
The Relationship Between Mother's Characteristic with Dietary Diversity among Children Under Two Years Old in Cirebon Regency During COVID-19 Pandemic

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Abstract

A mother has a crucial role in providing complementary feeding to support the growth and development of her children. By providing various food type are expected to be able to meet the children's nutritional requirements in order to avoid any occurrence of nutritional problems. The purpose of this study was to determine the relationship between mother's characteristics and the dietary diversity given to children under two years old during the COVID-19 pandemic. This research is a cross sectional study by applying secondary data. It involved 44 children aged 6-23 months who were selected by non-probability sampling technique. The data used in this study included the characteristic of the mother (age, education, occupation, family size, and family income) and data of dietary diversity given to children under two years old. Then, data were analyzed to see any relationship between mother's characteristics and dietary diversity of children by employing Spearman tests. The results showed that 77.3% had met the minimum amount of dietary diversity and 22.7% have not met the requirements. The final result of the Spearman test showed that there was no relationship between the characteristics of mothers and the dietary diversity of children under two years old ($p>0.05$). Consumption variety foods are highly recommended to fulfill the nutritional requirements of children under two years old.

Keywords: Children Under Two Years Old; Mother's Characteristic; Dietary diversity; Complementary Feeding.

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1. Introduction

Indonesia is a country that has great challenges from three burdens of malnutrition long before the Corona Virus Disease 2019 (COVID 19) pandemic swept the world. Children as one group of community are vulnerable to be infected with COVID 19, and along with its pandemic, make the risk of suffering various nutritional problems are arising. One nutritional problem that happens in Indonesia is stunting, while is a group of 0-23 months children in a critical period because during this time children need a balanced intake of nutrients whether from the quality or quantity aspects. According to the 2018 Basic Health Research data, the prevalence of stunting in Indonesia is 17.1 % in children aged 0-23 months and 12.8 % in very short (in height) prevalence. The prevalence of short in height for Cirebon Regency reaches a quite high number (19.91 %) and for children who have very short height reaches 11.45 % [1]. The urgency to fulfill the nutritional requirements for children, especially during a pandemic time becomes one of many key factors to the optimal children's growth and development for their future. Feeding practices in the first 2 (two) years of age play a crucial role in the growth, development, and health of children. When the nutritional necessities are not fulfilled, then children will have a greater risk of having malnutrition, where the mortality rate of children with acute malnutrition is 11.6 times higher than children with good nutrition, and those children who are able to survive the malnutrition condition can experience developmental problems throughout their lives [2]. A mother's role in providing any additional food is very important, and the type of foods that will be consumed is expected not only to fill the stomach of her children but also has nutrient-dense content. There are several factors that may affect the practice of providing complementary feeding, such as mother's age, education level, socioeconomic level, duration of breastfeeding, number of visitation to health facilities, and health promotion [3,4]. World Health Organization (WHO) has set indicators in providing feed for children age 6 (six) to 23 (twenty-three) months where one of the indicators is called the Minimum Diet Diversity (MDD). By consuming a variety of food is expected to meet the requirements of energy and nutrients for children, which leads to a better nutritional status for children, so they are at a lower risk of experiencing malnutrition [5,6]. This study is to analyze the relationship between mother characteristics with the dietary diversity given to children under two years old, especially in areas where the stunting prevalences are quite high.

2. Materials and Methods

2.1 Study Design, Time, and Samples

This research is a cross-sectional study with secondary data employed and obtained from a study entitled "Evaluation of the Effectiveness of Posyandu in Handling and Prevention of Stunting in Cirebon Regency" (Riyadi and his colleagues 2020), as a collaboration study between the Faculty of Human Ecology of IPB University and RISTEKDIKTI Indonesia. This research was conducted from June to November 2020 in Suranenggala Subdistrict of Cirebon Regency. The selection of research location was carried out under consideration that Suranenggala Subdistrict was the locus of stunting, its easy access, and the researchers successfully getting research permits from the local government. There were two villages taken from the selected subdistrict namely the Surakarta Village and the Suranenggala Kidul Village, which were the locus of stunting and/or had a high prevalence of stunting through secondary data and anthropometric screening of all toddlers living in the selected subdistrict; according to existing Community Based Nutrition Recording and

Reporting (CBNRP) data which obtained from the local health center. This study involved 44 children under two years old who were selected using a non-probability sampling technique. The inclusion criteria for this study were children aged 6-23 months were in good health, and respondents who were willing to have their children became research subjects as proven by their willingness to fill out the informed consent form.

2.2 Data Collection

The data employed for this study were characteristic data of respondents (age, education, occupation, family size, and family income) and the dietary diversity given to children under two years old. These data were collected by researchers by conducting interviews with respondents. Then, data of mother age were divided into two groups: (a) early adulthood (20-34 years) and (b) late adulthood (35-40 years). Mother's occupation data were grouped into housewives and working women, and the family size data were grouped into small family (≤ 4 people), medium family (5-7 people), and large family (≥ 8 people). As for family income data, it was collected based on the Cirebon Regional Minimum Wage of Rp. 2,196,416,- in 2020, which was grouped into $<$ (less than) Cirebon regional minimum wage and \geq (more than) Cirebon regional minimum wage. Dietary diversity of children aged 0-23 months was collected by the researchers through interviews with respondents by food recall in 24 hours (1x24 hours). The food diversities consist of eight (8) food groups as follow: (1) breastmilk (2) cereals and tubers; (3) beans and legumes; (4) milk and its derivatives; (5) animal protein; (6) eggs; (7) fruit and vegetable sources of vitamin A; (8) other fruits and vegetables. This interview was conducted to determine whether children under two years old consumed at least 5 (five) of the eight (8) types of food groups [7].

2.3 Statistical Analysis

The data analysis employed in this research was univariate and bivariate data analysis. Univariate analysis was conducted to see the frequency distribution of the studied variables, while the bivariate analysis was conducted to see the relationship between mother's characteristics and dietary diversity given to children under two years old by using the Spearman Test. Then, an SPSS program (Statistical Software Package) for Windows (version 21.0) was employed for further analysis.

2.4 Ethical Approvals

This research has obtained the Ethics Approval from the Research Ethics Commission of IPB University involving human subjects under the approval No. 294/IT3.KEPMSM-IPB/SK/2020.

3. Result and Discussion

3.1 Subject Characteristics

Table 1 shows the characteristics of respondents based on the largest number of presentations found in early adulthood (56.8%). Most respondents are having high education level, as stated by 31 people (70.5%), while the rest of the group have low education level as many as 13 people (29.5%). A mother's education level can affect the attitudes in dealing with various problems. Mothers have an important role in the health and growth

condition of their children, particularly in making decisions to give exclusive breastfeeding and her confidence when making decisions about the practice of complementary feeding and selection of the food provided to be able to meet the minimum diet diversity and minimum acceptable diet [4], especially when those acts are supported by information about the importance of proper complementary feeding that comes from health facilities. Unfortunately, mothers with low education level may find it difficult to understand the information obtained. Those infants who were given complementary feeding before 6 months had a twice higher risk of experiencing stunting than children who consumed the complementary feeding at the age of 6 (six) months [8]. In this study, the majority of respondents were housewives as many as 39 people (88.6%), while those who worked were only 5 people (11.4%). Housewives are 2.03 times better in giving complementary feeding than working mothers because they have more time to pay attention to the problems of growth and development of children [9]. Feeding is one of the factors that affect the nutritional status of infants. Inadequate feeding can lead to malnutrition and overfeeding will lead to obesity [10].

Table 1: The frequency distribution of respondent characteristic

Variables	n (%)
Age (years)	
Early adulthood (20-34 years)	25 (56.8)
Late adulthood (35-41 years)	19 (43.2)
Mean±SD	32±5.0
Education Level	
Low (Uneducated – Elementary)	13 (29.5)
High (Junior High – Higher Education)	31 (70.5)
Occupation	
Not working	39 (88.6)
Working	5 (11.4)
Family Size	
Small (≤ 4 members of family)	26 (59.1)
Average (5-7 members of family)	18 (40.9)
Large (≥ 8 members of family)	0 (0)
Family Income	
<Regional Minimum Wage of Cirebon Regency	28 (63.6)
≥ Regional Minimum Wage of Cirebon Regency	16 (36.4)
* Regional Minimum Wage of Cirebon Regency 2020 = Rp2.196.416,-	

Meanwhile, 26 respondents (59.1%) are having 4 family members and 18 respondents (40.9%) having 5-7 family members. The family size can also affect the mother's knowledge and attitude in giving complementary feeding [11]. The increasing nutritional needs of children under two years old must be accompanied by dietary diversity in each complementary feeding given, and the smaller the family number, the more dietary diversity can be provided [12]. Most of the family incomes as many as 28 respondents (63.6%) are still below the Cirebon Regency Minimum Wage (< Rp2,196,416,-). The level of income also affects the foodstuff choices that will be purchased. Thus, family income is an important factor in ensuring the quantity and quality of food. The more income spent on food, the more likely the child achieving the minimum diet diversity [13].

3.2 Dietary Diversity

Table 2 shows that the majority (84.1 %) of children under two years old consume breast milk. Scientifically,

breast milk has been proven to contain immune substances that can protect children from infections and chronic diseases in the future, able to reduce the risk of dental malocclusion and obesity and increase the intelligence of the children [14,15]. All children under two years old (100%) in this study consumed cereals such as rice, bread, and sweet potatoes. It also found in this study that most children under two years old (56.8%) did not consume nuts. Meanwhile, 56.8% of children under two years old consumed dairy products and their derivatives such as formulated milk, cheese, yogurt, and others and most children under two years old (65.9%) consumed animal protein. Animal protein has an important role in maintaining cells and body tissues, forming antibodies, and supporting the growth and development process of children under two years old, especially during their golden period [16]. Then, egg consumption from children under two years old has a percentage of 61.4%. Eggs are a high protein food and can significantly help the growth of the children's body length, and also contain choline which is able to improve brain function [17,18,19]. The fruits and vegetables as a source of vitamin A consumption in this study is 61.4 %, and most children under two years old (84.1%) had consumed other types of fruits and vegetables. Fruits and vegetables are rich in fiber, antioxidants, and micronutrients content such as potassium, vitamin A, vitamin C, and magnesium. Children who consume more fruits and vegetables tend to consume less sugary foods, lower salt, and energy density [20] and children who rarely consume fruits and vegetables have the potential to become obese in the future [21] also increase the risk of non-communicable diseases, such as heart disease [22].

Table 2: Children’s Food consumption based on 8 (eight) food groups

Food Groups	n (%)
Breastmilk	
Consumed	37 (84.1)
Not Consumed	7 (15.9)
Cereal	
Consumed	44 (100)
Not consumed	0 (0)
Nuts	
Consumed	19 (43.2)
Not Consumed	25 (56.8)
Milk and Its Derivatives	
Consumed	25 (56.8)
Not Consumed	19 (43.2)
Animal Protein	
Consumed	29 (65.9)
Not Consumed	15 (34.1)
Eggs	
Consumed	27 (61.4)
Not Consumed	17 (38.6)
Fruits and Vegetables sources of Vitamin A	
Consumed	27 (61.4)
Not Consumed	17 (38.6)
Other Fruits and Vegetables	
Consumed	37 (84.1)
Not Consumed	7 (15.9)

Table 3 concludes most children under two years old (77.3%) in this study have consumed at least 5 from 8 types of food groups. Children under two years old are needs a balanced intake of nutrients both in terms of

macro and micro substances to support their physical and cognitive development during this period. From the Basic Health Research report, diverse food consumption in West Java has reached 55.4% and for rural areas has reached 45.2% [1].

Table 3: The Frequency Distribution of Dietary Diversity Children Aged 6-23 Months

Dietary Diversity	n (%)
≥5 food groups	34 (77.3)
<5 food groups	10 (22.7)

Consuming a variety type of foods can be an indicator that determines the quality of the food consumed, one factor to meet the necessity of essential nutrients that can reduce the risk of micronutrient deficiency and as an effort to prevent stunting in the future. In addition, with the fulfillment of dietary diversity, it can increase energy and nutrient intake, which leads to changes in better nutritional status [23,24]. Meanwhile, there are 22.7% of children under two who do not consume a variety of foods where it can increase the risk of malnutrition, and when this inappropriate feeding occurs continuously, it can lead to an increased risk of stunting [25], morbidity, and mortality in children [24].

3.3 *The Relationship of Mother’s Characteristic with Dietary Diversity*

The results of the Spearman correlation found that there was no significant relationship between mother’s characteristics and dietary diversity ($p > 0.05$). Mothers who received formal education in one study conducted in Ethiopia had a significant influence on the fulfillment of dietary diversity of children under two years old. This difference may happen due to the fact that the higher education in this study is mostly limited to Senior High School. Higher education in general will increase the mother's confidence in making decisions about the practice of giving complementary feeding and can meet dietary diversity necessities [26], especially when she is supported by information about the importance of complementary feeding from health facilities, and due to the higher education she has, a mother will find it easier to understand the complex information given [27]. Unfortunately, mothers with low education may fail to understand the complexity of the information obtained.

Table 4: The Relationship Between Mother’s Characteristics to Dietary Diversity

Variables	Dietary Diversity	
	<i>R</i>	<i>p</i>
Age	0,144	0,350
Education	0,113	0,463
Occupation	-0,194	0,207
Family Size	0,100	0,517
Family Income	0,041	0,792

*Spearman Test

There are other variables existed which are not examined in this study, such as the more specific knowledge of mother about the dietary diversity and the appropriate way of Infant and Young Child Feeding Practices (IYCF) that able to increase the dietary diversity given to children under two years old [28], these results are in accordance to research conducted in Southern Ethiopia which stated that increasing mother's knowledge of IYCF would increase the score of dietary diversity. In addition, other factors that may influence dietary diversity are are mother's frequent exposure to information about IYCF, actively participate in cooking demos, and the husband's role in assisting IYCF [29]. Another study conducted in the Philippines stated that families who own agricultural land or garden for their own fruit and vegetables are able to increase dietary diversity scores [30]. Also, mothers who frequently having antenatal care check up during pregnancy can affect dietary diversity scores because during examinations mothers are more likely to obtain information about health that can support their children's dietary diversity [31]. This study was not free from recall bias and may not be accurate in describing food patterns because it only considers the food consumed by children under two years old during the last 24 hours before the research interview was conducted. This study also did not take into account the quantity or amount of food given. Aside from that, this study cannot describe the causal relationship because it only employed a cross-sectional study as the research method.

4. Conclusion

The results of this study showed that the most consumed types of food groups are cereals, roots and tubers, breast milk, along other fruits and vegetables, while the least consumed food groups were nuts and dairy products. Most of the children under two years old in this study had met the minimum amount of dietary diversity. The results of the analysis showed that there was no relationship between mother characteristics and dietary diversity, and the expectation for further research is able to examine other variables that can affect the dietary diversity given to children under two years old.

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5. Conflict of Interest

The authors declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

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