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The Impact of The Formal Education of Housewives and Environmental Sanitation on The Children's Nutritional Status in The Target Area of Community Health Centre Mananggu, Boalemo Regency, Gorontalo Province.

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ABSTRACT

Good nutrition plays a major role in the process of children's growth and development. Such a condition is achievable if there is a balance in both the physical and mental development of the children. This raises a question whether the formal education of the housewives and the environmental sanitation affect the children's nutritional status and therefore, this research aims at exploring this issue. This observational analytic research employed the *cross-sectional study* approach. The sample, which consists of 104 children among 1365 of the total population, was selected through the *proportionate stratified random* method by using the inclusion and exclusion criteria. According to the results of the *chi-square* test, the *p-value* of the formal education is 0.707, and the environmental sanitation gets 0.013. Therefore, the aspect of environmental sanitation has an interrelation with the children's nutritional status while the formal education is the opposite. Stakeholders, such as the public health service, are expected to tackle the problem by conducting workshops about children's nutrition for the women. Furthermore, educating people regarding the improvement of the environmental sanitation is necessary to anticipate issues of children's malnutrition.

Keywords: Education, housewives, environmental sanitation, children's nutrition

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INTRODUCTION

"Toddler years are the golden period of children's development in terms of their growth and cognitive; this is especially in the first two years since the birth of the children. Nutrition and health are the keys to these processes (Wahyuni, 2008)". This is because the nutrition is a process of a particular organism that relates to the diet of food consumption. This process runs through several processes, i.e., digestion, absorption, transportation, storage, metabolism, and excretion of nutrients in order to survive and to maintain the growth as well as the function of organs to produce energy.

A report from the National Development Planning Board reveals that around 50 percent of the human population in Indonesia, or more than 100 people, are suffering from issues of nutrition, such as malnutrition and excessive nutrition (Bappenas, 2014). People often ignore this issue despite the consequence of causing a more serious problem. In addition to the problem of malnutrition, there have been some excessive nutrition problems in Indonesia; even worse, it is reported that the number of the case is increasing. Suhardjo (2008) argues that "women's education, insight, occupation, and diet are the contributing factors of the problems of children's malnutrition."

Women's diet preferences, eating behavior, and food consumed is closely relatedto the body mass index and nutrition status of the children. In addition, the women's insight, responses, and behavior regarding the nutrition are also believed to be among the aspects influencing the children's nutrition. The term insight refers to the way the women understand about healthy food and source of nutrients contained within the food as a way of preventing diseases. Moreover, this results in a healthy food processing to retain the nutrients and to practice a healthy life.

"An educated woman with sufficient understanding about nutrition plays a major role in providing healthy food for her family" (Sariningsih, 2005). In other words, it is easy for highly educated women to process information and to implement it into their lifestyle, especially about health and nutrition. Such a factor also influences women's ideology, perspective, and their perception.

However, there are 899 of the total 2779 of the housewives in the target area of Mananggu community health center(henceforth called as *Puskesmas*) are illiterate, 466 of them are even uneducated. The research by Ahmad (2010) reveals that the case of malnutrition in the area of Dulupi community health center in 2009 blame several aspects, i.e., diet, understanding regarding nutrition, income, and infectious diseases of the women. It can be inferred that the chance of suffering from malnutrition for children of uneducated women are 13.6 times higher than those of educated women. This is in line with the results seen in Dewi (2010) that women's knowledge about nutrition is the contributing factor of the issues of malnutrition in Tiron village, Kediri district, 2010.

The report by the World Health Organisation (WHO) shows that in Indonesia the prevalence of malnutrition on the toddlers is of 19.6 percent while the percentage of children who are suffering from malnutrition is 8.6 percent (Bappenas, 2013). Similarly, a report by the public health office in Gorontalo province shows that in 2013, 1039 of toddlers suffered from malnutrition and around 3953 are undernutrition.

METHOD OF RESEARCH

This observational analytic research was conducted in the target area of Mananggu community health center for two months, June to July 2016. The *cross-sectional study* approach was employed to explore the issue in which the three variables, i.e., formal education, environmental sanitation, and status of children's nutrition are only examined once at the same time. The sample, which consists of 104 children among 1365 of the total population, was selected through the *proportionate stratified random* method by using the inclusion and exclusion criteria. Furthermore, the data were collected through questionnaires according to the purposes of this research.

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RESULTS

UNIVARIATE ANALYSIS

This analysis was to explore the distribution, frequency, and the variable of this research, i.e., characteristics of children, such as sex and age, women's formal education, environmental sanitation, and the nutrition status of the children. These are shown in Table 3.1 as follows.

The Data of the Children Respondents based on Their Sex

Table 1: Distribution of the Children based on Their Sex

Sex	Total	Percentage (%)
Male	56	53.8
Female	48	42.2
Total	**104**	**100.0**

From: Primary data, 2016

It is shown that the sample is mostly male with the total of 56 children or 53.8 percent while the females are only 48 children with the percentage 46.2 percent.

The Data of the Children Respondents based on their Age

Table 2: Distribution of the Children Based on their Age

Age (in months)	Total	Percentage (%)
7-12	16	15.4
13-24	31	29.8
25-36	28	26.9
37-48	23	22.1
49-59	6	5.6
Total	**104**	**100.0**

From: Primary data, 2016

The above table reveals that the sample is mostly toddlers whose age ranges from 13 to 24 months with the percentage of 29.8 percent (31 children). Thisis followed by toddlers in the group of age ranged from 49 to 59 months or 5.6 percent.

Formal Education of the Respondents

Table 3: Distribution of Respondents Based on their Formal Education

Education	Total	Percentage (%)
Low Education	61	58.7
Highly Educated	43	41.3
Total	**104**	**100.0**

From: Primary data, 2016

The results indicate that the number of the poor-educated respondents (61 women or 58.7 percent) dominates those of highly educated (43 women or 41.3 percent).

Environmental Sanitation

Table 4: Distribution of Respondents Based on the Environmental Sanitation

Education	Total	Percentage (%)
Poor	42	40.4
Good	62	59.6
Total	**104**	**100.0**

From: Primary data, 2016

Table 5 reveals that the environmental sanitation in the target area of Mananggu community health center is in a poor category with the total 42 houses (40.4 percent). In addition, another 62 houses are in good category (59.6 percent).

Children's Nutritional Status

Table 5: Distribution of the Children Based on their Nutritional Status

Education	Total	Percentage (%)
Abnormal	13	12.5
Normal	91	87.5
Total	**104**	**100.0**

From: Primary data, 2016

The results of the anthropometry analysis by using weight-for-age index calculated through Z-scoring reveal that 13 children in the site object suffer from overnutrition (12.5 percent). On the contrary, the children who have no nutrition issues outnumber the children with malnutrition problem; the children in this category are 91 (87.5 percent).

BIVARIATE ANALYSIS

The bivariate analysis of this research employed two variables by using a chi-square test. This is to examine the influence of women's formal education and environmental sanitation toward the nutritional status of the children in the target area of Mananggu community health center, Mananggu district. Further, the test, using the SPSS program, shows the results in the following table:

Formal Education of Housewives and the Environmental Sanitation on the Children's Nutritional Status

Table 6: The Impact of the Formal Education of Housewives and the Environmental Sanitation on the Children's Nutritional Status in the Target Area of Mananggu Community Health Centre

Formal Education	Total		X^2h	P *Value*
	N	Percentage (%)		
Low Education	61	58.7	0.142	0.707
Highly Educated	43	41.3		
Total	104	100		

From: Primary data, 2016

Table 6 shows that the value of *chi-square* calculation is 0.142 while 3.841 refer to the value of *chi-square* of the table. Since the value of *chi-square* calculate <*chi-square* of the table (0,142 < 3,841) and based on the significance that *p-value*= 0.707, or p > 0.05, it can be inferred that the formal education of the women does not contribute to the nutritional status of the children within the site object.

Environmental Sanitation and the Children's Nutritional Status

Table 7: The Influence of Environmental Sanitation on the Children's Nutritional Status in the Target Area of Mananggu Community Health Centre

Environmental Sanitation	Total		X^2h	P *Value*
	n	Percentage (%)		
Poor	42	40.4	5.135	0.026
Good	62	59.6		
Total	104	100		

From: Primary data, 2016

Based on Table 7, the value of *chi-square* calculate is 5.135 while the *chi-square* table is 3.841. Since the value of *chi-square* calculate <*chi-square* of the table (5,135 < 3,841) and based on the significance that *p-value*= 0.023, or p > 0.05, it can be inferred that the formal education of the women does not contribute to the nutritional status of the children within the site object.

DISCUSSION

UNIVARIATE ANALYSIS

The univariate analysis of this research was to explore the distribution, frequency, and the variable of this study. Furthermore, this analysis covered aspects, such as women's formal education, environmental sanitation, and the nutrition status of the children. A statistical software SPSS was used in this step to obtain the results of the research as explained as follows.

There are 61 uneducated women who outnumber the 43 highly-educated women. In other words, the education level of the women in the target area can be regarded as poor due to the fact that most of them are primary or secondary graduates. This condition blames the economicsituation of thefamily which forces the women to help their parents to make a living. Consequently, this obstructs their focus to study since their time is mostly for working and, therefore, leaving them being uneducated. One of the respondents, however, explains that not all uneducated women are lack of knowledge and have poor understanding; she emphasizes that learning can be in everywhere in addition to the ones in the formal education. Informal education, such as workshops, is among media to bridge the gap between these types of education. Moreover, she adds that curiosity is also important in obtaining knowledge. This resonates to the research result which indicates that 32 respondents with low educational level are better than 26 of those highly-educated ones in terms of their knowledge. Similarly, in her research entitled The Impact of Education Level and Family Income on the Nutritional Status of the Students of SD Muhammadiyah, Tri Wahini argues that ones' education level does not guarantee their cognitive capacity. She adds that learning can be through informal education in addition to the formal one. This is in line with the results seen in Notoatmodjo that factors, i.e., age, intelligence, experience, information, and environment play a major role in shaping a person's knowledge.

In terms of the aspect of environmental sanitation, 42 houses in the site object are in poor category; the other 62 houses, however, are in a good category. The idea of a healthy environment refers to a better condition of the environment of a particular area which constitutes to the well-being of the elements within the area. These elements are a residence, sewerage, clean water supply, industrial waste disposal, and stable. An unhealthy environment might be a contributing factor of diseases, i.e., diarrhea and respiratory infections. Additionally, other aspects, such as the supply of clean water, toilet, type of flooring, and clean tableware, are closely related to the environmental sanitation. Sufficient water supply will minimise the risk of suffering from malnutrition problems in children. A healthy environment is based on the probability that an environment support the life of its inhabitants. By that, an unhealthy environment can be easily recognized by factors, such as inadequate clean water supply, poor waste disposal and sewerage, and the absence of a better landfill. Further, the lack of facilities and services regarding food supervision and the absence of standardized housing facilities indicates that there is an issue in the environment.

Examining the nutritional status of the respondents (children) in this research was carried out through a number of steps. Anthropometry, the scientific study of the measurements and proportions of the human body, is among the methods previously explained. It is also possible to use this method in measuring the nutritional status of imbalances between the consumption of protein and energy. Problems can be identified with a pattern of physical growth and proportion of proportion of the tissues of the body, i.e., fat, muscle, and body water. Anthropometry is relatively an easy process yet, in some circumstances, it requires skills, equipment, and other details in its practice. Almatsier (2011) categorizes anthropometry into two which is based on its purposes: The first is the measurement of the mass of the tissue which involves the measurement of weight and thick fat under the skin and upper arm circumference. Moreover, the mass of the tissue is sensitive and fluctuate; it represents the current condition of the body. The other measurement is linear density which refers to the height, head circumference, and the chest size. In contrast to the mass tissue, linear density is relatively slow in change; its size can be either constant or increasing, and it can depict the profile of human in their past. Examining the nutritional status through anthropometry will be shown in the form of an index that is correlated with other variables. The first variable is age; it is the core in determining ones' nutritional status. Misidentification of this variable leads to the misinterpretation of the nutrition status. In other words, an accurate measurement of the height would be nothing if there is a mistake in examining the age variable.

According to the results of the anthropometry analysis by using weight-for-age index calculated through Z-score, there are 13 children in the site object suffering from overnutrition (12.5 percent). On the contrary, the children who have no nutrition issues outnumber the children with malnutrition problem; the children in this category are 91 (87.5 percent). It is shown that some children have nutritional problems, particularly overnutrition. This condition blames some factors, i.e., women's knowledge regarding nutrition in food, their formal education, and the environmental sanitation in the site object.

BIVARIATE ANALYSIS

The formal education of housewives contributes to the children's nutritional status. Fattah (2011) argues that "education play a major role in shaping one's cognitive as well as his or her behavioral change. Higher education eases people in processing information; as a consequence, people will gain significant knowledge. Thereby, individuals with lower education find it difficult in processing the information; they progress slowly compared to those with higher education" (Fattah, 2011). The results of the research on 104 of respondents, however, reveal that the formal education of housewives does not affect the children's nutritional status. Furthermore, the results indicate that the number of the poor-educated respondents (32 women) in the target area of Mananggu Community Health Centre outnumber those of highly educated (26 women). This is due to the notion that knowledge is a result of curiosity; it is a process of from not knowing to knowing. Furthermore, people will be able to do something through this process. Gaining knowledge consists of methods and concepts through education or experience. By that, it does not guarantee that people with lower education have inadequate knowledge. The process of obtaining knowledge is not only by completing formal education but also through non-formal education. This is in line with the statement by Notoatmodjo (2010): factors, i.e., age, intelligence, experience, information, and environment play amajor role in shaping a person's knowledge.

Regarding the impact of environmental sanitation towards the nutritional status of the children, Notoadmojo (2010) proposes that elements, such as the 'resident, sewerage, and clean water supply play a major role in shaping a healthy environment". By that, an unhealthy environment might be a contributing factor of diseases, i.e., diarrhea and respiratory infections. Additionally, other aspects, such as the supply of clean water, toilet, type of flooring, and clean tableware, are closely related to the environmental sanitation. Sufficient water supply will minimise the risk of suffering from malnutrition problems in children.

There are aspects related to thesanitary system in a house; the first is the wall of the house. In addition to support roofs, the purpose of the walls in houses is to provide shelter and security; thus, apermanent wall made of bricks is a better option for a house. The second aspect refers to the people who live in the house and its relation to the possibility of diseases attacking these people. Flooring is the third factor to consider; earthen floors are more humid than cement floors. Sufficient lighting for every room in a house is also important. This fourth aspect refers to natural lighting, the sunlight, entering the room through

windows within the house. Moreover, objects should not obstruct slits in the house in which the sunlight enter the room through it. This is because the sunlight is effective to control the humidity, preventing mosquito, as well as eradicating germs in addition to its role as natural lighting. The fifth aspect is ventilation, which is regarded as among factors in shaping a better house environment. There are differences in the ventilation system in houses in rural areas and cities. Poor ventilation system impacts on the health of the people because diseases are more likely to attack them. The sixth refers to sewerage and toilet; these are central to human hygiene, and therefore its cleanness must be maintained. Also, the lighting should be sufficient, and the location of the toilet must be distant from the location of water sources. Waste disposal, to dispose water that has been used in kitchen, toilet, in business, or as part of an industrial process, is the seventh prominent aspect of the sanitary system. Poor wastewater disposal system in the house will affect the health of the people; the house will be more humid as well. The standardized garbage dump is also essential in keeping the environment healthy. Moreover, clean water supply should meet the standard since the water will be used for daily activities and will be consumed. However, the water should be processed according to the standardbefore consuming. The tenth aspect is the distance of the sewerage and water sources; 10 to 15 meters is basically the standard for this. This is to avoid pathogen contaminating the water.

The research result reveals that the level of environmental sanitary in the target area of Mananggu Community Health Centre is classified into two: poor and good category. Each consists of a number of children with nutritional problems: 13 children in the poor category and 91 children in the good category. This is based on a higher *p-value* in compared to the *alpha value* (0,026 < 0,05). By that, it can be inferred that the environmental sanitation contributes to the nutritional status of the children in the site object. Furthermore, this is in line with the statement by Notoatmodjo: “other aspects, such as the supply of clean water, toilet, type of flooring, and clean tableware, are closely related to the environmental sanitation.” Sufficient water supply will minimise the risk of suffering from malnutrition problems in children. This also corresponds to the results seen in Natalia Puspitawati’s research which states that it is possible to improve one’s health status through maintaining his or her health and both the physical and social environment. To put it simply, the better the health status, the better the nutritional status. From the perspective of epidemiology, issues regarding nutrition are closely related tohost, agent, and environment.

CONCLUSION AND RECOMMENDATIONS

CONCLUSION

This research concludes that:

1. The formal education of housewives does not affect the children’s nutritional status in the target area of Mananggu community health center; this is based on the *p-value* 0.707which outnumbers the α-value 0.05.
2. Instead, the environmental sanitation is the aspect that contributes to the nutritional status indicated by *p-value* 0.026 < α-value 0.05.

RECOMMENDATIONS

The community health center is urged to conduct workshops to disseminate knowledge regarding nutrition to women with children and female teenagers since they will need the information once they become mothers and housewives. Environmental-oriented improvement programs are also necessary to solve problems of undernutrition and overnutrition. In addition, it is recommended for further research to examine other contributing factors toward the children nutritional status, i.e., motivation, beliefs, religion, and family income.

REFERENCES

[1] Ahmad, K. (2010). *Faktor Risiko Kejadian Gizi Buruk pada Balita di Wilayah Kerja Puskesmas Dulupi Kecamatan Dulupi Kabupaten Boalemo Tahun 2009. Gorontalo* [The Risk Factors of Malnutrition in the Children of the Target Area of Dulupi Community Health Centre, Boalemo District, Gorontalo, 2009]: Universitas Negeri Gorontalo

[2] Almatsier, S. F. (2010).*Prinsip Dasar Ilmu Gizi. Edisi Kedua* [Basic Principle of Nutrition Studies, Second Edition]. Jakarta: P.T Gramedia Pustaka Utama.

[3] Asfuah, J., Proferawati, K. (2011). *Hubungan Zat Gizi Makro dengan Prestasi Belajar pada Anak Sekolah Dasar* [The Influence of Macro Nutrients toward the Achievement of Primary Students].*2*(4).Available online, 25th of June 2016.

[4] Arikunto, S. (2010). *Dasar-Dasar Evaluasi Pendidikan* [The Basics of Education Evaluation]. Jakarta: Rineka Cipta.

[5] Praptono, et al. (2014). *Hubungan Konsep Diri dengan Interaksi Sosial pada Klien Ulkus Diabetik di RSUD Banyudon* [Exploring the Interrelation between Self-Concept and Social Interaction on Diabetic Ulcers Patients in RSUD Banyudon].Universitas Sahid Surakarta.Jurnal pelopor ISSN 0854-1302.7 Juni 2016.

[6] Bappenas. (2014). Indonesia: *Laporan Perkembangan Pencapaian Tujuan Pembangunan Millennium* [Report on the progress achievement of Millennium Development Goals]. Jakarta: Bappenas.

[7] Chandra, B. (2006). *Biostatistik untuk Kedokteran dan Kesehatan* [Biostatistics for Medical and Health]. Jakarta: EGC.

[8] Dinas Kesehatan Kabupaten Boalemo. (2015). *Profil Kesehatan Kabupaten Boalemo* [Health Profiles of Boalemo District]. (2015). Gorontalo: Pemerintah Kabupaten Boalemo.

[9] Dinas Kesehatan Puskesmas Mananggu. (2015). *Profil Puskesmas Mananggu* [The Profile of Mananggu Community Health Centre, 2015].Gorontalo: Pemerintah Puskesmas Mananggu.

[10] Hermawan, T. (2010).*Pengaruh Sanitasi Air Terhadap Kesehatan Lingkungan Ditinjau Secara Bakteriologis* [The Impact of Water Sanitation on Environment from the Perspective of Bacteriology]. Yogyakarta: Universitas Gajah Mada.

[11] Notoatmodjo, S. (2012).*Promosi Kesehatandan Perilaku Kesehatan* [Health Promotion and Health Behavior]. Jakarta: PT Rineka Cipta.

[12] Notoatmodjo, S. (2012).*Metodologi Penelitian Kesehatan* [Methodologies of Research on Health]. Jakarta: Rineka Cipta.

[13] Sariningsih, Y. (2005). *Perilaku Orang Tua Dalam Memenuhi Kebutuhan Gizi Balita (Studi* Kasus *Terhadap Orang Tua Balita dari Keluarga Miskin di Kelurahan Babakan Surabaya Kecamatan Kiaracondong Kota Bandung)* [Parents' Behaviour in Fulfilment of Children's Nutrition (A Case Study of Parents with Low Economy Status in Babakan Sub-District].Tesis. Jakarta: Program Pasca Sarjana Universitas Indonesia.

[14] Universitas Indonesia.(2014). *Gizi dan Kesehatan Masyarakat* [Nutrition and Community Health]. Jakarta: PT Raja Grafindo Persada.

[15] Wahyuni, E. (2008). *Kajian Ketahanan Pangandan Alokasi Sumber daya Keluarga Serta Keterkaitannya dengan Status Gizi dan Perkembangan Anak* [A Study on Food Security and the Allocation of Family Resource and Its Interrelation with the Development of the Children]. Bogor: Institut Pertanian Bogor.