

# FOOD CONSUMPTION AND NUTRITIONAL STATUS OF INDIGENOUS PEOPLE AT THE LOW LINE OF MAHAKAM RIVER IN EAST KALIMANTAN: SOCIAL, CULTURE, AND ECONOMIC APPROACH

Ahmad SUHAIMI<sup>1</sup>, Zarmiyeni<sup>2</sup>

<sup>1</sup> Department of Agribusiness, Higher Education of Agriculture STIPER Amuntai

<sup>2</sup> Department of Agrotechnology, Higher Education of Agriculture STIPER Amuntai  
Jl.Bihman Villa No.07B, Amuntai, Kalimantan Selatan, Indonesia

Email: [ahmad99ec@gmail.com](mailto:ahmad99ec@gmail.com)

## ABSTRACT

The research aimed to examine food consumption and nutritional status in the household of indigenous people “Dayak” which resided at the low line of Mahakam river, and to conduct the study on social, culture, and economic factors which affected the food consumption. The research result showed average energy and protein consumption per person was 2.000,7 kcal and 71,0 gram which the actual energy consumption level was 100,04 % and actual protein consumption level was 92,54 %. The value of actual energy consumption level was in the sufficient category (80 – 99% of RDA) and actual protein consumption level was in the good category (>100% of RDA). When the nutritional status of children under five was related to energy consumption level of household, the prevalence of malnutrition was in the low and deficit category for energy consumption level of household; and the good nutritional status tended to be in the sufficient and good category for energy consumption level of household. The estimation was also supported by the Pearson Correlation of  $p= 0.0001$  and  $r= 0.692$ . It could be understood their was highly significant relationship of nutritional status of children under five and the energy consumption level of household. The socio-culture, economic factors which affected food consumption of household were : nutritional awareness of mother ( $p=0.016$ ), food preference ( $p=0.023$ ), food avoidance ( $p= 0.000$ ), inequality of member in the household ( $p= 0.000$ ), and income level of household ( $p= 0.001$ ).

Keywords : Food Consumption, Food Taboo, Nutritional Status, Indigenous People,

## INTRODUCTION

### Acknowledgement

Food consumption disparity within individual, community, as well as between rural and urban have obviously been known in Indonesia (NSAI, 2017). Its disparity was caused by poverty, low level in education, and the myth related to food eating taboo, (Rimbawan, 2004). Insufficient

food quantity and its quality consumption within part of community will affect low level degree of health and so is national productivity.

Food consumption disparity occurred in East Kalimantan in term of per capita and per day of calorie and nutrition consumption by city residence i.e.: 1.926.92 kcal and 58.72 gram which is very different from village population i.e.: 1.879.17 kcal and 51.82 gram (NSAI, 2017). Decreasing in food consumption in some parts of Kutai Kertanegara regency, East Kalimantan where indigenous people live due to food resource availability in forest and waters territorial was increasingly diminished since legal deforestation, widespread in oil palm plantation, and coal mining industry. This condition causes under-five-year-old baby's malnutrition as a critical point to food family endurance. Meyer (2009), unfortunately there are worse things such as indigenous people's food diet which is said harmful to their health and religious prohibition.

Indigenous people in Kutai Kertanegara regency is Dayaks who has various unique social-cultures and enjoys living along Mahakam river. The river is utilized as economic activities (trade), means of transportation, bestial nutrition need such as many kinds of fish. Mahakam where its current from forest in upper end is a vital life.

The indigenous people's habit living alongside the river performs different household food consumption, consumption pattern, eating habit and eating prohibition compared to people who do not live alongside the river. It is obviously different, Dayaks living alongside the Mahakam consumes more fresh water fishes, what is more they eat fish not only for nutritious need but also social status.

### **Research Aim**

This research aims to recognize the rate of energy consumption as well as nutritious status inside indigenous people household who live alongside Mahakam river, social, cultural, and economic factors related to the household food consumption.

## **RESEARCH METHOD**

The method applied in this research is the cross sectional technique and in-depth study through the combination between quantitative and qualitative analysis. Indigenous people "Dayaks" is the unit analysis who live alongside Mahakam river. Research was undertaken in Kutai Kertanegara regency, East Kalimantan, started from September 2017 to February 2018.

### **Population and Samples**

The selection for subregency and villages as well as households are conducted by simple random sampling from a number of samples which are thought to be able to represent indigenous population who live alongside Mahakam river. In order to conduct in-depth study by purposive rational, the writer chose households by regarding social economy and health (family, income rate, under-five-year baby's nutritious status) (see table 1)

### **Data Collecting Procedure**

This kind of data collecting includes in: (1) respondent identity (name, number in family card). (2) social factors (family size, householder's education, house wife's knowledge towards

nutrition), cultural factors (food preference and food prohibition), economic factors (family income, food consumption).

Determining family food consumption in qualitative and quantitative way describes its kinds, frequency as well as the amount of food which are consumed by using 24 hour food recall method. The measure for infant nutrition status is undertaken with anthropometry, measuring the infant weight against its age . By assuming that the infant weight while growing up is unbalanced shows the weight per age index describes current nutritional status (California Department of Health Care Services, 2016).

Qualitative data and information which influence food consumption and nutritional status was collected by in-depth study.

Table 1. Research Sample Spreading

Location	Subregency	Village	Population	Household (Samples)
Kutai Kertanegara	Tenggarong	Loa Ulung	410	41 (3)*
Regency	Seberang	Loa Raya	335	34 (3)*
		Loa Pari	327	33 (3)*
		Perjiwa	339	34 (3)*
<b>Total</b>				<b>142 (24)*</b>

Note:(3)\*in-depth study

### Data Analysis

Food consumption data (24 hour recall) obtained from this research was made and analyzed by World Food, and compared with Recommended Dietary Allowanced (RDA) by expectancy food pattern score. Infant anthropometry data that is obtained if compared with WHO and NCHS standard to reach z-score by the aid of EpiInfo 7.2.2.6 program indicator used based on BB/U with cut of point: mal nutrition (if <-3SD, insufficient nutrition (if 3.00 to -2.00 SD), well nutrition (if -2.00 to +2.00 SD), better nutrition (if >2.00SD).

Social cultural and economic factors which related to and influence food consumption as well as nutritional status were descriptively analyzed. Then, the data is analyzed through three stages i.e.: univariate, bivariate and multivariate by utilizing Statistical Product and Service Solution program.

## RESULT

### Energy and Protein Consumption of Household

The result of 24 hour recall from households shows the average in energy and protein consumption are 2.000.7 kcal and 71.0 gram. Energy rate is at 80-99% (moderate) of nutrition rate and protein consumption rate is at good category, that is >100% nutrition rate as seen on table 2 below.

Table 2. Respondent Distribution Based on the Category of Energy and Nutritional Consumption Rate along Mahakam River

No.	Category	Number of Households (%)			
		Energy Consumption (% 2.150 kcal)*		Protein Consumption (% 57 gram)*	
		N	%	N	%
1.	Good : $\geq 100\%$ RDA	110	77.5	123	86,6
2.	Enough : 80 – 99% RDA	24	16.9	14	9,9
3.	Less : 70 – 80% RDA	7	4.9	3	2,1
4.	Least : $< 70\%$ RDA	1	0.7	2	1,4
		142	100	142	100

Source : Analysis Output, 2018, \* NWFN XI (2016)

### Food Consumption Analysis Based on Desirable Dietary Pattern (DDP)

The situation of consumption and food diversity at the riverside area shows moderate condition i.e.: 2.000.7 kcal. or its achievement of 92.54% from Recommended Dietary Allowanced (RDA) with only 85.6 DDP.

### Any Factor Related to Household Consumption

Food knowledge and mother’s nutrition are social factors that relates to food consumption, however family size and household’s education does not affect significantly. Though there are five cultural factors as predictors against household food consumption however only three that can influence significantly i.e.: food stuff preference, belief in tradition, and food priority. Income per capita as economic factor affect significantly against household food consumption, as seen on table 3 below:

Table 3. Multivariate Analysis to Social-Cultural Factor and Economic Affect on Indigenous Household Food Consumption

No	Economic, Cultural, and Social Factors	Coefisien		
		$\beta$	t	p
1.	Social Factors:			
	a. Family size	-21.278	-1.214	0.227
	b. Householder’s education	9.724	0.908	0.365
	c. Mother’s nutrition and food knowledge	6.231	2.435	0.016
2.	Cultural Factor:			
	a. Preference	4.430	2.305	0.023
	b. Food Abstinance:			
	- Belief in Tradition	13.688	3,776	0.000
	- Status in Family	23.565	7,298	0.000
	- Belief in Health-Illness	6.679	0.148	0.882
	- Emotional Association	39.227	1,813	0.074
3.	Economic Factors:			
	a. Householder’s income per capita	-0.002	-3.550	0.001

Source: Research Output, 2018

### Nutritional Status:

Among those of 142 under five year babies at households along riverside there was 74,7% reached well nutritious status, 19,7% less nutritious, and 4,9% mal nutritious but one baby (0,7%) is better nutritious status. Based on cohorts, bad nutritious for under five year babies between 24 to 59 months or over 23 months. All cohorts suffered from less nutritious food, while

the baby that has more nutritious food only for 24-35 months. See the result of research at table 4 below:

**Table 4. Nutritional Status Distribution Of Under-Five-Year-Old Baby Based On Age Group Along The Mahakam Riverside**

Nutritional Status	Age Groups (Months)											
	6-11		12-23		24-35		36-47		48-59		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Malnutrition	0	0.0	0	0.0	3	2.1	3	2.1	1	0.7	7	4.9
Less Nutrition	2	1.4	12	8.5	7	4.9	1	0.7	6	4.2	28	19.7
Good Nutrition	22	15.5	37	26.1	27	19.0	15	10.6	5	3.5	106	74.7
More Nutrition	0	0.0	0	0.0	1	0.7	0	0.0	0	0.0	1	0.7
Total	23	16.2	47	33.1	41	28.9	19	13.4	12	8.5	142	100

Source: The Result of Research, 2018

By explaining the 6-11 month age groups is found 1,4% Protein Energy Malnutrition (PEM) but after 12 months it could be seen its maximal trend towards PEM. If the baby’s nutritional status related to household’s energy consumption, the result of research shows the household with the rate within well energy consumption category is not found the under-five-year baby that suffered from insufficient nutrition even who suffered from bad nutrition. At this level the under-five year baby whose good nutrition status is 15.5% and more nutrition status was 0.7%.

No under-five-year-old baby that suffered from mal nutrition and more nutritional status at the category of household with moderate energy consumption rate, but there find 19,0% under-five-year-old baby suffers from insufficient nutritional. Among four energy consumption categories rate at moderate category, there find the most good nutritional status i.e.: 58,5%.

There find 4,2% under-five-year-old babies that suffers from mal nutrition consumption status rate and 1,4% “minus” nutrition, but not for babies with good and more nutrition at household with less/insufficient category. Among four categories at energy consumption rate at “minus” category, the most under-five-year-old baby whose bad nutrition status, i.e.: 4,2%.

The household within deficit energy consumption rate is a single baby (0,7%) with bad nutrition, while insufficient (not nutritious baby), good nutrition, and over nutritious (exceeding nutrition) are not really at this level, as shown on table 5.

**Table 5. Baby Nutrition Status Based on Energy Consumption Level Category**

Nutritious Status	Energy Consumption Level									
	Good		Moderate		Less		Deficit		Total	
	> 100% RDA		80-99% RDA		70-80% RDA		<70% RDA		N	%
	N	%	N	%	N	%	N	%	N	%
Over Nutritious	1	0.7	0	0	0	0	0	0	1	0.7
Well Nutritious	23	15.5	83	58.5	0	0	0	0	106	75
Less Nutritious	0	0	26	19	2	1.4	0	0	28	20
Mal Nutritious	0	0	0	0	6	4.2	1	0.7	7	4.9
Total	24	16.2	109	77.5	8	5.6	1	0.7	142	100

Source: Result in research, 2018.

## DISCUSSION

### Energy and Protein Consumption of Household

The average of indigenous household's energy consumption contains 2.000,7 kcal. Compared to SUSENAS (NSAI, 2016)'s data, this value surpasses over East Kalimantan energy consumption rate (1.909,87 c.cal), but it was under national rate (2.037,4 c.cal). Meanwhile, the average of protein intake was 71,0 gram which was both over East Kalimantan's protein consumption (56,67 gram) and national rate (56,67 gram).

Compared with sufficient nutrition rate intake based on National Workshop on Food and Nutrition (NWFN) XI (2016), that recommended for 2.150 kcal and 57 gram of protein, so the actual energy consumption rate is 92,54% and actual protein intake is 124,6%. This energy intake rate is in moderate category, still household's consumption is 4,9% insufficient and 0,7% deficit. Protein intake is in good category, but insufficient category is 2,1% and 1,4% deficit.

High protein intake has relation with the habit in eating fresh water fish perspective. The habit of eating fresh water fish is the highest position among other foods and it has so far been said as social status performance as well as united value in Dayaks community in charge with traditional custom. This perspective derives from ecological adaptation of indigenous people, waters with fish resources that is benefited for the need of daily animal protein consumption resources where, in this way, it becomes a choice and preference of their taste. According to Dayaks perspective, the advantage of forest and river resources is a choice. These resources should be sustained, handed down from generation to generation. Land, river, and forest are the three most important elements that enable someone to live as genuine Dayaks. During several centuries these three elements have formed a unique identity that we know now as Dayaks, Dayaks culture, and Dayaks Adat *recht* ("traditional law"), and Dayaks belief.

Agriculture and forestry are two crucial resources for self-reliant society. Diverse forest crops could be as food resources directly utilized as consumption or trade. (Wijaya et al., 2005). Once upon a time, natural resources exploration was only for the basic need or substance. We hardly think barter system and market generally have long been recognized by society. (Levang 2005 in Wijaya et al., 2005).

River is not only utilized as means of transportation, means of economic activity as market place but also as food resource of fish species. The Mahakam river is vital life facility where its water derived from forest upstream, Tanah Hulu, East Kalimantan. Small streams located in forest are connected to main river. Small streams are rich in fresh water fish species (such as Gabus (*Channa Striata*), Baung (*Mystus Nemurus*), Betok (*Anabas Testudineus*), Sepat (*Trichogaster Pectoralis*), Jelawat (*Leptobarbus Haevani*), Lais (*Cryptopterus spp*), and Nilem), also as a place where there was natural fish reproduction (Suhaimi, 2007).

### **Food Consumption Analysis Based on Desirable Dietary Pattern (DDP)**

Household food consumption rate has reached 92.54% but its quality and diversity do not indicate ideal consumption condition: (i) exaggerated rice commodity consumption, animal food, and sugar; (ii) less from cholesterol, legumes, fruit/seed, vegetables and fruit, and others.

### **Related Factors with Household Food Consumption**

Household distribution of indigenous people based on family size and energy consumption rate seemingly indicates that the bigger the family size is, the lesser its food consumption. Food distribution in household is a complex system. Rogers and Schlosman in den Hartog et al (1995),

there is an external factor such as culture and internal one like family size which affects food distribution in household.

The household's education level in indigenous people is commonly known as elementary school. This education level obviously related to energy consumption. The higher the family education, the easier they adopt food and nutrition knowledge through electronic or print media. According to Niehof (1988), the relationship between the household's education level and nutritional resources or all sorts of food which were good for family consumption were tightly closed. Parappurathu et al (2015), dietary diversity showed that larger households with better-educated male heads and higher purchasing power fared well on dietary diversity scores. Amuna et al (2004), an integrated approach including community supported food-based interventions, education with an in-built nutrition and health component as well as information, learning and leadership strategies will contribute to human and economic development efforts.

Household distribution based on the rate of energy consumption and mother's knowledge affect on better energy consumption. Rajika et al (2000), knowledge of the food consumption patterns associated with higher educational levels provides information that can be incorporated into policies designed to alter people's eating habits and for raising dietary and nutritional standards. The education level of the male and female heads of household had a differential impact on food consumption patterns. Female education had an effect on the consumption of nutritious and preferred foods that was independent of the effect of income; male education, on the contrary, had an effect on the consumption of these foods only when it interacted with income. Sadegholvad et al (2017), knowledge is power and better informed school-leavers are more likely to make healthy and sustaining food choices.

Although some households perform eating prohibition as the cultural reason, house wives help preparing nutritious food. Between household and family interact one another through traditional law (*adat recht*) facilitated by informal conference hall (house, building) where they are gathering and talking about farming as well as food making.

Pearson's statistical examination and correlation shows the relationship between food diversity and household's energy consumption ( $p=0,000$ ,  $r=696$ ). *Adat recht* has Dayaks help, symphatize, and care to member of family either inside or outside its community. Collective value in *Adat recht* is highly kept up and it is a cultural wisdom towards the benefit of forest resources. Render mutual assistance phenomenon to adopt an attitude in mutual care in order to distribute local food by exchanging crops or supporting each other. This is the condition to distribute food and diversify food consumption among Dayaks. This cultural values is similar with Bulkis' research (2004) said that collective values in South Sulawesi villages was still found and the habit of mutual assistance was one of the patterns to overcome food crisis (coping mechanism). Coping mechanism has relationship with cultural and social system existed in society.

Food consumption by "much preference category" for indigenous people is of tasteful reason and what is more, they stick to eating food from local resources. Food as local resources are available among society as social reality from environment to individual and to family (it is consumed by grand parents as old generation) to community and finally it is performed a taste. Sanjur (1982) stated that aptitude towards the food, especially the preference, affected on food consumption, developed by Ellis in Sanjur (1982) and King et al, (1983), so factors which affected food preference was focused from individual character, environment, and the food itself.

There are 59,86% of indigenous people believe and practice eating prohibition where its rationality rate is of 28,24%. eating prohibition quietly orientates on traditional belief (31,69%). this prohibitive practice affect on limiting the energy amount they consume and also food distribution in household. Eating prohibition in fact really affects on energy consumption in household. Acharya et al (2017), said that cultural issues have a strong impact on people's food behaviour. Food habits and practices are closely associated with the typical food behaviours of particular groups of people or cultures which follow codes of conduct in relation to food choice, cooking methods and eating and including frequency of meals, time (of meals) and portion size.

Food priority in household is in variety, but the highest variety is equally divided in 58,45%, while the lowest priority given to children only 10,56%. The habit to practice eating priority highly determines the in household food distribution then affect on food consumption as well as household member nutrition status.

Indigenous people household distribution based on income rate and energy consumption shows the trend seeing the increase in household income which also affects on the increase in energy consumption. This condition is supported by Pearson's Correlation Analysis indicating the valuable correlation (i.e.:  $p=0,000$   $r=0,619$ ). Also, multivariate analysis result shows the income rate as independent variable really affect on household energy consumption value i.e.:  $p=0,001$  and  $t=3,550$ .

The effort to provide household food consumption used to highly rely on forest and river advantages which directly consumed by households. Forest and river resources enable their adequate life but it, however, changes nowadays as forest resources decrease and decrease due to forest clearing, tree cutting, palm oil plantation, coal mining. Besides, bank of river has been abraded owing to big waves from coal tugboat passing daily which also damages main road in villages, also creates dust and hot water pollution to endanger fish resource and other marine biota.

Household's income derived from food and forest crops terribly decrease. In fact, the advantage gained by indigenous people much bigger by the means of environmental treatment system traditionally rather than agricultural mechanism. Economic and environment study from NRM/EPIC and Consortium SHK Kal-Tim (2000) summed up from local people perspective that is the result traditional forest treatment system that offered labors much more income than palm oil plantation labors. This system, however, does not consider the advantages and intangible cost.

The relationship between income rate and food cost proportion are inversely proportional, indicating to Pearson's statistical correlation result  $p=0,000$  and  $r=0,375$ . The increase in household income tends to enhance food consumption amount indicating by increasing energy intake per caput. The increase in energy consumption stands not only for food intake enhancement but also food consumption diversity. The consumption diversity of people in a region is determined by a variety of factors including agricultural biodiversity in the region and diversity of its farming systems (Jones et al. 2014; Oyarzun et al. 2013; Herforth 2010), historical consumption habits of the population, local practices and level of technology associated with food production, processing and storage (Keding et al. 2013), income/expenditure levels of the inhabitants (Doan

2014; Taruvinga et al. 2013; Drescher et al. 2009) and demographic and socio-economic characteristics of households.

### **Nutrition Status**

Comparing to household energy consumption rate, bad-nutritious under-five-year old baby prevalence is on the category level of household's "less and deficit". And well-nutritious baby tends to be in household category is "moderate and well". This estimation is supported by Pearson's statistical-correlated examination i.e.:  $p=0,000$  and  $r=0,692$ . This can be accepted as there is valuable correlation between nutritious baby status and household energy consumption rate. Abubakar et al (2012), said that malnutrition among children in developing countries is a major public health concern since it places a heavy burden on already disadvantaged communities. The link between poverty and poor nutritional status among children has been widely reported (Semba et al 2008, Walka and Pollitt 2000). Varying indicators of social economic status (SES) such as maternal and paternal educational level (Agueh et al 1999, Sakisaka et al 2006), parental income (Owusu et al 2004), and family assets such as the ownership of land, quality of housing, and foods harvested (Engebretsen et al 2008, Getaneh et al (1998) among many SES indicators have all been associated with children's nutritional status. Regardless of the method by which SES was estimated, its influence on child's nutritional status was significant and consistent. Upadhyay and Palanivel (2011), overpopulation is linked to competition for food and can lead to malnutrition amongst children, especially in rural areas where access to food is limited.

### **Conclusion**

The average in energy and nutrition consumption for indigenous people household is 2,000,7 kcal and 71,0 gram. Showcategory "moderate" by energy consumption level (80–99% RDA) and protein consumption level on well category (>100% RDA).

The eating prohibition practice in *adat* community is able to ban the distribution in food consumption and food diversity for household.

With the relationship between under-five-year baby nutrition status and household energy consumption level, bad-nutritious baby prevalence on the household energy consumption level is "less and deficit" and well-nutritious status tends to on household Adequate Nutrition Rate category is "moderate and well"

The decrease in indigenous people's food consumption is due to the shortness of food resources from forest and from river as well caused by soil enlargement that affects on people's nutrition status diminish.

### **Suggestion**

It is necessary that Provincial Government enhance self-reliant food and nutrition status for indigenous people by implementing food planning based on local resources as well as forest resource conservation along with waters for indigenous people food main resource.

## **BIBLIOGRAPHY**

- Abubakar, A, Jacqueline, U, Sia E. M, Mark, S and Babill S.P., 2012. Prevalence and Risk Factors for Poor Nutritional Status among Children in the Kilimanjaro Region of Tanzania. *International Journal of Environmental Research and Public Health*. 9, 3506-3518.
- Acharya, J., van Teijlingen, E., Murphy, J. , Hind, M. 2017. Food Belief Practices Amongst Mothers in Nepal: A qualitative overview. Conference: Britain-Nepal Academic Council (BNAC) 15th Annual Nepal Study Days. Faculty of Health & Social Sciences, Bournemouth University, England. <https://www.researchgate.net/publication/316188482>.
- Agueh, V.D.; Makoutode, M.; Diallo, P.; Soton, A.; Ouendo, E.M. 1999. Infant malnutrition and associated maternal factors in a secondary city south of Benin, Ouidah (in French). *Rev. Epidemiol. Sante Publique*. 47, 219–228.
- Amuna P, Zotor F, Tewfik I. 2004. Human and economic development in developing countries: a public health dimension employing the food multimix concept. *International Journal of Food Safety, Nutrition and Public Health*. 1(2) DOI: 10.1504/WRSTSD.2004.005510.
- Bulkis,S, 2004. Household Food Self-Reliant, Household Sociological Study as Social System on Three Type Agroekosistem in Sinjai District, South Sulawesi. Dissertation. University of Hasanuddin, Makassar.
- California Department of Health Care Services, Systems of Care Division Child Health and Disability Prevention Program, Health Assessment Guidelines March 2016.
- Den Hartog, AP and W.A Van Staveren and Brouwer, I.D 1995. Manual for Social Surveys on Food Habits and Consumption in Developing Countries, Magraf Verlag: Weikersheim.
- Doan, D. (2014). Does income improve diet diversity in China? Paper presented at 58th Annual Conference of the Australian Agricultural and Resource Economics Society, Port Macquarie, New South Wales, 4–7 Feb 2014.
- Drescher, L. S., Thiele, S., Roosen, J., & Mensink, G. B. (2009). Consumer demand for healthy eating considering diversity – an economic approach for German individuals. *International Journal of Consumer Studies*, 33, 684–696.
- Engelbrechtsen, I.M.; Tylleskar, T.; Wamani, H.; Karamagi, C.; Tumwine, J.K. 2008. Determinants of infant growth in eastern Uganda: A community-based cross-sectional study. *BMC Public Health*. 8, doi:10.1186/1471-2458-8-418.
- Getaneh, T.; Assefa, A.; Tadesse, Z. 1998. Protein-energy malnutrition in urban children: Prevalence and determinants. *Ethiopian Medical Journal*. 36, 153–166.
- Herforth, A. (2010). Promotion of traditional African vegetables in Kenya and Tanzania: a case study of an intervention representing emerging imperatives in global nutrition. Ithaca: Cornell University.
- Jones, A. D., Shrinivas, A., & Bezner-Kerr, R. (2014). Farm production diversity is associated with greater household dietary diversity in Malawi: findings from nationally representative data. *Food Policy*, 46(2014), 1–12.
- Keding, G. B., Schneider, K., & Jordan, I. (2013). Production and processing of foods as core aspects of nutrition-sensitive agriculture and sustainable diets. *Food Security*, 5(6), 825–845.
- King. M.H. F.M.A King, D.C. H.J.L. Burgess and A.P. Burgess. 1983. Nutrition for Developing Countries. Oxford University Press, Dar Es Salaam.

- Meyer-Rochow VB. 2009. Food Taboos: Their Origins And Purposes. *Journal of Ethnobiology and Ethnomedicine*. BMC Part of Springer Nature. 2009 Jun 29. 5(18). doi: [10.1186/1746-4269-5-18](https://doi.org/10.1186/1746-4269-5-18).
- Central Bureau of Statistics of Indonesia (BPS). 2017. Caloric Consumption and Provincial and Indonesian Nutrition. BPS, Jakarta.
- National Workshop on Food and Nutrition (NWFN) XI. LIPI. 2016. Proceeding Food Self-Reliant in Regional Autonomi Era and Globalization. NWFN XI, Jakarta, 2016.
- Niehof.A.1988. Household and the Food Chain: How do They Relate? Users Perspective with Agricultural Research and Development (UPWARD), Los Banos.
- NRM/EPIQ and SHK Consortium Kaltim. 2000. Traditional Forest Treatment System by Dayaks Benuaq, East Kalimantan. Traditional System Advantage Compared with Alternative System, Jakarta.
- Owusu, W.B.; Lartey, A.; de Onis, M.; Onyango, A.W.; Frongillo, E. A. 2004. Factors associated with unconstrained growth among affluent ghanaiian children. *Acta Paediatr.* 93, 1115–1119.
- Oyarzun, P. J., Borja, R. M., Sherwood, S., & Parra, V. (2013). Making sense of agrobiodiversity, diet, and intensification of smallholder family farming in the highland Andes of Ecuador. *Ecology of Food and Nutrition*, 52(6), 515–541.
- Parappurathu, S, Anjar Kumar, M.C.S. Bantilan, P.K. Joshi. 2015. Food Consumption Pattern and Dietary Diversity in EasternIndia: Evidence From Village Level Studies (VLS). 7(5), 1031-1042.
- Rajika, B; & Smith, Frank J. (2000). Education and Food Consumption Patterns in China: Household Analysis and Policy Implications. *Journal of Nutrition Education and Behavior*, 32(4), 214-224.
- Rimbawan, dan Y.F. Baliwati. 2004. Nutrition and Food Problem. Introduction in Food and Nutrition, Penebar Swadaya, Bogor.
- Sadegholvad S, Yeatman H, Omidvar N, Parrish A M, and Worsley A. 2017. Gaps in Iranian School-leavers' Current Knowledge of Nutrition and Food Systems. *Iranian Journal of Public Health*. 46 (11), 1589-1590.
- Sakisaka, K.; Wakai, S.; Kuroiwa, C.; Cuadra Flores, L.; Kai, I.; Mercedes Aragon, M.; Hanada, K. 2006. Nutritional status and associated factors in children aged 0–23 months in Granada, Nicaragua. *Public Health*. 120, 400–411.
- Sanjur, A 1982. *Social and Cultural Perspectives in Nutrition*. Prentice-Hall, Inc: New Jersey.
- Semba, R.D.; de Pee, S.; Sun, K.; Sari, K.; Akhter, N.; Bloem, M.W. 2008. Effects of parental formal education on risk of child stunting in Indonesia and Bangladesh: A cross-sectional study. *Lancet*, 371, 322–328.
- Suhaimi, A. 2007. Nutrition Status and Food Consumption on Indigenous People in East Kalimantan. Disertation of Hasanuddin University.
- Supariasa, I.D.I.N, B.Bakri and I, Fajar. 2002. Nutrition Evaluation. Medicine Book Publisher EGC.
- Taruvunga, A., Muchenje, V., & Mushunje, A. (2013). Determinants of rural household dietary diversity: the case of Amatole and Nyandeni districts, South Africa. *International Journal of Development and Sustainability*, 2(4) In Press.
- Upadhyay RP, Palanivel C. 2011. Challenges in Achieving Food Security in India. *Iranian Journal of Public Health*. 2011 Dec; 40(4): 31–36.

- Walka, H.; Pollitt, E. 2000. A preliminary test of a developmental model for the study of undernourished children in Indonesia. *Eur. J. Clin. Nutr.* 54, S21–S27.
- Wijaya, K, N Rosdiana and B Lusiana. 2005. Carbon Reserves in Nunukan Regency, East Kalimantan Formacs. World Agroforestry Center (ICRAF), Bogor

Orientasi Jurnal:

1. Iranian Journal of Public Health
2. Ethiopian Medical Journal
3. International Journal of Consumer Studies
4. Journal of Health Population and Nutrition
5. Journal of Nutrition Education and Behavior
6. International Journal of Food Safety, Nutrition and Public Health
7. Ecology of Food Nutrition
8. International Journal of Environmental Research and Public Health

## CURRICULUM VITAE

### I. IDENTITAS DIRI

- |                           |  |
|---------------------------|--|
| 1. Nama lengkap dan gelar | : Dr. Ir. H. Ahmad Suhaimi, DEA  |
| 2. NIP                    | : 19660912 199203 1 005  |
| 3. Tempat/Tgl lahir       | : Daha-Utara (Kal-Sel), 12 September 1967  |
| 4. Agama                  | : Islam  |
| 5. Pangkat/Golongan       | : Pembina Tk.1/IV-b  |
| 6. Jabatan Fungsional     | : Lektor Kepala (669,30 KUM)   |
| 7. Program Studi          | : Agribisnis (Sosial Ekonomi Pertanian)  |
| 8. Bidang Keahlian        | : Ekonomi Pangan dan Gizi Masyarakat   |
| 9. Unit Kerja             | : Dosen Kopertis Wilayah XI Kalimantan dpk<br>STIPER Amuntai                       |
| 10. Alamat Rumah          | : Komplek Balitan I No.90 Loktabat Utara,<br>Banjarbaru (70712) Kalimantan Selatan |
| 11. Telpon /HP            | : 0511- 4783719/ HP.082153122828   |

10. E-mail : ahmad99ec@gmail.com

IJSER