



Anthropometry as Indicator of the Family Economic Condition

Antropometri Keluarga sebagai Indikator Kondisi Ekonomi Keluarga

Lely Wahyuniar^{1*}, Bambang Sutrisna², Abas B. Djauhari³, Ratna Djuwita⁴

¹Sekolah Tinggi Ilmu Kesehatan (STIKKES) Kuningan, Jawa Barat

²Departemen Epidemiologi, Fakultas Kesehatan Masyarakat Universitas Indonesia

³Puslitbang Gizi Kementerian Kesehatan RI

⁴Departemen Epidemiologi, Fakultas Kesehatan Masyarakat Universitas Indonesia

*Email korespondensi: wahyuniarl@un aids.org

ARTICLE INFO

Article History:

Received Aug, 10th, 2020

Revised form Nov, 17th, 2020

Accepted Des, 21st, 2020

Published online Des, 31st, 2020

Keywords:

Family anthropometry;
capita expenditure;
economic condition;

Kata Kunci:

*Antropometri keluarga;
pengeluaran kapita;
kondisi ekonomi;*

ABSTRACT

The prevalence of Indonesian population experiencing hunger reaches 20.1%. Anthropometry is considered capable to measure socio-economic conditions because it is directly related to the financial purchasing power of food that affects intake patterns. The aim of this study is to test the reliability of the family anthropometry using Height for Age Z Score (HAZ) index and Body Mass Index Z Score (BMIZ) as indicator of the family economic condition. This cross-sectional study design located in Astanajapura (Rural) and Kesambi (Urban) Subdistrict, Cirebon, West Java. The stratification sampling method was held to obtain samples from all main family members of the selected households (1,999 persons) from 405 families. Data analysis used ROC method to obtain the cut-off points of anthropometry index, validity test for sensitivity and specificity, and Kappa test for the reliability test. The findings indicate that the family HAZ anthropometry index could represent the family economic condition better than the BMIZ and it is reliable to become an indicator for the economic condition both in rural and urban areas. There is a positive correlation between consumption per capita and the HAZ index where the higher the family HAZ z score is, the higher the family consumption per capita. The method can be used to measure the poor prevalence in macro level and select the target of poor families in the micro level using the family HAZ anthropometry index. It is recommended to use HAZ index to estimate prevalence of poor families within the micro level, but the process must not include children under two years old due to the technical obstacle during measurement and other substance factors. Further research is needed to produce a more accurate method in using the family anthropometry as an indicator of family economic condition.

ABSTRAK

Prevalensi penduduk Indonesia yang mengalami kelaparan mencapai 20,1%. Antropometri dianggap mampu merefleksikan kondisi sosial-ekonomi karena berkaitan langsung dengan daya beli finansial makanan yang memengaruhi pola asupan. Penelitian ini bertujuan mempelajari reabilitas indeks antropometri TB/U keluarga dan IMT/U keluarga sebagai indikator kondisi ekonomi keluarga. Penelitian potong-lintang ini berlokasi di Kecamatan Astanajapura dan Kesambi, Cirebon, Jawa Barat. Metode stratifikasi sampling digunakan untuk mengambil sampel dari seluruh anggota keluarga inti rumah tangga terpilih (1.999 orang) dari 405 keluarga. Analisis data menggunakan metode ROC untuk mengetahui titik potong indeks antropometri, uji validitas untuk menilai sensitivitas dan spesifisitas dan uji Kappa untuk reliabilitas. Hasil analisis menunjukkan bahwa indeks antropometri TB/U keluarga lebih dapat menggambarkan kondisi ekonomi keluarga melalui pengeluaran per kapita keluarga dibandingkan dengan IMT/U keluarga dan andal sebagai indikator kondisi ekonomi keluarga. Indeks antropometri keluarga minus baduta dapat menggambarkan kondisi ekonomi keluarga di pedesaan dan perkotaan. Terdapat hubungan positif antara pengeluaran per kapita dengan indeks TB/U, di mana semakin tinggi nilai z score B/U keluarga, semakin tinggi pengeluaran per kapita keluarga tersebut. Hasil ini dapat digunakan untuk perhitungan prevalensi kemiskinan di tingkat makro dan seleksi target keluarga miskin di tingkat

mikro. Perlu adanya indeks antropometri TB/U untuk mengestimasi besaran keluarga miskin di tingkat mikro, namun sebaiknya tidak mengikutsertakan baduta sebagai unit analisis. Penelitian lebih lanjut diperlukan untuk menghasilkan metode yang lebih akurat dalam hal penggunaan antropometri keluarga sebagai indikator kondisi ekonomi masyarakat.

INTRODUCTION

Malnutrition, hunger and poverty are still major problems in developing countries.¹ UNICEF said that around 513.9 million people in Asia still experience hunger and malnutrition.² In Indonesia itself, according to data from the Global Hunger Index (GHI) in 2019, Indonesia is still ranked 70 with a percentage of 20.1% and is in the serious category and 313,232 thousand Indonesians are still below the food poverty line range.^{3,4} According to the Central Statistics Agency, the percentage of poor people in Indonesia in 2019 was 9.41% and in 2018 it was 9.81%. The percentage of poor people in urban areas in 2018 was 6.89% and decreased to 6.69% in 2019. Likewise, the percentage of poor people in rural areas in 2018 was 13.10%, falling to 12.85% in 2019.³

Economic conditions have a direct impact on nutritional status, which is linked to food intake and infectious diseases. People with poor economic conditions generally have poor nutritional status as well.⁵ The composition of household expenditure can be an indicator of the economic well-being of the population, assuming that an increase in the percentage of expenditure on food to total expenditure indicates a decline in the economic level of the population. In other words, the greater the percentage of expenditure on food, the poorer the population.⁶ Therefore, socio-economic

conditions are closely related to the financial purchasing power of food so that it affects the nutritional status of individuals and families.

If poverty is assumed to be the lack of fulfillment of basic needs, then stunting is an appropriate indicator. Stunting is commonly used as an indicator of the health situation in the population, especially in relation to poverty and the prevalence of chronic diseases. The high prevalence of stunting is often related to economic conditions.^{1,7} Average Height according to Age (TB/U) and Body Mass Index (BMI) of a population as well related to income.⁸ Based on a study by Aziseh and Yao, family income has a positive correlation with body mass index and height. Families with upper middle class income tend to be at risk of experiencing an increase in BMI while families with lower middle class income are at risk of experiencing a decrease in BMI.⁹

Poverty is largely reflected as a measure of economic conditions at both the individual and household level.^{10,11} The Central Statistics Agency uses poverty as an indicator of the economic condition of the family, by classifying the economic status of families based on per capita expenditure with a poverty line cut-off.¹² A family is said to be poor if it has an average expenditure per capita below the poverty line.¹³ The anthropometric index is the right indicator to measure the phenomenon of poverty, so a

policy is needed to use anthropometry as a social tool to assess nutritional status, health and economic conditions and their impacts.¹⁴ The results of the anthropometric indicator assessment are able to reflect economic conditions because they can identify groups with certain economic status.^{15,16}

Previous research from Haryanto and Umar proved that stunting in children under five can be an indicator of the economic condition of the family. Stunting in toddlers is formed simultaneously as a result of the interaction of various components in household economic conditions such as per capita expenditure for food consumption, education level and mother's employment status, exclusive breastfeeding, sanitation and environmental hygiene.¹⁷ Family economic conditions directly affect the fulfillment of children's nutritional status and the ability to access health services.¹⁸

However, the anthropometric approach using the age group under five as an economic indicator still has weaknesses because the nutritional status of children alone does not always reflect what happens in the household.^{19,20} There are still many other factors that influence such as birth weight, breastfeeding practices, maternal nutritional status and interaction patterns, also related to early childhood growth.²¹ Previous research stated that there was a positive bias in low-income areas, where the nutritional status of children was influenced by parenting patterns and food distribution in the family.²² Thus, the anthropometric status of certain age groups

cannot be used as an indicator of household economic conditions. Households can be used as a unit of analysis because there is a proven relationship between households and socio-economic conditions.^{23,24}

Health and nutrition problems are closely related to lack of access to food, neglected care for mothers and children, lack of health services and an unhealthy environment.¹ The difference in economy and lifestyle is significant in rural and urban areas, causing differences in nutritional status between the two.²⁵ The prevalence of nutrition is somewhat higher in rural than urban areas which is typical in developing countries.²³ Households in urban areas have more access to adequate sanitation and clean water as well as good parental education, thus supporting the creation of a better nutritional status. The low prevalence of stunting (TB/U) was consistently higher in rural areas, which indicates a difference in food intake in rural and urban areas.²⁶ Better nutritional status in urban areas may be due to the cumulative effect of a range of socio-economic conditions such as education, maternal status, access to sanitation and clean water, as well as family economic conditions, which in turn lead to better practices of maternal and child care.¹⁶ Therefore, this study aims to determine the reliability of family anthropometry as an indicator of family economic conditions and to develop a more objective tool for identifying poor families.

MATERIAL AND METHOD

This research with cross-sectional design is located in Kesambi District, Cirebon City and Astanajapura District, Cirebon Regency, West Java. The sample came from all selected family members (1,999 people) from 405 families. The sampling technique used stratified random sampling based on data from local cadres or village heads with 205 families in Astanajapura District and 200 families in Kesambi District. The sample is grouped into all families and families with special conditions. The group of all families consists of all members of the nuclear family (minus baduta, batuta, toddlers and only mothers) with a total sample of 405 families. In this study, maternal anthropometry was included in the family anthropometric measurement because the mother's nutritional status had an effect on the nutritional status of children and reflected the economic conditions of the household. A study from Noviana and Fitriahadi states that mothers who are stunted are 1.36 times at risk of giving birth to stunted children, and mothers who are stunted 47.8% of them come from the middle to lower economic class.^{27,28}

Meanwhile, families with special conditions are families who do not have children under five and families who have children under five. This group is called special because the presence or absence of children under five will be examined whether there is a reliable anthropometric measurement of children under five on the economic condition of the family, considering that in previous research from

Aryastami, it was stated that the determinants of nutritional status are quite complex and do not always reflect what happens in the household.²⁰

The dependent variable of this study is the per capita family expenditure as an indicator of economic conditions measured through interviews with a questionnaire containing questions related to food and non-food expenditure in the last week. The cut-off indicator used to describe low economic conditions is 40% of per capita expenditure based on the classification from the World Bank in 2018.²⁹ Meanwhile, the independent variable is measured based on the family anthropometric index using the height index according to age (height/age) and the body mass index according to age (BMI/U) with z scores.

For the selection of the anthropometric index, the Coefficient of Variation (CV) calculation is performed. The data analysis was carried out in two stages. First, the T test analysis was conducted to determine the difference in the mean z score of TB/U between families in the expenditure group above 40% and below 40%; and analysis of the Receiving Operating Curve (ROC) method to determine the anthropometric cut-off using optimal sensitivity and specificity values. Then the Kappa test is carried out which plays a role in determining the reliability of the anthropometric index of various family groups with different family member compositions as an indicator of the economic condition of the family (per capita expenditure) by using the cut point obtained from the ROC method. The standard value of Kappa in this

study is determined to be at least 0.15, so it can be said that the anthropometry of the family group is quite reliable as an economic indicator, by selecting the highest Kappa value among the four groups being compared.

Meanwhile, the cutoff point value is used to determine the Prevalence Odds Ratio (POR) value. The POR value serves to determine the relationship between family anthropometric variables (TB/U in z score) and family per capita expenditure. The mean value of z score TB/U and BMI/U was obtained by adding up all z scores of nuclear family members divided by the number of available family members according to the family group in the analysis. According to research from Guevara, states that the average z score of family members (including mothers) represents the level of malnutrition in the family. Anthropometric measurements to determine nutritional status apply to all levels of life, from children to adults.³⁰ The validity test was conducted to determine the sensitivity and specificity values and the Kappa test to determine reliability.

RESULTS

In Table 1, the results of the T test showed a significant difference in the mean z score of TB/U in most family groups except for the mother group. While the mean z score of BMI/U was found to be significant in all family groups. In rural areas, the average TB/U of families minus baduta and batuta has a significant difference based on the level of expenditure. Meanwhile, in urban areas there are no significant differences between family groups.

The mean value of z score TB/U is lower for families in the expenditure group 40% compared to those above the expenditure group 40%. The cut-off point for the 40% per capita expenditure group in the combined area (rural and urban) is IDR 490,665.00; rural only Rp. 354,978.00; and only urban Rp. 1,010,019.00.

The variable TB/U has small variations, while the BMI/U variable has large variations. Based on the Coefficient of Variation (COV) value, the TB/U of families whose expenditure was below 40% was not too different from those whose expenditure was above 40%, while for BMI/U the COV value was greater in the expenditure group above 40% than in the expenditure group below 40%. In addition, the possibility of false positives and false negatives will be greater in determining the point of intersection of the average z family anthropometric score as an indicator of the economic condition of the family, so the validity is also lower. Therefore, in the next analysis only family TB/U would be selected because it had a smaller COV.

The results of the analysis in Table 1 show that the ROC, sensitivity, specificity, POR and Kappa values were higher in the minus baduta and minus batuta family groups so that it can be said that these two groups are the most reliable indicators of economic conditions in rural areas and urban.

The sensitivity value in this reliability test aims to determine how much influence the BMI in each sample group has on per capita expenditure in urban and rural areas. It can be

seen that the highest sensitivity value is found in the minus baduta and batuta group (61), which means that the anthropometric measurements of the minus baduta and batuta family groups are the most sensitive (able to measure what should be measured) to changes in per capita family expenditure.

Next is the specificity value which is theoretically able to distinguish anthropometry from which sample group is truly reliable in determining the economic conditions of the family. Based on the analysis, it is known that the family anthropometry of the minus baduta and batuta groups also has the highest specificity (71), which means that the minus baduta and batuta groups are indeed reliable in determining the economic condition of the family when compared to other sample groups.

Meanwhile, in rural areas, the most reliable family groups are families minus toddlers, families minus baduta and families minus batuta (see Table 2). The minus baduta family has a significant T test value (0.03) and the Kappa value is high enough that it is

considered to represent the family group to describe the economic condition of the family. The minus batuta family was not selected for operational reasons, namely it was difficult to measure batuta in the field. Meanwhile, the minus five-year-old group had a high Kappa value but the T test was not significant so it was not chosen either. So, it can be said that the minus baduta family is a reliable indicator to describe the economic condition of the family in rural areas.

Table 2 also shows that for urban areas, the proportion of families with low economic conditions, which is close to 40%, is a family minus children under five. Families minus children under five also have quite high ROC values, sensitivity, specificity, POR, Kappa and Percent Agreement. However, the Kappa value for families minus baduta is greater than for other groups, and the proportion of poverty that is close to the 40% cut-off point is for families minus toddlers.

Table 1. Summary of Reliability Test Results in Urban and Rural Areas for All Families

Sample Group	<i>p</i>	The Intersection of Rural and Urban Areas	ROC	Sensitivity	Specificity	POR	Kappa	Proportion of Poor Families (%)
All Family								
All members	0.00	-1.4	0.68	59	68	2.77	0.27	44.92
Minus toddlers	0.00	-1.7	0.678	56	69	3.31	0.284	35.24
Minus baduta	0.00	-1.5	0.700	61	71	3.6	0.303	43.87
Minus batuta	0.00	-1.5	0.698	61	71	3.9	0.322	42.11
Only mother	0.07	-1.7	0.552	57	55	1.66	0.120	47.04

Source: Primary Data, 2020

Table 2. Summary of Reliability Test Results in Rural and Urban Areas for All Families

Sample Group	<i>p</i>	The Intersection of Rural and Urban Areas	ROC	Sensitivity	Specificity	POR	Kappa	Proportion of Poor Families (%)
Rural								
All Family								
All members	0.12	-2.0	0.538	41.46	73.98	2.01	0.16	33.08
Minus toddlers	0.08	-2.0	0.572	51.22	65.85	2.03	0.17	40.91
Minus baduta	0.03	-2.0	0.546	46.34	67.48	1.79	0.139	38.8
Minus batuta	0.02	-2.0	0.558	45.12	69.92	1.91	0.153	37.4
Only mother	0.66	-2.0	0.59	37.8	79.67	2.38	0.185	30.43
Urban								
All Family								
All members	0.29	-1.2	0.597	57.5	62.5	2.01	0.195	44.92
Minus toddlers	0.2	-1.3	0.579	48.75	65.83	2.03	0.146	39.98
Minus baduta	0.19	-1.3	0.599	47.5	70	1.79	0.177	36.65
Minus batuta	0.26	-1.2	0.603	60	61.67	1.91	0.21	47.10
Only mother	0.7	-1.6	0.528	53.75	58.33	2.38	0.118	46.44

Source: Primary Data, 2020

Whereas for families with special conditions, only toddlers were selected because they had the highest Kappa value (Table 3). However, in the field you will also find families who do not have toddlers, so they cannot be used as indicators to represent the condition of the family in the community. Therefore, groups of all families in this case the minus baduta and minus batuta families will be selected to represent reliable families to describe the economic conditions of families in rural and urban areas. Then for families with special conditions in rural areas, even though the kappa value obtained families with toddlers quite high compared to

other family groups, but the value of the T test is not significant. So that no family with special conditions is chosen to represent the family group in describing the economic conditions in rural areas (Table 4).

Furthermore, for families with special conditions in urban areas, only toddlers are reliable enough as an indicator of the economic condition of the family (Table 5). However, on the grounds that there are families who do not have children under five who are entitled to receive assistance, the only group of children under five was not selected to represent the family group as an economic condition.

Table 3. Summary of Reliability Test Results in Rural and Urban Areas for Families with Special Conditions

Sample Group	<i>p</i>	The Intersection of Rural and Urban Areas	ROC	Sensitivity	Specificity	POR	Kappa	Proportion of Poor Families (%)
Families With Special Conditions								
Do Not Have Toddlers	0.00	-1.7	0.718	66	76	4.96	0.314	26.90
Have a Toddler								
All	0.00	-1.4	0.67	57	69	2.85	0.254	49.12
Minus Toddler	0.00	-1.6	0.678	57	68	2.7	0.244	44.20
Only Toddlers	0.00	-1.0	0.684	63	70	3.55	0.306	48.37

Source: Primary Data, 2020

Table 4. Summary of Reliability Test Results in Rural Areas for Families with Special Conditions

Sample Group	<i>p</i>	The Intersection of Rural and Urban Areas	ROC	Sensitivity	Specificity	POR	Kappa	Proportion of Poor Families (%)
Families With Special Conditions								
Do Not Have Toddlers	0.58	-1.5	0.483	60	75	0.62	0.05	71.78
Have a Toddler								
All	0.11	-2.0	0.56	40.26	74.75	1.99	0.155	51.05
Minus Toddler	0.09	-1.8	0.585	58.44	56.57	1.76	0.138	31.83
Only Toddlers	0.11	-1.5	0.539	55.84	57.58	1.72	0.133	48.66

Source: Primary Data, 2020

Table 5. Summary of Reliability Test Results in Urban Areas for Families with Special Conditions

Sample Group	<i>p</i>	The Intersection of Rural and Urban Areas	ROC	Sensitivity	Specificity	POR	Kappa	Proportion of Poor Families (%)
Families With Special Conditions								
Do Not Have Toddlers	0.21	-1.3	0.515	44.12	60	0.62	0.041	42.25
Have a Toddler								
All	0.67	-1.2	0.661	68.10	58.17	1.99	0.33	34.59
Minus Toddler	0.54	-1.4	0.628	50	74.29	1.76	0.247	38.75
Only Toddlers	0.98	-0.8	0.679	52.17	80	1.72	0.332	33.18

Source: Primary Data, 2020

DISCUSSION

A. Reliability of the Family Anthropometry Group as an Indicator of the Economic Condition of the Family

Anthropometry of Height by Age (TB/U) is the most sensitive indicator that reflects changes in the family economy. Broadly speaking, anthropometry describes the nutritional status of individuals and families where nutritional status is related to food intake which is influenced by purchasing

power or family financial conditions.^{15,31}

According to a study from Graguber, height is a sensitive biological indicator in reflecting on socio-economic conditions because the role of adequate dietary nutrition, which is influenced by household expenditure, directly affects physical growth.³² The study of Tyrrel, et al stated that height has a positive correlation with education level and income.⁸

The results showed that there were

differences in the anthropometric reliability of TB/U for all families with the anthropometric reliability of TB/U families with special conditions. In the TB/U index group for all families, the TB/U index for families minus baduta and the TB/U index for families minus batuta were selected as the most reliable families as the economic condition of the family both in combined areas and only rural or urban areas. Meanwhile, in the special condition group, families with children under five were the most reliable. However, for the purpose of screening families with low economic conditions, all families were selected compared to families with special conditions. This is due to the fact that not all families have children under five in the field. So, it was decided to select the intersection point of the TB/U index from the group of all families represented by the minus baduta families. Baduta children usually have a good nutritional status so that it cannot be used as an indicator. If stunting and wasting occur in baduta, it is generally caused by mother's behavior or biological characteristics of the child under the mother's control, such as breastfeeding practices and birth weight.²¹ In the group with low economic conditions, adequate duration of breastfeeding is a factor preventing stunting.³³

Although the TB/U index of minus batuta families also has good reliability and consistent scores in combined areas as well as in separate rural and urban areas, but the very

small proportion of batuta in the community may be due to the participation of young families in the family planning program. So, not including batuta as an indicator will not have a big impact on the intersection point (the same effect as removing baduta).

There is a theory of positive deviance (positive deviance) which is defined as an infant or child who grows adequately in a poor family and or community, where most of the babies or children have growth disorders. In other words, the physical growth of the child in this positive deviation is an indicator of good health, normal cognitive abilities and satisfying social adjustment.²² From the results of the study, it is recommended not to include baduta in the measurement because the measurement on baduta has several weaknesses such as inaccuracy due to the nature of the baduta is not cooperative when measured, and there are other factors that influence such as food distribution patterns in the family, parenting, socio-culture, birth weight and genetic factors.³¹

The measurement stated to be the least accurate was the length of the baby, as it was impractical and difficult to do in the field. Measuring baby length generally uses length-board only by trained personnel.³⁴ By removing baduta children or including children under five in the analysis, it will be able to better describe the condition of nutritional status which can also be used to describe socio-economic conditions.

Based on the results of the analysis, the Kappa Test values obtained in this study are still included in the poor agreement (<0.4). This can be caused by many factors that affect aspects of nutrition such as biological, socio-cultural, economic and political factors.

B. Proportion of Families with Low Economic Conditions using the Cutpoint for Family Height/Age

The results of this study can be used for the purposes of screening families with low economic conditions at the family level as well as finding the prevalence of families with low economic conditions in the community. There is a difference in the proportion of the prevalence of families with low economic conditions in the combined area, only rural and only urban. The results of the analysis in rural and urban areas are based on the intersection of the anthropometric index minus baduta families which was found to be the most reliable indicator of economic conditions. By using the intersection point at -2 SD TB/U families minus baduta, it is known that in the urban area of Cirebon the number of families with low economic conditions is 37% while in rural areas it is 39%.

According to the central statistics agency regarding the calculation of the poor at the district or city level, the poorer a person is, the higher the proportion of spending on food. Based on this calculation method, it was obtained that the number of poor people

in 2018 in Cirebon Regency was 10.7% and Cirebon City was 8.88%.¹² This approach is based on the concept of minimum standards for the adequacy of food required by one person, which is equivalent to 2,150 calories per person per day, as recommended by Minister of Health Regulation No. 73 of 2014.³⁵ Since 1993, the currency value (rupiah) of 2,150 calories equivalent to food needs is considered sufficient, namely the amount of food consumption is calculated to determine the minimum need for food consumption expenditure. In the central statistics agency measure this minimum expenditure on food and non-food items is used to define the poverty line.¹³ This approach has a weakness, namely that there is generalization for different communities with different food patterns and ingredients. Dietary differences for different societies will have implications for the price and quality of food. The monetary value for a certain amount of energy (eg 2,100 calories) from the lowest price rice has a lower value than the same caloric value of the combination of rice, side dishes and vegetables.³⁶ Other difficulties that arise are the determination of the number of food and non-food commodities and the varying prices between regions. Family anthropometry using height for age is considered more objective as an indicator of the economic condition of the family because the head of the family cannot manipulate the data, where measurements can only be done

by officers. Identification of families with low economic conditions is also easier and can be done directly in the field using a scoring system. This method is seen as more objective than simply using a questionnaire that contains criteria for poverty conditions to the subject because the results will be biased.

C. Research Limitations

This study has limitations, namely the need for a larger and more heterogeneous sample in urban areas so that the intersection point of the anthropometric index of family TB/U is more accurate; the development of a more comprehensive analytical model to predict the economic condition of the family has not been carried out; as well as the tools produced in this study have never been applied in the field so further trials are needed for the use of the family TB/U scoring system in the selection of target families with low economic conditions. In this study, the anthropometric reference data used were WHO anthropometric data where reference data for individuals aged 18 years and over were not available.

CONCLUSION AND RECOMMENDATION

The anthropometric index of family height/age can better describe the economic condition of the family than the family BMI/age anthropometric index. The cut-off point for the TB/U family index minus baduta for target selection of families with a low economic condition in rural areas is lower (-1.5 SD) than in

urban areas (-2 SD), which means that families minus baduta with low economic conditions in rural areas has lower anthropometric measurement results compared to minus baduta families with low economic conditions in urban areas. The prevalence of poverty in rural areas with the index cut-off point for family height/age was 37% and 39% in urban areas. It can be said that the minus baduta family anthropometric index has proven to be reliable as an indicator of the economic condition of families both in rural and urban areas. Therefore, the anthropometric index of family TB/U minus baduta can be used to estimate the proportion of families with low economic conditions at the macro level and target selection of families with low economic conditions at the micro level. There is a need for socialization and policy advocacy to related institutions to start using the anthropometric index TB/U families minus baduta as an estimate of the economic condition of the family and the selection of targets for nutrition and health assistance programs for families with low economic levels. The development of a nutritional surveillance system that is more effective in terms of family anthropometric measurements is also needed so that it can provide more objective data as a means of monitoring and evaluating nutrition programs.

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