, so food therapy is needed that is high in protein and has a smooth texture so that it can be consumed by toddlers[18–20]. One of the efforts made to overcome the appetite of toddlers is the innovation of snacks in the form of Koya Nate which has a high nutritional value which can increase the appetite of toddlers [21]. Based on this description, researchers are interested in analyzing the effect of giving koya nate on the appetite of stunted toddlers in the city of Surabaya.

Commented [GU9]: Please add more data related to how many children have no appetite in certain areas, especially in the area that this study conducted.

Commented [GU10]: Please give more explanation of what Koya Nate is and how it can affect toddlers' appetite. Give the reason why you choose Koya Nate to increase the appetite. Add the previous studies about using Koya Nate if there's any and what makes it different with this study.

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METHODS

Commented [GU12]: please follow the following flow to explain in method:
1. Design
2. Population, sample, sampling
3. Variable
4. Instrument / intervention
5. Data collection process
6. Analysis

Research design

The research design used in this study used a quasi-experimental method with a two-group pre-post design approach to determine the influence of toddlers' appetite in the intervention group by providing Koya Nate snacks with the control group not providing Koya Nate snacks.

Study Participants

The sample used in this research was based on the results of sample size calculations using the Federer formula. The sample size that was obtained from the calculation results was 8 samples that were given Koya Nate and 8 samples that were not given Koya Nate, so the total sample required for the research was 16 samples. When selecting samples from treatment and non-treatment groups using techniques of Simple Random Sampling taking into account the inclusion and exclusion criteria, namely: children aged 1-5 years, included in the stunting criteria, not currently suffering from an illness, and willing to be involved in becoming sample study.

Commented [A213]: justify why you chose a sample size of 16 (8 in the intervention group and 8 in the control group).
Additionally, given the small sample size, it's important to acknowledge the limitations of this and its potential impact on the study's generalizability.

Variable, Instrument and Data Collection

Commented [A214]: if there was any training or standardization of measurements among researchers or data collectors, it should be mentioned.

The independent variables in this study are demographic factors, namely the toddler's identity (age, gender, height, weight, stunting category) and the mother's identity (age,

education level, mother's occupation, and family income), meanwhile, for the toddler's comfort eating variable. The dependent variable in this research is the provision of Koya Nate snacks. The instrument used to identify toddlers' appetite is a questionnaire that has been developed by research which is measured using the results of food waste from the child's initial portion of the child's meal using the Comstock Method [22]. This method uses a scale of 0 which is the percentage of toddlers consuming the entire portion of food from the start of the meal. scale 1 is the percentage of toddlers consuming ¾ of the initial amount of food. scale 2 is the percentage of toddlers who consume ½ the initial portion of food. scale 3 is the percentage of toddlers who consume ¼ of the initial part of food. scale 4 is the percentage of toddlers consuming 1/9 (only a tiny portion) of the initial part of food. scale 5 is the percentage of toddlers who do not eat at all from the initial part of the meal.

Data Analysis

Data analysis used test *statistics paired t-tests* and *independent t-tests*. if the data obtained is normally distributed. This statistical test aims to see the effect of appetite before and after being given the Koya Nate intervention and the effect on appetite after being given the Koya Nate intervention and not being given the Koya Nate intervention. The indicator used to measure appetite is to look at the leftover food given by the toddler's parents..

Ethical Clearance

The research did not receive ethical approval.

RESULTS

Table 1, Showed that the demographic factors, namely the age factor for toddlers < 41 months and ≥ 41 months, were 50% in the treatment group and for the most part those aged ≥ 41 months were 62.5% in the control group. The toddlers gender was mostly found in boys at 62.5% in the treatment and control groups. The height factor for toddlers with heights < 80 cm and ≥ 80

Commented [A215]: 1.Please briefly state the koya Nate snack is

2. Also give more detail about your intervension given, such as frequency,duration, and portion for each intervention

Commented [A216]: 1.why did this research did not receive ethical clearance? If there are specific reasons why ethical approval was not sought, explain these reasons transparently. It's important to acknowledge and address this issue.

2.Even if formal ethical approval was not obtained, include a statement indicating that the research was conducted in compliance with ethical standards and guidelines.

3.Explain how you ensured that participants were fully informed about the study.

158 cm was 50% in the treatment group and most of the toddlers' height < 80 cm was 75% in the
159 control group. The weight factor of toddlers weighing < 10 kg was 62.5% in the treatment
160 group and the majority of toddlers weighing ≥ 10 kg was 62.5% in the control group. The
161 mothers' age factor was mostly found in those aged ≥25 years old, amounting to 75% in the
162 treatment group, and most of the maternal age < 25 years old, amounting to 62.5% in the control
163 group. The majority of mothers' education levels were at the senior high school level, 87.5%
164 in the treatment group and 100% in the control group. Regarding mother's employment status,
165 the majority of unemployed, 87.5% in the treatment group and 62.5% in the control group.
166 Meanwhile, the majority of mothers' income was below the MW (Minimum Wages), 75% in
167 the treatment group, and mothers' income above and below the MW (Minimum Wages) was
168 50% in the control group.

169 Table 1. Characteristics of demographic factors (N=??)

Demographic Factors	Treatment group		Control group	
	f	%	f	%
Toddler Age				
< 41 Months	4	50	3	37.5
≥ 41 Months	4	50	5	62.5
Total	8	100	8	100
Toddler Gender				
Boy	5	62.5	5	62.5
Girl	3	37.5	3	37.5
Total	8	100	8	100
Toddler Height				
< 80 cm	4	50	6	75
≥ 80 cm	4	50	2	25
Total	8	100	8	100
Toddler Weight				
< 10 Kg	5	62.5	3	37.5
≥ 10 Kg	3	37.5	5	62.5
Total	8	100	8	100
Mother's Age				
< 25 Years old	2	25	5	62.5
≥ 25 Years old	6	75	3	37.5
Total	8	100	8	100
Mothers' Education Levels				
Primary School	0	0	0	0
Junior High School	1	12.5	0	0
Senior High School	7	87.5	8	100
College	0	0	0	0

Total	8	100	8	100
Mother's Employment Status				
Unemployed	7	87.5	5	62.5
Employed	1	12.5	3	37.5
Total	8	100	8	100
Mothers Income				
Below MW	6	75	4	50
Above MW	2	25	4	50
Total	8	100	8	100

Table 2, showed that the appetite of toddlers in the pre-treatment group mostly consumed 1/9 portion of the initial portion with a percentage of 37.5%, and in the post-treatment group, the appetite of toddlers increased by consuming ¾ portion of the initial portion with a percentage of 50%. Meanwhile, most of the toddlers' appetite in the pre-control group consumed ¼ portion of the initial portion with a percentage of 62.5% and in the post-control group, most of the toddlers' appetite consumed 1/9 of the initial portion with a percentage of 37.5%.

Table 2. Distribution of food portions for toddlers in the treatment group and control group in Surabaya

Portion spent	Pre-Test				Post-Test			
	Treatment		Control		Treatment		Control	
	f	%	f	%	f	%	f	%
Not Eaten	2	25	2	25	0	0	2	25
1/9 Portion	3	37.5	5	62.5	0	0	3	37.5
¼ Portion	1	12.5	0	0	0	0	2	25
½ Portion	1	12.5	1	12.5	3	37.5	1	12.5
¾ Portion	1	12.5	0	0	4	50	0	0
Full Portion	0	0	0	0	1	12.5	0	0
Total	8	100	8	100	8	100	8	100

Table 3, showed the pre and post treatment group data shows that the data is normally distributed with a significant value 0.109. Meanwhile, the data for the pre-control group shows that the data is not normally distributed with a significant value. (0.001) and the post control group shows that the data is normally distributed with a significant value. (0.200).

Table 3. Normality test for toddlers' appetite in the treatment and control groups in Surabaya

Group	Sig.*	Values
Treatment Group (Pre-Test)	0,109	Normally
Treatment Group (Post-Test)	0,109	Normally

Control Group (Pre-Test)	0,001	Not Normally
Control Group (Post-Test)	0,200	Normally

Note (*): Uji *Kolmogrov - Smirnov*

Table 4, showed the influence of toddlers' appetite before and after the treatment group as evidenced by the significant value (0.005) with a mean difference of -2.250. Meanwhile, there was no influence of toddlers' appetite before and after the control group as evidenced by the significant value (0.157) with a mean difference of -0.250

Table 4. Analysis of the influence of appetite in the pre and post-treatment and control groups in Surabaya

Indicatior	Group	Mean	Std. Deviation	t	Sig.(2-tailed)
Appetite	Pre - Treatment Post – Treatment	-2,250	1,581	-4,025	0,005(*)
	Pre - Control Post - Control	-0,250	0,463	-1,414	0,157(**)

Note (*) *Paired t-test*
(**) *Wilcoxon Sign Rank Test*

Table 5, showed that there is an influence on appetite in the treatment group and control group as evidenced by the significant value. (0.000) with an mean difference of 4.75

Table 5. Analysis of the influence of toddlers' appetite in the treatment and control groups in Surabaya

Indicator	Group	n	Mean	Std. Deviation	t	Sig.(2-tailed)*
Appetite	Post – Treatment	8	4,75	0,707	5,641	0,000
	Post - control	8	2,25	1,035	5,641	

Note (*) *Independent t-test*

DISCUSSION

The results of the study showed that there was an influence on toddlers' appetite before and after giving Koya Nate by researchers in the treatment group. Meanwhile, there was no influence on toddlers' appetite before and after Koya Nate was not given. So far Koya Nate has been given a snack with a composition consisting of 80% tuna fish and 20% tempeh (fermented soybean). The management of Koya Nate does not contain the fishy smell that is usually found

Commented [A217]: Use period (.) for decimal.

Commented [A218]: 1.Elaborate on the practical implications of the study's findings. How might this research benefit parents and caregivers? Are there potential policy implications for early childhood nutrition programs?

2.You briefly touched on limitations related to data collection, but it would be beneficial to expand on this. For instance, discuss the potential impact of these limitations on the study's results. Also, acknowledge any other potential limitations like sample size or generalizability.

3.Consider concluding the discussion by suggesting areas for future research. For example, you can propose conducting longer-term studies to evaluate the sustained effects of Koya Nate or investigating the influence of other dietary interventions on toddler nutrition.

in processed fish food, so it can increase toddlers' appetite and meet daily protein needs [21]. Fulfilling the daily protein needs of toddlers is not accompanied by innovations made by parents in serving food, then protein needs cannot be met due to the nature of toddlers being picky about food [23]. The role of parents in this case is the role of mothers who often spend time with toddlers compared to fathers who must pay more attention to children's eating patterns so that their appetite increases and nutrition remains fulfilled[24,25].

The results of this study, in testing the hypothesis of this study, showed that there was an influence on the appetite of toddlers in the group given Koya Nate compared to the group not given Koya Nate. The influence of appetite on toddlers is caused by several factors, including menu preparation, food management, food presentation, and the way food is given. If these factors can be carried out correctly by parents, they can indirectly increase the toddler's appetite [26]. One type of snack that looks at food management and food presentation which is quite practical, has a fairly high number of macronutrients, a smooth taste and texture so that it is easy for toddlers to consume is the factor that Koya Nate prefers [21,27].

Furthermore, the appetite of toddlers who have been given intervention in the form of Koya Nate is high in the protein required, however, apart from protein, toddlers' needs also require the absorption of iron and folic acid specifically for toddlers aged under 24 months [28]. Giving Koya Nate also have not a high impact in a short time but takes quite a long time [28]. One other effort that can reduce the incidence of stunting is not only the Koya Nate intervention but also during pregnancy or the formation of a fetus up to a two-year-old toddler [29]. It is at this time that all vital organs begin to grow and develop, so iron supplementation is needed during pregnancy, initiation of breastfeeding, exclusive breastfeeding, and appropriate breastfeeding companions [30].

There are several points of limitations in the data collection method in the treatment group administering Koya Nate, namely that researchers have difficulty in directly monitoring the administration of Koya Nate at toddler dinner time, the feeding schedule for toddlers in each toddler's family is different so that when administering Koya Nate it is done the following day so that obtaining accurate data and data collection was carried out by researchers directly and accompanied by health cadres from the community health center without using field research assistants.

CONCLUSION

In research on giving snacks in the form of Koya Nate, it can be concluded that there is an influence on toddlers' appetite before and after giving Koya Nate and there is also an influence on the evening appetite of toddlers who have been given Koya Nate snacks compared to the appetites of toddlers who are not given snacks Koya Nate.

Commented [A219]: The conclusion effectively summarizes the key findings of your study. However, it can be strengthened by providing a bit more detail and clarity, such as add an practical implication or recommendation for future research

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*Corresponding Author:

Muh Zul Azhri Rustam

Sekolah Tinggi Ilmu Kesehatan Hang Tuah Surabaya, Surabaya, Indonesia

Email: zul.azhri@gmail.com

Keyword: Appetite; Koya Nate; Stunting

Contributions:

DA Conceptualization, Investigation, Methodology, Validation, and Writing – Original Draft, Review & Editing; MZAR Conceptualization, Methodology, Formal Analysis, Validation, and Writing – Original Draft, Formal Analysis, Validation ,Review & Editing; LW Conceptualization, Data Curation, Formal Analysis, Methodology, Validation, Visualization, Writing – Original Draft, Review & Editing;

Conflict of interest:

The authors declare no conflict of interest.

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The research has received ethical approval from the Health Research Ethics Committee of the Sekolah Tinggi Ilmu Kesehatan Hang Tuah Surabaya, Indonesia based on the ethical certificate number PE/78/VII/2023/KEP/SHT. During the research, the researcher gave on attention to the ethical principles of information to consent and respect for human rights.

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ABSTRACT

The appetite experienced by toddlers is at risk of causing nutritional disorders and will have a negative impact on health, one of which is stunting. Efforts are being made to overcome the appetite of toddlers through innovation in the form of Koya Nate. The aim of the research was to analyze the effect of giving koya nate on the appetite of stunted children in the city of Surabaya. The research method used by a quasi experiment with a two-group pre-post design approach. The samples used were toddlers aged 1 – 5 years, who were included in the stunting criteria who lived in Kenjeran District, Surabaya City. The sample size was taken using a formula federer There were 8 samples obtained from the treatment group and 8 samples from the control group. When selecting samples using techniques, simple random sampling takes into account the inclusion and exclusion criteria. The data analysis used is by paired t-test and independent t-test. The results of this study show that there is an influence on the appetite of toddlers in the group before and after being given the intervention (Sig. 0.000) and there is no influence on the appetite of toddlers before and after being given no intervention in the control group (sig. 157), while after being tested from both The group found that there was an influence on appetite in the treatment group compared to the control group (sig. 0.000)~~hasil penelitian ini menunjukkan bahwa terdapat pengaruh selera makan balita pada kelompok sebelum dan setelah diberikan intervensi (Sig. 0.000) dan tidak terdapat pengaruh selera makan balita sebelum dan setelah tanpa diberikan intervensi pada kelompok kontrol (sig. 157), sedangkan seteleh diuji dari kedua kelompok di peroleh terdapat pengaruh selera makan pada kelompok perlakuan dibandingkan dengan kelompok kontrol (sig. 0.000).~~ Conclusion of this study was that there was an influence on appetite in the group given Koya Nate compared to the group not given Koya Nate. This is caused by toddlers being picky about food, so innovation in presenting food menus to toddlers is needed.

Keyword: Appetite; Koya Nate; Stunting

INTRODUCTION

The problem of malnutrition is still one of the main public health problems in the world, especially the prevalence of malnutrition in Indonesia which is still quite high [1]. One of the nutritional problems that children often experience is a decrease in appetite or difficulty eating, because at this age children begin to choose the foods they like[2,3]. Children who experience a lack of appetite for a long time can cause the child's height to become stunted [4,5].

United Nations International Children's Emergency Fund (UNICEF) shows the prevalence of stunting in the world reaches 28%, in Eastern and Southern Africa it is 40%, and in South Asia it is 38% [6]. The results of the Indonesian Nutrition Survey Study in 2022 showed that the prevalence of stunting in Indonesia had decreased by 3% since 2021 [7]. The prevalence rate of stunting in East Java Province has also decreased quite significantly in age, especially in children < 30 days old, it has decreased by around 30% from the previous year and in children aged 12-23 months it has also experienced a quite significant decrease of 7 % from the previous year [8]. The stunting rate in various cities and districts in Indonesia has also experienced a large reduction in stunting, one of which is the city of Surabaya which recorded a stunting prevalence rate in 2022 of 4.8% and is the second city with the lowest stunting prevalence rate [9].

Incidents of stunting children influenced by several important factors, one of which is nutritional factors, namely animal and vegetable protein[10,11]. The high nutritional value of animal and vegetable protein contained in each food ingredient is available and in sufficient quantities, however if the child does not want to eat or the wrong feeding pattern can result in a lack of nutritional intake received by the toddler [12–14]. Appetite problems experienced by children are at risk of causing nutritional disorders and will have a negative impact on the health, growth and development of toddlers[15–17]

One of the causes of delayed growth and development in toddlers is the factor of decreased appetite in toddlers. The results of interviews by researchers and village health workers with several parents of toddlers who visited the Integrated Services Post (Posyandu) activities at the Kenjeran Health Center, showed that parents of toddlers said that their toddlers had difficulty consuming the food provided by their parents because there were several types of food that they didn't like. So toddlers often do not finish the food they are given. Therefore, it is necessary to pay attention to efforts in handling toddlers who have no appetite to achieve optimal growth, so food therapy is needed which is high in protein and has a smooth texture so that it can be consumed by toddlers [18–20].

One of the efforts made to overcome the appetite of toddlers is the innovation of snacks in the form of Koya Nate which has a high nutritional value which can increase the appetite of toddlers. According to previous research, Koya Nate's snack food innovation can increase appetite because it has a formula of 80% tuna and 20% tempeh which was obtained from organoleptic tests. The composition of this formula no longer smells of the fishy smell that is usually found in fish, so toddlers eat koya nate without the fishy smell [21]. Based on this description, researchers are interested in analyzing the effect of giving koya nate on the appetite of stunted toddlers in kenjeran village, Surabaya City.

METHODS

Research design

The research design used in this study used a quasi-experimental method with a two-group pre-post design approach to determine the influence of toddlers' appetite in the intervention group by providing Koya Nate snacks with the control group not providing Koya Nate snacks.

Study Participants

The sample used in this research was based on the results of sample size calculations using the Federer formula. The sample size that was obtained from the calculation results was 8 samples that were given Koya Nate and 8 samples that were not given Koya Nate. The sample selection obtained was based on calculation results, also adjusted to the condition of the population in this study, namely toddlers who experienced stunting in Kenjeran Village, Surabaya City, so the sample with treatment groups and non-treatment groups was limited. The selecting samples from treatment and non-treatment groups using techniques of Simple Random Sampling taking into account the inclusion and exclusion criteria, namely: children aged 1-5 years, included in the stunting criteria, not currently suffering from an illness, and willing to be involved in becoming sample study.

Variable, Instrument and Data Collection

The independent variables in this study are demographic factors, namely the toddler's identity (age, gender, height, weight, stunting category) and the mother's identity (age, education level, mother's occupation, and family income), meanwhile, for the toddler's comfort eating variable. The dependent variable in this research is the provision of Koya Nate snacks which are sourced from 80% tuna and 20% tempeh. Koya nate was given to the intervention group for one week, each day they were given koya nate once a day during the day with the composition of one portion of food with the addition of 1 small 40g package. The instrument used to identify toddlers' appetite is a questionnaire that has been developed by research which is measured using the results of food waste from the child's initial portion of the child's meal using the Comstock Method [22]. This method uses a scale of 0 which is the percentage of toddlers consuming the entire portion of food from the start of the meal. scale 1 is the percentage of toddlers consuming ¾ of the initial amount of food. scale 2 is the percentage of toddlers who consume ½ the initial portion of food. scale 3 is the percentage of toddlers who

consume ¼ of the initial part of food. scale 4 is the percentage of toddlers consuming 1/9 (only a tiny portion) of the initial part of food. scale 5 is the percentage of toddlers who do not eat at all from the initial part of the meal. Appetite data collection was carried out using the Comstock method, carried out by village health workers whose competency had been obtained at the Kenjeran Health Center, Surabaya City.

Data Analysis

Data analysis used test *statistics paired t-tests* and *independent t-tests*. if the data obtained is normally distributed. This statistical test aims to see the effect of appetite before and after being given the Koya Nate intervention and the effect on appetite after being given the Koya Nate intervention and not being given the Koya Nate intervention. The indicator used to measure appetite is to look at the leftover food given by the toddler's parents.

Ethical Clearance

The research has received ethical approval from the Health Research Ethics Committee of the Sekolah Tinggi Ilmu Kesehatan Hang Tuah Surabaya, Indonesia based on the ethical certificate number PE/78/VII/2023/KEP/SHT. During the research, the researcher gave an attention to the ethical principles of information to consent and espect for human rights.

RESULTS

Table 1, Showed that the demographic factors, namely the age factor for toddlers < 41 months and ≥ 41 months, were 50% in the treatment group and for the most part those aged ≥ 41 months were 62.5% in the control group. The toddlers gender was mostly found in boys at 62.5% in the treatment and control groups. The height factor for toddlers with heights < 80 cm and ≥ 80 cm was 50% in the treatment group and most of the toddlers' height < 80 cm was 75% in the control group. The weight factor of toddlers weighing < 10 kg was 62.5% in the treatment group and the majority of toddlers weighing ≥ 10 kg was 62.5% in the control group. The

mothers' age factor was mostly found in those aged ≥25 years old, amounting to 75% in the treatment group, and most of the maternal age < 25 years old, amounting to 62.5% in the control group. The majority of mothers' education levels were at the senior high school level, 87.5% in the treatment group and 100% in the control group. Regarding mother's employment status, the majority of unemployed, 87.5% in the treatment group and 62.5% in the control group. Meanwhile, the majority of mothers' income was below the MW (Minimum Wages), 75% in the treatment group, and mothers' income above and below the MW (Minimum Wages) was 50% in the control group.

Table 1. Characteristics of demographic factors (N=8)

Demographic Factors	Treatment group		Control group	
	f	%	f	%
Toddler Age				
< 41 Months	4	50	3	37.5
≥ 41 Months	4	50	5	62.5
Total	8	100	8	100
Toddler Gender				
Boy	5	62.5	5	62.5
Girl	3	37.5	3	37.5
Total	8	100	8	100
Toddler Height				
< 80 cm	4	50	6	75
≥ 80 cm	4	50	2	25
Total	8	100	8	100
Toddler Weight				
< 10 Kg	5	62.5	3	37.5
≥ 10 Kg	3	37.5	5	62.5
Total	8	100	8	100
Mother's Age				
< 25 Years old	2	25	5	62.5
≥ 25 Years old	6	75	3	37.5
Total	8	100	8	100
Mothers' Education Levels				
Primary School	0	0	0	0
Junior High School	1	12.5	0	0
Senior High School	7	87.5	8	100
College	0	0	0	0
Total	8	100	8	100
Mother's Employment Status				
Unemployed	7	87.5	5	62.5
Employed	1	12.5	3	37.5

Total	8	100	8	100
Mothers Income				
Below MW	6	75	4	50
Above MW	2	25	4	50
Total	8	100	8	100

Table 2, showed that the appetite of toddlers in the pre-treatment group mostly consumed 1/9 portion of the initial portion with a percentage of 37.5%, and in the post-treatment group, the appetite of toddlers increased by consuming ¾ portion of the initial portion with a percentage of 50%. Meanwhile, most of the toddlers' appetite in the pre-control group consumed ¼ portion of the initial portion with a percentage of 62.5% and in the post-control group, most of the toddlers' appetite consumed 1/9 of the initial portion with a percentage of 37.5%.

Table 2. Distribution of food portions for toddlers in the treatment group and control group in Surabaya

Portion spent	Pre-Test				Post-Test			
	Treatment		Control		Treatment		Control	
	f	%	f	%	f	%	f	%
Not Eaten	2	25	2	25	0	0	2	25
1/9 Portion	3	37.5	5	62.5	0	0	3	37.5
¼ Portion	1	12.5	0	0	0	0	2	25
½ Portion	1	12.5	1	12.5	3	37.5	1	12.5
¾ Portion	1	12.5	0	0	4	50	0	0
Full Portion	0	0	0	0	1	12.5	0	0
Total	8	100	8	100	8	100	8	100

Table 3, showed the pre and post treatment group data shows that the data is normally distributed with a significant value 0.109. Meanwhile, the data for the pre-control group shows that the data is not normally distributed with a significant value. (0.001) and the post control group shows that the data is normally distributed with a significant value. (0.200).

Table 3. Normality test for toddlers' appetite in the treatment and control groups in Surabaya

Group	Sig.*	Values
Treatment Group (Pre-Test)	0.109	Normally
Treatment Group (Post-Test)	0.109	Normally
Control Group (Pre-Test)	0.001	Not Normally
Control Group (Post-Test)	0.200	Normally

Note (*): Uji *Kolmogrov - Smirnov*

Table 4, showed the influence of toddlers' appetite before and after the treatment group as evidenced by the significant value (0.005) with a mean difference of -2.250. Meanwhile, there was no influence of toddlers' appetite before and after the control group as evidenced by the significant value (0.157) with a mean difference of -0.250

Table 4. Analysis of the influence of appetite in the pre and post-treatment and control groups in Surabaya

Indicatior	Group	Mean	Std. Deviation	t	Sig.(2-tailed)
Appetite	Pre - Treatment Post – Treatment	-2.250	1.581	-4.025	0.005(*)
	Pre - Control Post - Control	-0.250	0.463	-1.414	0.157(**)

Note (*) *Paired t-test*
(**) *Wilcoxon Sign Rank Test*

Table 5, showed that there is an influence on appetite in the treatment group and control group as evidenced by the significant value. (0.000) with an mean difference of 4.75

Table 5. Analysis of the influence of toddlers' appetite in the treatment and control groups in Surabaya

Indicator	Group	n	Mean	Std. Deviation	t	Sig.(2-tailed)*
Appetite	Post – Treatment	8	4.75	0.707	5.641	0.000
	Post - control	8	2.25	1.035	5.641	

Note (*) *Independent t-test*

DISCUSSION

The results of the study showed that there was an influence on toddlers' appetite before and after giving Koya Nate by researchers in the treatment group. Meanwhile, there was no influence on toddlers' appetite before and after Koya Nate was not given. So far Koya Nate has been given a snack with a composition consisting of 80% tuna fish and 20% tempeh (fermented soybean). The management of Koya Nate does not contain the fishy smell that is usually found in processed fish food, so it can increase toddlers' appetite and meet daily protein needs [21].

Koya Nate is given to fulfill daily protein needs for toddlers, if it is not accompanied by innovations made by parents in serving food, then protein needs cannot be met due to the nature of toddlers in being picky about food [23]. Providing koya nate, which is a snack food that is high in protein, which will be given over a long period of time and done consistently, can help the local government in its efforts to *Scaling Up Nutrition* (SUN) [24].

Scaling Up Nutrition in helping the government cannot be separated from the role of parents, especially the role of mothers spending time with toddlers compared to fathers who must pay more attention to children's eating patterns so that their appetite increases and nutrition remains fulfilled [25,26]. The reinforcing factor in fulfilling nutrition for toddlers is the family. The family plays a role in promoting the introduction and provision of nutritious food, and health practices and as a role model for all family members [27].

The results of this study, in testing the hypothesis of this study, showed that there was an influence on the appetite of toddlers in the group given Koya Nate compared to the group not given Koya Nate. The influence of appetite on toddlers is caused by several factors, including menu preparation, food management, food presentation, and the way food is given. If these factors can be carried out correctly by parents, they can indirectly increase the toddler's appetite [28]. One type of snack that looks at food management and food presentation which is quite practical, has a fairly high number of macronutrients, a smooth taste and texture so that it is easy for toddlers to consume is the factor that Koya Nate prefers [21,29].

Furthermore, the appetite of toddlers who have been given intervention in the form of Koya Nate is high in the protein required, however, apart from protein, toddlers' needs also require the absorption of iron and folic acid specifically for toddlers aged under 24 months [30]. Giving Koya Nate also have not a high impact in a short time but takes quite a long time [30]. One other effort that can reduce the incidence of stunting is not only the Koya Nate intervention

but also during pregnancy or the formation of a fetus up to a two-year-old toddler [31]. Given Koya Nate also cannot have a large enough impact in a short time but requires quite a long time, therefore it is necessary to spread and spread the influence of giving Koya Nate to toddlers who have been given it for a long period of time [32].

There are several points of limitations in the data collection method in the treatment group giving Koya Nate as follows (1) researchers have difficulty in directly monitoring the provision of Koya Nate at toddler dinner time, (2) the toddler's eating schedule in each toddler's family is different, so that in One of the respondents was not there at the time of giving Koya Nate and it was done the following day. (3) data collection was carried out directly by researchers and assisted by village health workers to obtain accurate data. (4) the sample size in the study is relatively small because the population of stunting toddlers is limited to Kenjeran Village so the impact on the results of this study cannot be generalized to the population.

CONCLUSION

Giving snacks in the form of Koya Nate has an influence on toddlers' appetite before and after giving Koya Nate and there is also an influence on the evening appetite of toddlers who have been given Koya Nate snacks compared to toddlers who have not been given Koya Nate snacks. Koya Nate snacks can increase appetite in toddlers because they have a high animal protein value so they can meet toddlers' nutritional needs and the texture of Koya Nate is smooth so it is easy for toddlers to consume. The implications of giving Koya Nate have quite a big impact over a long period of time on toddlers, so that toddlers' abilities can increase as expected.

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