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Household socioeconomic factors and minimum dietary diversity among infants and young children in kebumen district of indonesia

Tantri Nofitasari1, Nur Indah Rahmawati2, Eka Nurhayati2, Fatimah Fatimah2,
Tri Siswati3, Bunga Astria Paramashanti*1

[1]Department of Nutrition, Faculty of Health Sciences, Universitas Alma Ata, Yogyakarta 55183, Indonesia
[2]Department of Midwifery, Faculty of Health Sciences, Universitas Alma Ata, Yogyakarta 55183, Indonesia
[3]Polytechnic of Health Ministry of Health Yogyakarta, Daerah Istimewa Yogyakarta 55293, Indonesia

*Correspondence**:** *bunga@almaata.ac.id*.

ABSTRAK

Latar Belakang: *Meskipun bermanfaat bagi kesehatan dan gizi anak, namun proporsi anak Indonesia yang memenuhi minimum keragaman pangan masih belum optimal.*
Tujuan: *Penelitian ini bertujuan untuk mengetahui hubungan faktor sosial ekonomi rumah tangga dengan keragaman pola makan minimal pada anak usia 6-23 bulan.*
Metode: *Studi cross-sectional dilakukan di Kabupaten Kebumen, Indonesia. Kami memilih total 356 anak menggunakan multistage cluster sampling. Hasil utamanya adalah minimalnya keragaman pangan. Variabel independennya adalah faktor sosial ekonomi rumah tangga, meliputi pendidikan orang tua, pekerjaan orang tua, dan pendapatan rumah tangga.*
Hasil: *Persentase balita yang memenuhi minimum keragaman pangan sebesar 43,5%. Hasil regresi logistik berganda menunjukkan bahwa pendapatan rumah tangga yang tinggi berhubungan signifikan dengan minimalnya keragaman pangan (AOR= 2.27; 95%CI: 1.38-3.72). Faktor sosial ekonomi lainnya, seperti pendidikan dan pekerjaan orang tua, tidak berhubungan dengan minimum keragaman makanan pada bayi dan anak kecil.*
Kesimpulan: *Keanekaragaman pangan minimal di Kabupaten Kebumen rendah. Rumah tangga yang lebih kaya cenderung memberikan makanan yang bervariasi kepada anak-anak mereka dibandingkan rumah tangga yang lebih miskin. Kombinasi intervensi gizi spesifik dan sensitif gizi diperlukan untuk mencapai praktik pemberian makan bayi dan anak yang tepat.*

KATA KUNCI: *keanekaragaman pangan minimum; memberikan makanan kepada bayi dan anak; MPASI; sosial ekonomi*

ABSTRACT

Background: *Despite its benefits on child health and nutrition, the proportion of Indonesian children meeting the minimum dietary diversity remains suboptimal.*
Objective: *This study aimed to examine the association between household socioeconomic factors and minimum dietary diversity among young children 6-23 months.*
Methods: *A cross-sectional study was conducted in Kebumen District of Indonesia. We selected a total of 356 children using multistage cluster sampling. The main outcome was minimum dietary diversity. Explanatory variables were household socioeconomic factors, including parental education, parental occupation, and household income.*
Results: *The percentage of children meeting minimum dietary diversity was 43.5%. The multiple logistic regression results showed that high household income was significantly associated with minimum dietary diversity (AOR= 2.27; 95%CI: 1.38-3.72). Other socioeconomic factors, such as parental education and occupation, were unrelated to*

minimum dietary diversity among infants and young children.
Conclusion: *Minimum dietary diversity is low in Kebumen District. Wealthier households are more likely to feed their children with a diversified diet than poorer households. A combination of nutrition-specific and nutrition-sensitive interventions is needed to achieve appropriate infant and young child feeding practices.*

KEYWORDS: *complementary feeding; infant and young child feeding; minimum dietary diversity; socioeconomic*

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INTRODUCTION

Dietary diversity is one of the critical elements of a healthy diet. It reflects individual nutrient adequacy and household food security regarding access to various food (1). In low- and middle-income countries, dietary diversity in young children has been linked with child nutritional status, including stunting (2). Additionally, less food diversity during early life may increase the risk of childhood allergies and asthma, although the mechanism remains unclear (3).

Globally, less than 25% of children aged 6-23 months met minimum dietary diversity (4). Among Southeast Asian countries, the proportion of children meeting dietary diversity ranges between 24.6% and 58.2% (5). A recent survey in Indonesia showed that the proportion of young children consuming at least four of seven food groups was 46.6% nationally. The lowest coverage occurred in Maluku Province (18.2%), while the highest percentage was in the Yogyakarta Special Region (69.2%).

Previous studies revealed that child dietary diversity varied with child, maternal, and household factors. Among child factors, child age was linked with minimum dietary diversity in most studies (6). Parental education was also associated with eating varied food among children, where maternal knowledge of nutrition might mediate this (7). At the household and community level, dietary diversity was influenced by household food security, economic status, seasonal production of food, and food price (7,8).

While many studies assessed the determinants of child dietary diversity in Indonesia at the national level (911), only a few were conducted in specific settings (12,13). Kebumen is one of the districts in Central Java Province, Indonesia, with a 1281.12 km^2 geographical area (14). Despite its annual improvement, the district's economic growth ranked the lowest at the provincial level. The agricultural sector, especially food crops, contributed to Kebumen's gross regional domestic product. However, the contribution substantially decreased (26.65%) over the last five years (15). Therefore, our study aimed to analyse the relationship between household socioeconomic factors and minimum dietary diversity in Kebumen District, Central Java Province, Indonesia.

MATERIALS AND METHODS

Study design and location, We conducted a cross-sectional study between February and May 2018 in Kebumen District, Central Java, Indonesia. This study was ethically approved by Alma Ata University Research Ethics Committee number: KE/AA/IV/510/EC/2018.The population in this study was 1,018 children aged 6-23 months old living in Kebumen District, Central Java.

Samples were 6-23 months old children whose mothers agreed to participate in the study by signing an informed consent form. We excluded subjects who had a congenital disease, developmental impairment, and those with oral anatomy impairment. Data of all subjects were obtained from primary health centres' records. We calculated the sample size using the Lemeshow formula (16) and then added it by 10%, thus resulting in 356 young children.We used multistage cluster sampling to select subjects. Firstly, samples within three clusters (Kebumen I Primary Health Center (PHC), Kebumen PHC II, and Kebumen PHC III) in Kebumen Subdistrict were proportionally estimated.

Secondly, we chose villages with a simple random sampling technique using a lottery system. Six villages were selected. Lastly, all children who attended monthly child weighing and met inclusion criteria in each village were recruited using quota sampling. The dependent variable of this study was the child's minimum dietary diversity. Dietary diversity reflects the individual consumption of seven food groups: 1) Grain, roots, and tubers; 2) Flesh food; 3) Eggs; 4) Dairy products; 5) Nuts and legumes; 6) Fruits and vegetables rich in vitamin A; and 7) Other fruits and vegetables. Consumption of four or more food groups was considered good, whereas consumption of less than four food groups was deemed poor(17).

The independent variable in this study was household socioeconomic factors that covered the mother's educational attainment, father's educational attainment, mother's occupation, father's occupation, and household income. The academic level of mothers was categorised into two groups: 1) low if they completed junior high school or below, and 2) high if they completed senior high school or above. We used regional minimum wage to estimate household income in two categories: below or equal to 1,558,700 Indonesian rupiahs (IDR) and more than 1,558,700 IDR. We used a structured questionnaire collecting the main research variables and 24-hour food recall data. A child's food intake data were obtained by 24-hour food recall before converting to child dietary diversity. However, food with at least 10 g that children consumed was used to calculate dietary diversity (Working Group on Infant and Young Child Feeding Indicators, 2006, Kennedy et al., 2007). Statistical analysis, Descriptive statistics were done to describe subjects' characteristics and the distribution of primary variables. To analyse the association between two variables, we used the chi-square test. All variables with a p-value <0.25 entered multiple logistic regression analysis. Variables with a significance level of 0.05 were retained in the final model. All of the analyses were performed by using Stata 14.2.

Table 1. Characteristics of infants and young children aged 6-23 months

Characteristics	n	%
Child's age (in months)		
6-11	139	39.04
12-23	217	60.96
Parity		
≤2	269	75.56
>2	87	24.44
Mother's age		
<25	54	15.17
25-34	223	62.64
≥35	79	22.19
Mother's educational level		
Not completed elementary school	2	0.56
Completed elementary school	85	23.88
Completed junior high school	117	32.87
Completed senior high school	128	35.96
Completed tertiary education	24	6.74
Mother's occupation		
Not working	272	76.40
Labour/farmer/breeder/fisherman	17	4.78
Private employee/entrepreneur	60	16.85
Government employee	7	1.97
Father's age		
<25	9	2.54
25-34	173	48.73
≥35	173	49.73
Father's educational level		
Not completed elementary school	4	1.12
Completed elementary school	85	23.88
Completed junior high school	72	20.22
Completed senior high school	164	46.07
Completed tertiary education	31	8.71
Working		
Father's occupation		
Not working	0	0.00
Labour/farmer/breeder/fisherman	159	44.66
Private employee/entrepreneur	177	49.72
Government employee	20	5.62
Household income		
<regional minimum wage	188	52.81
≥regional minimum wage	168	47.19
Minimum dietary diversity in young childrer		
<4 food groups	201	56.46
≥4 food groups	155	43.54

Table 2. Bivariate and multivariate analyses of factors associated with minimum dietary diversity

Variables	COR (95% CI)	p	AOR (95% CI)	P
Child's age (in months)				
6-11 (ref)				
12-23	1.44 (0.93-2.22)	0.10*	1.18 (0.74-1.89)	0.48
Parity				
≤2 (ref)				
>2	1.46 (0.90-2.37)	0.13*	1.74 (0.99-3.05)	0.05
Mother's age				
<25 (ref)				
25-34	1.49 (0.81-2.74)	0.21*	1.24 (0.64-2.39)	0.53
≥35	1.01 (0.54-2.24)	0.80	0.84 (0.38-1.86)	0.67
Mother's educational level				
Low (ref)				
High	0.82 (0.54-1.26)	0.37		
Mother's occupation				
Not working (ref)				
Labour/farmer/breeder/fisherman	0.50 (1.17-1.46)	0.20*	0.56 (0.19-1.70)	0.31
Private employee/entrepreneur	0.97 (0.55-1.73)	0.93	0.99 (0.55-1.81)	0.98
Government employee	0.20 (0.02-1.68)	0.14*	0.29 (0.03-2.51)	0.26
Father's age				
<25 (ref)				
25-34	1.68 (0.41-6.94)	0.47		
≥35	1.46 (0.35-6.03)	0.60		
Father's educational level				
Low (ref)				
High	1.39 (0.91-2.12)	0.23*	1.19 (0.73-1.93)	0.49
Father's occupation				
Labour/farmer/breeder/fisherman (ref)				
Private employee/entrepreneur	1.56 (1.01-2.41)	0.05*	1.22 (0.73-2.06)	0.44
Government employee	1.35 (0.53-3.45)	0.53	1.00 (0.35-2.87)	1.00
Household income				
<regional minimum wage (ref)				
≥regional minimum wage	2.64 (1.72-4.07)	<0.00*	2.27 (1.38-3.72)	<0.00**

RESULTS AND DISCUSSIONS

Characteristics of subjects

Table 1 shows the distribution of our samples. Most children were aged 12-23 months (85.4%) and had more than 35 years old mothers (81.7%). Most mothers of young children completed junior high school and senior high school education, 32.87% and 35.96%, respectively, and did not work (76.40%). Fathers of young children were mostly above 25 years old (97.46%), completed senior high school level of education (46.07%), and worked in nongovernmental sectors. More than half of

households had income less than a regional minimum wage (1,558,700 IDR or equal to 110.35 USD) per month.

Factors associated with minimum dietary diversity in young children

Table 2 presents the association between dependent variables and child minimum dietary diversity in bivariate and multivariate analyses. In bivariate analysis, young children from a household with income more than the regional minimum wage (1,558,700 IDR or equal to 110.35 USD) per month were more likely to meet the minimum dietary diversity (OR=2.64; 95%CI: 1.72-4.07). However, all variables with a p-value <0.25 were also entered in the multivariate analysis: child's age, parity, mother's age, mother's occupation, father's education, father's occupation, and household income. The only variable associated with minimum dietary diversity among young children in adjusted models was household income (adjusted OR= 2.27; 95%CI: 1.38-3.72).

Our study found that only 43.54% of young children in Kebumen District met the minimum consuming a diverse diet requirement. This proportion was lower compared to a previous study conducted in Yogyakarta (62.43%) (18), and Indonesia's national survey (46.60%) (19) but higher than an earlier study in Bandung (27%) (13). We used the criteria of fulfilling a minimum of four food groups out of seven food groups consumed by young children aged 6-23 months as recommended by the WHO for infant and young child feeding practices (17). We also set a minimum quantity of 10 grams for each food group to predict adequate micronutrient intake (20). On the other hand, there was no quantity restriction in Yogyakarta (18), and Bandung (13) studies and a different number of total food groups and child age groups in Bandung (13). These variations may explain the different proportions of minimum dietary diversity in young children.

Household income was the only factor linked with a diversified diet in young children. This finding confirms earlier studies showing a positive association between household income and minimum dietary diversity (21). A study in Bangladesh showed that poorer households were more likely to purchase staple foods than animal-source food or micronutrient-rich food (22). Household income may directly affect dietary diversity by increasing family purchasing power on food where higher-income families could feed their children more diverse and nutritious food. Additionally, qualitative ethnographic research reported that wealthier families could have more access to land, purchase seeds, and hire labours for agrobiodiversity, thus increasing the availability of a variety of food to be consumed at the household level (23). There was no significant association between a child's age and dietary diversity in this study. Although some studies found that the variety of food consumed by young children improved with age (2426), this study implied no different food groups consumed across age groups. The quantity, consistency, and frequency of food infants consume should be increased as they age. Therefore, it is recommended to provide them with various food to meet their nutrient needs (27). However, some children may not

achieve this guideline due to limited household food availability or poor feeding practices.

The mother's and father's education levels were unrelated to the child's dietary diversity. The results were in line with existing studies (28,29). Mothers with sufficient knowledge were more likely to practice good dietary diversity (7,30). Meanwhile, fathers' knowledge and involvement were also significantly associated with child dietary diversity –(30,31). Our finding suggests that high educational attainment does not always mirror adequate nutrition knowledge. Not only educated parents are more likely to be well-informed about child feeding practices. Information on feeding the children with varied food could be obtained from other resources such as health centres and mass media. For this reason, it is vital to strengthen nutrition education programs and make the information publicly available, targeting mothers and fathers or other family members.

One of the limitations of this study was using a cross-sectional design where causality between variables cannot be concluded. In addition, we did not include variables such as child illness and parental knowledge that might have influenced child dietary diversity. Nonetheless, this study indicates that household economic status is the crucial cause of poor dietary diversity in infants and young children. By referring to Kebumen's potency in food crops (rice and soybeans) (32) and livestock (beef cattle) (32), governments need to initiate nutrition-sensitive agriculture programs to improve food access and consumption for all communities. At the same time, household-level interventions such as home gardening, women empowerment, and income-generating activities should be developed and integrated with existing nutrition programs.

CONCLUSION AND RECOMMENDATIONS

Identifying the leading causes of child dietary diversity is particularly important because it may vary across different settings. Furthermore, given that household income is the key factor associated with minimum dietary diversity among young children, strengthening nutrition-sensitive programs is urgent for governments and stakeholders. Therefore, it becomes critical for larger-scale studies and formative research to be conducted before program planning and implementation.

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