

# The Food Intake Pattern in Relation to the Nutritional Status of School Age 6–12-Year-Old in Muhammadiyah Orphanage

El patrón de ingesta de alimentos en relación con el estado nutricional de los niños en edad escolar de 6 a 12 años en el orfanato de Muhammadiyah

Gita Marini<sup>1a\*</sup>, Eri Herawati Susanti<sup>a</sup>, Suyatno Hadi Saputro<sup>a</sup>, Reliani Reliani<sup>2a</sup>,  
Anis Rosyiatul Husna<sup>3a</sup>

## SUMMARY

**Introduction:** School-age children have a very high risk of experiencing a nutritional problem during their development, consisting of an imbalance between their body mass index and the state of malnutrition due to their nutritional intake. The parenting at Muhammadiyah Orphanage is related to the nutritional status of the children managed in the group. This parenting status causes less attention to be paid to the children's nutrition. This study aims to identify the food intake pattern in relation to the food delivery and nutritional status of school-aged children (6-12 years) in the Muhammadiyah Orphanage house setting.

**Methods:** The research design was descriptive and used random cluster sampling. The variable of this study was food intake patterns. The data was collected using demographic statistics and a validated CFQ

*Questionnaire, after which the data was then analyzed through frequency distribution to get the relevant percentage. Ethical clearance was required in this study.*

**Result:** A total of 121 children aged 6-12 years old at Muhammadiyah Orphanage were recruited. The results show that most children were male (51.2 %) with an age range of 5-7 years old (38.8%). The food intake patterns of the sample were inappropriate (78.5 %).

**Conclusion:** This study concludes that there was a high prevalence of inadequate nutritional status among the sampled school-age children. The caregivers, as they are supported by the government and stakeholders, should consider the children's nutritional intake. This result also suggests that the scope of this study looking into the early detection of nutritional status among school-age children still needs to be improved in relation to various elements.

**Keywords:** Food intake patterns, nutritional status, orphanage, school-age children.

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ORCID ID: 0000-0002-8290-1747<sup>1</sup>

ORCID ID: 0000-0003-4904-5720<sup>2</sup>

ORCID ID: 0000-0001-5273-9331<sup>3</sup>

<sup>a</sup>Universitas Muhammadiyah Surabaya, Indonesia

\*Corresponding Author: Gita Marini

E-mail: gita.ners82@gmail.com

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## RESUMEN

**Introducción:** Los niños en edad escolar tienen un riesgo muy alto de sufrir un problema nutricional durante su desarrollo, consistente en un desequilibrio entre su índice de masa corporal y el estado de desnutrición debido a su ingesta nutricional. La crianza en el orfanato Muhammadiyah está relacionada con el estado nutricional de los niños que se manejan en el grupo. Este estado de crianza hace que se preste

*menos atención a la nutrición de los niños. Este estudio tiene como objetivo identificar el patrón de ingesta de alimentos en relación con la entrega de alimentos y el estado nutricional de los niños en edad escolar (6-12 años) en el entorno de la casa del orfanato Muhammadiyah.*

**Métodos:** *El diseño de investigación fue descriptivo y se utilizó un muestreo aleatorio por conglomerados. La variable de este estudio fue el patrón de ingesta de alimentos. Los datos se recopilaron utilizando estadísticas demográficas y un cuestionario CFQ validado, luego de lo cual los datos se analizaron a través de la distribución de frecuencia para obtener el porcentaje relevante. En este estudio se requirió autorización ética.*

**Resultado:** *Se reclutó un total de 121 niños de entre 6 y 12 años en el orfanato Muhammadiyah. Los resultados muestran que la mayoría de los niños eran del sexo masculino (51,2 %) con un rango de edad de 5 a 7 años (38,8 %). Los patrones de ingesta alimentaria de la muestra fueron inadecuados (78,5 %).*

**Conclusión:** *Este estudio concluye que hubo una alta prevalencia de estado nutricional inadecuado entre los niños en edad escolar de la muestra. Los cuidadores, ya que cuentan con el apoyo del gobierno y las partes interesadas, deben considerar la ingesta nutricional de los niños. Este resultado también sugiere que el alcance de este estudio que busca la detección temprana del estado nutricional entre los niños en edad escolar aún debe mejorarse en relación con varios elementos.*

**Palabras clave:** *Patrones de ingesta de alimentos, estado nutricional, orfanato, niños en edad escolar*

## INTRODUCTION

The intake of nutrition is essential in the process of growth and development in school-age children. Children have a high risk of nutritional problems during their development consisting of an imbalance between their body mass index and malnutrition problems (1–4). The prevalence of malnutrition problems is as follows: South Asia (27 %), West Africa (20 %), Oceania and East Africa (18 %), Southeast Asia (15 %), Central Africa (15 %), and South Africa (11 %) (5,6). Indonesia as part of Southeast Asia was listed in fifth place for having the worst malnutrition problem in the world in 2015 (7). This is a very serious problem and the prevalence of malnutrition in 2017 shows that it has increased (19.2 %) with the majority being categorized as underweight. The condition of school-age

children and adolescents aged 5–12 years based on the BMI / U index according to the provinces in East Java in 2017 was very thin (3.4 %) and thin (7.5 %). Meanwhile, the prevalence of obesity in school-age children (4.6%) and very obese (3.7 %) are also a part of this (8–11).

This problem is encountered as there are various forms of nutrition problems. This is contrary to the SDG's 2030 target (5,12,13) which mentions the reduction of stunting and obesity in children under 5 through to adolescence (7,14,15). In Indonesia, a previous study mentioned those nutritional problems might be caused by the food consumed not meeting the structure needed for it to be balanced nutrition (16–19). In addition, several of the causes such as an unbalanced diet and daily nutritional inadequacy connects to poor support from their parents (20,21). Moreover, there is also the influence due to their parent's pattern of caring and an inappropriate or appropriate healthy environment (17,22,23). The majority of children in Indonesia who do not meet adequate nutritional standards and who have poor support from an appropriate environment were found in the orphanage setting. More than 8 000 children are registered at these social institutions (24). Furthermore, adding in unregistered institutions, there are estimated to be approximately 15 000 or more orphanages that include abandoned, orphaned, and poor children. This can be increased if the number of foster children is included, which totals 3 000 due to poverty pressure and unstable economic conditions (8). Surabaya, as one of the five biggest urban areas in Indonesia, has 244 orphanages scattered in each sub-district that care for 2 274 foster children. In addition, 80% are orphanages under Indonesian child welfare and social institutions. In the foundation of Muhammadiyah in Surabaya, there are approximately 17 orphanages with 176 primary school-aged children residing there (8,9,25,26). The majority of children are categorized as being of school age (10,16). The energy consumption of children aged 6 - 9 years old should be 1 900 kcal. Based on the previous study in Muhammadiyah Social Orphanage, Putri Aisyiyah Orphanage, Al-Huda Orphanage, Muslim Orphanage, and Asslafiyyah Orphanage, the average intake of the sample children intake was 1 476.5 kcal, which is classified as insufficient (27).

A previous study reported that insufficient intake might be related to various factors such as food care, infection, income, and the utilization of health services (2,3,28-31). Another study also mentioned the significance of the increasing number of orphanages allowing the poor nutritional intake of school-age children in the orphanage setting (1,20). In addition, over a long-term duration, the orphanages experience difficulties such as challenges when providing good quality food, limited finances, limited facilities, and an insufficient number of caregivers (32). Moreover, in this sequence, the children suffer and this leads to the pattern of imbalanced nutritional intake and reduced health status among school-age children living in orphanages (22,33,34). The effect of the decrease in health status causes severe problems including a 45 % mortality rate for these children (5,12,13) and other severe problems such as a decreased immune system, a reduction in IQ score, a decrease in cognitive development, impaired concentration, and attention span, and a decrease in self-confidence (6,7,20,24)

However, the food intake and nutritional status of school-age children living in the orphanage setting is unknown and no data has been published on this issue. Therefore, the researcher intended to identify the food intake pattern involved in relation to the nutritional status of school-age children (6-12 years) at Muhammadiyah Orphanage in Surabaya, Indonesia.

## METHODS

The design of the study was descriptive. From the total population using random cluster sampling, we recruited 121 children aged 6-12 years old from Muhammadiyah Orphanage in Surabaya. This study was conducted from July to August 2020. Permission, agreement, and ethical clearance were obtained before approaching the participants (35). The variable of this study was food intake patterns. The demographic questionnaire and a Child Feeding Questionnaire (CFQ) (36) were used to obtain and gather the information. The CFQ aimed to measure the feeding patterns. It categorized the responses using a Likert scale. The answers consisted of very often, often, rarely, and never. There were

15 questions. For each question item, they had to answer with a score ranging from 1 to 4. Score 1 was for the respondents who answered never, score 2 for respondents who answered rarely, score 3 for respondents who answered frequently, and score 4 for respondents who answered very often. The question items consisted of the type of food (1, 2, 3, 4, 5), the number of meals given (6, 7, 8, 9, 10), and the schedule of feeding (11, 12, 13, 14, 15). After the questionnaire was answered and the results were presented, it was found that the nutrition parenting category was interpreted in the imprecise category <44 % and 45 - 100 % correct. The questionnaire was adopted from the research conducted by (37). The results of the validity and reliability tests were declared to be valid with an *r* table result of 5% (0.321) (37). The reliability test resulted in a value for the type of food being 0.902 at very reliable. The amount of food was 0.769 which is reliable and the meal schedule was 0.911, which is very reliable (37). After the information was collected, we analyzed the data using SPSS software through frequency distribution and statistical tests (35).

## RESULTS

The distribution of the respondents by gender and age is as follows in the Muhammadiyah Surabaya Orphanage:

Based on Table 1, the data shows that most of the respondents are male, totaling as many as 62 respondents (51.2 %). Meanwhile, there are 59 female respondents (48.8 %). It also shows that out of the 121 respondents, those aged 5-7 years old total 47 respondents (38.8 %) and 8-10 years old total 41 respondents (33.9 %), while 33 respondents (27 %) were aged 11-12 years old.

Table 1  
Distribution of the respondents by gender and age  
(n = 121)

| Demographic   |        | N (%)     | N (%)       |
|---------------|--------|-----------|-------------|
| Gender        | Male   | 62 (51.2) | 121 (100 %) |
|               | Female | 59 (48.8) |             |
| Age<br>(Year) | 5-7    | 47 (38.8) | 121 (100 %) |
|               | 8-10   | 41 (33.9) |             |
|               | 11-12  | 33 (27.3) |             |

Based on Table 2 above, shows that most of the respondents were in the category of receiving an inappropriate pattern of parenting regarding the delivery of nutrition, totaling as many as 95 (78.5 %). A small proportion of respondents were in the category of receiving an appropriate pattern of parenting, totaling as many as 26 (21.5 %) respondents.

Table 2

Identification of Parenting Patterns in Relation to the Children's Food Intake at the Muhammadiyah Surabaya Orphanage (n = 121)

| No | The pattern of parenting to deliver the nutrition | n (%)     | N (%)     |
|----|---|-----------|-----------|
| 1. | Appropriate                                       | 26 (21.5) | 121 (100) |
| 2. | Non-appropriate                                   | 95 (78.5) |           |

**DISCUSSION**

The results of the demographic examination of the gender indicated that most of the school-age children were male. This might lead to an increased need for energy and growth to meet their bodily resistance demands compared to female school-age children (13,28,29,38). Therefore, an increase in a person's age, especially in terms of gender development, might influence the nutritional status of the children (38). From this result, it is easy to conclude that the processes of growth and development among school-age children are determined based on the pattern of parenting used to deliver nutrition when they are residing at Muhammadiyah Orphanage.

Based on the results of the study, the majority are categorized as being of early school age. This is indicated by most of the children being in this phase of their growth and development (5,30,33). About children aged 5-12 years old, the children are more active when it comes to them choosing the foods they like. This is different from the previous age group who are still very dependent on their parents providing them with food. The energy needs of school-age children are greater because they do more physical activity, for example, sports, playing,

interacting with other children, and helping their parents (5). The setting of the orphanage based on an Islamic and Muhammadiyah foundation might also be an influence (25). This is due to the dietary habits and meal delivery in that setting. Moreover, the Muhammadiyah social orphanage setting provides care for various ages starting from newborn babies (0 days) up until adolescence (12,13,28,29,39). Thus, the various age groups might stress the caregiver's ability to provide the time, attention, and support needed to meet the physical, mental, and social needs of the children who are growing in the setting. Furthermore, their daily activities, water, fat, protein, carbohydrates, vitamins, and minerals must be fulfilled sufficiently and be considered properly so then the organs of their body can work properly. It is necessary to implement a healthy and balanced diet as well as to include certain types of food such as vegetables, fruit, whole grains, and brown rice. This is as well as limiting the consumption of foods that are high in salt, as well as fried or fatty foods (9,16,26). Many of the previous studies suggest that a healthy menu served on a plate should consist of a source of carbohydrates, side dishes as a source of animal and vegetable protein, vegetables as a source of vitamins and minerals, and fruits as an additional source of vitamins (2,5,13,29,38). From this situation, it can be concluded that the consideration of a nutritional menu by the caregivers and an appropriate environmental setting cannot be ignored as an effort to improve the pattern of parenting used to deliver nutrition to the children residing in the Muhammadiyah orphanage setting respectively.

The pattern of parenting was found to be inappropriate. This means that the setting did not meet the nationally standardized criteria (10). The assistance of the caregivers was manifested through their level of education and their ability to educate the children (13,30,39). In addition, the approach for each child should be unique (13). In this case, the caregiver must be able to determine the appropriate parenting style when considering the needs and situation of the child. On the other hand, caregivers, should also have the desire and hope to shape the child into someone they aspire to be (12,40,41).

It was also interesting to find that food intake is a determining factor when meeting nutritional

needs as a source of energy, growth, and bodily resistance against disease attacks. The food intake that is consumed has an impact on the growth and development of the child which can be seen from their nutritional status. A variety of foods are very beneficial for health. For children who are in school, food is a source of energy to make children smart. The school-age group of children use a lot of attention and engage in a lot of activities outside the home. They often forget about eating and engage in high-energy activities at school or in the play area. This causes an imbalance between the incoming energy and the energy used to carry out activities, resulting in a decrease in nutritional status (42).

The other challenge in relation to the inadequate nutritional status in an orphanage setting was regarding the respondents who were not eating properly. A previous study explained that the key to success when fulfilling children's nutrition lies in the caregiver having to be as creative as possible when fulfilling their nutritional intake by paying attention to the various types of food, and the amount that suits the needs of each individual, and the ideal feeding schedule of three main meals and two nutritious snacks to complement the composition (26). In addition, balanced nutrition in a day has to fulfill the child's needs to achieve a healthy diet. It has also been concluded that the caregivers in the orphanage are defined as substitutes for the school-age children's parents and they function as the caretaker of the children's health promotion. Our findings also revealed that the interaction between the children and their caregiver influences the child's diet consciously and unconsciously. This leads to the children's food preferences and eating habits, especially in the Muhammadiyah Orphanage setting, respectively.

### CONCLUSION

This study concludes that there was a high prevalence of inadequate nutritional status among school-age children and an inappropriate pattern of parenting when delivering nutrition in the Muhammadiyah Orphanage setting. This is despite the reported healthy nutrition intake. The caregivers, who are supported by the government and stakeholders, should consider the nutritional

intake that they provide regarding the type, amount, and schedule for feeding the children according to balanced nutritional composition and a good pattern of eating habits. This result also suggests that the scope of the study in terms of the early detection of poor nutritional status among school-age children still needs to be improved in relation to various elements.

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## FOOD INTAKE PATTERN IN RELATION TO THE NUTRITIONAL STATUS

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