

Analysis of Fish Derived Protein Intake Adequacy and Cultural Factors and its Correlation with the Occurrence of Stunting among Children Under Two Years Old in Martapura Riverbanks, Banjar District Ar

by Atikah Rahayu

Submission date: 06-Aug-2020 03:39PM (UTC+0700)

Submission ID: 1366510307

File name: RESEARCH_AND_DEVELOPMENT_10_11__2019_compressed-2059-2063-1.pdf (232.31K)

Word count: 2830

Character count: 15427

Analysis of Fish Derived Protein Intake Adequacy and Cultural Factors and its Correlation with the Occurrence of Stunting among Children Under Two Years Old in Martapura Riverbanks, Banjar District Area

Atikah Rahayu¹, Fahrini Yulidasari¹, Andini Octaviana Putri¹, Nur Laily¹

¹Departement of Public Health, Medical Faculty, Lambung Mangkurat University

Abstract

Banjar is an area of higher fish farming production compared to other districts in South Kalimantan. Taking the condition of the area and the fish farming production into account, Banjar is an area of significant potential to become the source of fish as supplies of animal protein to be utilized by people to improve their nutritional status and overcome the protein energy malnutrition problems. Correlations have been demonstrated between food consumption and nutritional status. The implication of chronic malnutrition for children under two years old is called stunting. To conduct an in-depth analysis on the cultural factors and fish-origin protein intake adequacy with the occurrence of stunting. This three month cross-sectional study recruited 36 children aged 6-24 months as samples. The study was conducted for three months in 2015 in Sungai Pinang, Banjar District. The children's nutritional status was determined according to the 2005 edition of WHO anthropometry reference standard with categories as follows: 1) stunting (very short, z score <-3.0 SD); 2) short (≥ -3 SD sd <-2 SD); 3) no stunting (normal status, ≥ 2 SD). Protein intake adequacy was determined by the standards of Nutrition Adequacy Score for children For Age 0-3 Year on WNPNG 2004. Data were analyzed using chi square test with 95% confidence interval. This study demonstrated a correlation between the fish derived protein intake adequacy with the occurrence of stunting among children under two years old. Children of poor protein intake adequacy had 5.5 times greater risk of stunting. This significant number of stunting was partially caused by the culture of not establishing a habit of eating fish since early age and during pregnancy. The fish-origin protein intake adequacy and cultural factors played important roles on the occurrence of stunting among children under 6-24 months in Sungai Pinang, Banjar District.

Keywords: Children under two years old, fish-origin protein intake adequacy, stunting, cultural factors.

Introduction

The first two years of life is a period of heightened sensitivity toward environmental influences and this period was relatively brief and could not repeat, hence the recognition of this period as the golden period/the window of opportunity/the critical period. In addition, more than half death among infants and children under five years old is caused by inadequate nutrition during the first two years of life. Chronic nutritional deficiency might lead to stunting. Children who experience stunting have a higher possibility to develop to adults of low quality. Therefore, the issue of stunting is not negligible as it carries with it life-long consequences that might be

hard to overcome.^{1,2} Data from the Basic Health Research (Riset Kesehatan Dasar/Riskesdas) stated that the prevalence of stunting among children under two years old in Indonesia in 2007 was 36.8% and this prevalence seemed to be gradually increasing as demonstrated by the prevalence of 35.6% and 37.2% in 2010 and 2013, respectively. These prevalences of more than 30% has made stunting a significant public health burden. The 2007 Basic Health Research data of South Kalimantan Riskesdas stated that the prevalence of stunting among children under two years old was 35.3%. The 2013 data also demonstrated an increased prevalence to 45%. This further indicated the significance of stunting as a public health burden due to its high prevalence.^{3,4,5}

The 2014 data from the local Health Office stated that Banjar is the district of highest contribution to cases of stunting in south Kalimantan. Among areas in Banjar, the highest number of case load was found in the Sungai Pinang Public Health Center's working coverage area (53.46%). This prevalence slightly increased than the 213 prevalence of 53.25%. The finding was intriguing as the working coverage area of Sungai Pinang Public Health Center included areas located in the riverbank that can be utilized for fish farming. As fish farming products might provide a significant source of protein, the areas shouldn't have had a public health problem of a high prevalence of stunting.^{6,7}

Banjar district with its approximately 12595.9 tons of yearly production, is an area of highest fish farming production compared to other areas in South Kalimantan. The tremendous products mostly comes from the products of pond and fresh water fish cultivation, karamba, mina padi/sawah dan jaring apung. The conducive environment of Banjar district has allowed this various types of farming to develop. However, in concordance with the research conducted by Hartati, the number of riverbank inhabitants that consume fish is still really low despite the area's potential as a significant source of animal protein from fish farming products. The riverbank area should've been utilized by the community to manage with the low nutritional status, especially with stunting.^{8,9}

Three categories of factors might lead to the occurrence of stunting: basic factors (e.g. economy, social, political factors), underlying factors (e.g. family and health service), and immediate factors (e.g. diet and health status). Family factors might also include genetics and parental level of educational attainment (that might significantly correlates with knowledge), social economy condition, and the number of children under two years old within the family. Dietary factors might include food intake of the children under two years old within the family.¹⁰ As mentioned by Atmarita and Soekirman, lower socioeconomical status and level of educational attainment might affect their nutritional status. These risk factors might lead to the inability to buy and sort the food required for a balanced diet, hence the nutritional inadequacy.^{1,2}

This research was conducted to better explore the cultural factors and fish-origin protein intake adequacy and its potential correlation with the occurrence of stunting among children under two years old in the riverbank of Martapura river in Banjar district. Specifically, this

research aimed to conduct in-depth analysis of the factors that might prevent fish consumption within families with children who experience stunting, identify the types of fish consumed and its protein content, determine the adequacy fish derived protein intake, and its potential correlation with the occurrence of stunting.

Materials and Method

This research employed a mixed method with cross sectional design. The quantitative part of the research aimed at analyzing the adequacy of protein intake and other risk factors that might correlate with the occurrence of stunting, while the qualitative part was conducted to analyze the cultural factors that might prevent fish consumption among children under two years old in riverbanks within the working coverage of Sungai Pinang Public Health Center. Sample was taken during the nutritional status assessment conducted on children under two years old who met the predetermined inclusion criteria. The children's nutritional status was determined according to the 2005 edition of WHO anthropometry reference standard with categories as follows: 1) stunting (very short, z score <-3.0 SD); 2) short (≥ -3 SD sd <-2 SD); 3) no stunting (normal status, ≥ 2 SD). Protein intake adequacy was determined by the standards of Nutrition Adequacy Score for children For Age 0-3 Year on WNPNG 2004.²

The research subjects were mothers with children under two years old (age 6-24 months) within the working coverage area of Sungai Pinang Public Health Center, with a number of 36 subjects recruited⁷. The sample was obtained using the purposive sampling technique with a predetermined inclusion and exclusion criteria.¹¹ The inclusion criteria used were as follows: 1). Inhabitants of the riverbank within the working coverage area of Sungai Pinang Public Health Center, 2). Mothers with children under two years old (age 6-24 months), 3). The indexed children under two years old (age 6-24 months) were biological children, 4). When the family had more than one children under two years old (age 6-24 months), the one recruited was the youngest child, 5). Physically and mentally healthy, 6). Willing to participate as respondents as indicated by signing the informed consent form, 7). No congenital anomalies (physical disability) found in the children, 8). The indexed children did not suffer from conditions that might alter food absorption (TBC, hepatitis, shingles, worm infestation, diarrhea), 9). Subjects were available during the time of data collection.

Research instrument used in this research were as follows: 1). Anthropometry instruments for children age 6-24 months (a baby lengthboard with the precision of 0.1 cm), 2). Informed consent form, 3). Food recall Form to collect the food intake data during three non consecutive twenty-four-hour-period. This note was used determine the level of protein intake in the indexed children, 5). Basic demography form to note the subjects' and family identity. In addition, an interview manual was used to help gathering data about factors that might affect the fish derived protein consumption. Data collected were then analyzed using *chi square* statistical test with a 95% confidence interval to determine the subjects' protein intake adequacy status and its possible correlation with the occurrence of stunting.

B. Bivariate Analysis

Table 2. The correlation of fish derived protein intake adequacy and the occurrence of stunting among children under two years old

Level of protein intake adequacy	The state of stunting				Total		p value	OR (95% CI)
	Stunting		No stunting		n	%		
	n	%	n	%				
Poor	12	80.9	4	19.1	16	100	0.041	5,5 (1.277-23.693)
Good	3	19.1	17	80.9	20	100		

Table 2 showed that most children under two years old with poor fish derived protein intake adequacy experienced stunting (n=12; 80.9%). In contrast, a number of 17 (80.9%) children within the good protein intake adequacy never experienced stunting. A significant correlation was demonstrated between the fish-origin protein intake adequacy and the occurrence of stunting among children under two years old (p<0.05). The OR value of 5.5 indicated that children under two years old with poor fish derived protein intake adequacy had 5.5 higher risk of stunting than the children with good fish derived protein intake adequacy.

One of the indirect causes of stunting might be the socioeconomy state of the family that might correlate well with the level of the family income. When limited income prevents a good access for food, stunting would be highly more likely to occur. For countries undergoing nutritional transition like Indonesia, obesity might also emerge as a public health problem in addition to conditions related to the low nutritional adequacy such as stunting. While improved welfare might lead to improvements in food adequacy, the risk of consuming

Result and Discussion

A. Univariate Analysis

Table 1. Distribution of Frequency

Variabel	N	%
Level of Protein Intake Adequacy		
Poor	25	69.4
Good	11	30.6
The state of stunting		
Stunting	15	41.7
No Stunting	21	58.3

higher level of calories and saturated fat instead of protein should also be of concern due to its potential health risks in the far future.¹² This is because protein plays an important role in the growth and development of children, especially during the window of opportunity period. This might be well represented by the finding of this research. A number of 15 (41.7%) children under two years old in this research experienced stunting, and 80.9% of them were from the poor protein intake adequacy group. This was further supported by Hartati who has previously demonstrated the correlation of protein adequacy and the nutritional status of children under five years old. Protein is needed by human body as substrates for replacing damaged cells that would subsequently induce growth and development especially during infancy and under five years of age.⁹

A number of 3 (19.1%) subjects, however, still experienced stunting despite being in the good fish derived protein intake adequacy. This finding might present the bias potentially induced by the short research duration and the food recall period of three non consecutive days. These methodological aspects

might lead to the data being not entirely representative for the subjects' actual eating habit. The degree of fish availability might also affect the dietary pattern of the inhabitants from time to time. The cross sectional design of this research did not allow a further analysis on such changes and its possible correlation from the occurrence of stunting. It was also impossible to analyze internal factors such as genetics that might also play role in the occurrence of stunting. Further research should therefore be conducted with improvements on those factors.

Madanijah, *et al* (2006) further stated that the fish consumption among children in fishermen family was higher than non fishermen family as the dietary pattern would understandably be determined by the availability of the immediate food source. Some families might also prevent themselves from feeding their children with fish as preparing fish dish potentially requires some additional time to clean the fish bones and scales. Limited mothers' knowledge about the importance of fulfilling the nutritional status of children under two years old could also contribute to their tendency to not provide fish. Another misled belief that might lead to this reduced fish intake in children under two years old is the belief that the children have had their protein needs covered from the breast milk. Therefore, the fish should be provided to the mother instead.¹³

Conclusions

A significant correlation was demonstrated between the fish derived protein intake adequacy and the occurrence of stunting among children under two years old ($p < 0.05$). The OR value of 5.5 indicated that children under two years old with poor fish derived protein intake adequacy had 5.5 times greater risk of experiencing stunting compared to children with good fish derived protein intake adequacy. The possible immediate approach to manage with this problem would be to provide nutritional education for mothers. This might include the education about the importance of maintaining a balanced diet, the process of preserving and preparing various fish derived food, and the role of fish derived protein in the growth and development of their children. When conducted during the window of opportunity period, this might allow the children who might be at risk to catch up on growth and development.

Ethical Clearance: This study approved and received ethical clearance from the Committee of Public Health Research Ethics of Medical Faculty, Lambung

Mangkurat University, Indonesia. In this study we followed the guidelines from the Committee of Public Health Committee of Public Health Research Ethics of Medical Faculty, Lambung Mangkurat University, Indonesia for ethical clearance and informed consent. The informed consent included the research title, purpose, participants' right, confidentiality and signature.

Source Funding: This study done by self funding from the authors.

Conflict of Interest: The authors declare that they have no conflict interest.

References

1. Atmarita. Current Nation's Generation Problems In Indonesia: Poor Nutrition, Less Healthy, And Less Intelligent. Publication Article. Yogyakarta: Gajah Mada University: 2010
2. Soekirman, Science of Nutrition And Its Application For Family And Society. Jakarta: Ministry of Reaserch Technologi and Higer Education, Department of Education Republic of Indonesia; 2000.
3. Health Research and Development Agency of Indonesia. Basic Health Research 2007. Jakarta: Ministry of Health of Indonesia; 2007.
4. Health Research And Development Agency of Indonesia.. Basic Health Research 2010. Jakarta: Ministry of Health of Indonesia; 2010.
5. Health Research and Development Agency of Indonesia. Basic Health Research 2013. Jakarta: Ministry of Health of Indonesia; 2013.
6. Banjar Departement of Public Health. Banjar Health Profile 2013. Martapura: Banjar Departement of Public Health; 2013.
7. Banjar Departement of Public Health. Banjar Health Profile 2014. Martapura: Banjar Departement of Public Health; 2014.
8. Banjar Annual Report Department of Fisheries 2012. Martapura: Banjar Departement of Fisheries and Animal Husbandry; 2012.
9. Hartati Y. Factors Related To Fish Consumption And Nutritional Status of Children Aged One To Two Years in Sub District Gandus Palembang City 2005. [Thesis]. Semarang: Diponegoro University; 2006.

10. Candra A. Relationship Between Underlying Factors And The Incidence of Stunting In Children Aged One To Two Years. Reaserch Article. Semarang: Diponegoro University; 2013.
11. **6**otoatmodjo S. Health Research Methodology. Jakarta: PT. Rineka Cipta; 2001
12. Repi A. The Relationship Between Socio-Economic Status And The Nutritional Status of Fourth And Fifth Grade Elementary School Children From First Tounlet Elementary School And St. Monica Catholic Elementary School Sub District West Langowan. Publication Article. Manado: Sam Ratulangi University; 2007
13. Madanijah S, Zulaikhah, Munthe YB. Effect of Fish Consumption And Snacks On Children's Nutritional Adequacy In Fisherman Families. Nutrition and Family Media. 2006; 30(1): 31-41.

Analysis of Fish Derived Protein Intake Adequacy and Cultural Factors and its Correlation with the Occurrence of Stunting among Children Under Two Years Old in Martapura Riverbanks, Banjar District Ar

ORIGINALITY REPORT

4%

SIMILARITY INDEX

1%

INTERNET SOURCES

2%

PUBLICATIONS

3%

STUDENT PAPERS

PRIMARY SOURCES

1

Rian Diana, Ali Khomsan, Dadang Sukandar, Hadi Riyadi. "Nutrition Extension and Home Garden Intervention in Posyandu: Impact on Nutrition Knowledge, Vegetable Consumption and Intake of Vitamin A", Pakistan Journal of Nutrition, 2014

Publication

1%

2

Dwi Cahya Rahmadiyah, Junaiti Sahar, Poppy Fitriyani. "The Correlation between Providing Complementary Food and Breast-Feeding with the Growth and Development of Children under the Age of Five Years Old (6-24 months)", Makara Journal of Health Research, 2016

Publication

1%

3

repository.unair.ac.id

Internet Source

1%

4

Submitted to Universitas Negeri Semarang

Student Paper

1%

5

Submitted to University of Brighton

Student Paper

<1%

6

Lalu Muhammad Saleh, Tjipto Suwandi,
Hamidah Hamidah. "The Correlation between
Sex, Age, Educational Background, and Hours
of Service on Vigilance Level of ATC Officers in
Air Nav Surabaya, Indonesia", International
Journal of Evaluation and Research in
Education (IJERE), 2016

Publication

<1%

Exclude quotes On

Exclude matches Off

Exclude bibliography On