THE SOCIAL, DEMOGRAPHIC, AND ECONOMIC IMPACTS ON HOUSEHOLD FOOD INSECURITY EXPERIENCE IN GORONTALO IN 2018

Amelia Mahdali, Dewi W.K. Baderan, Sri Endang Saleh
Postgraduate Program of Population and Living Environment Gorontalo State
University

ABSTRACT

This research aims to analyze: 1) The correlation between social factors which are domicile and education on household food insecurity experience in Gorontalo, 2) The correlation between demographic factors which are the household members, sex, marital status, and age and household food insecurity experience in Gorontalo, and 3) The correlation between economic factors which are household expenditure on household food insecurity experience in Gorontalo. The method used in this research was descriptive quantitative, and the population was the number of households in Gorontalo. The data collection technique was a probability, bringing about the number of samples of 3,000 households taken from Susenas 2018 data. The data analysis was quantitative through a binary logistic regression analysis using SPSS 23. The research findings indicate seven variables influencing the inclination to household food insecurity experience. The variables were the number of housemaids of 4-6 people (51.8%), marital status with unmarried status (75.95%), sex (86.7%), age of <25 years old (46.7%), education <junior high school (75.95%), rural domiciles (65.58%), and household expenditure <1,000,000 (62.42%). By means of this research, the government is expected to get a new insight and gives more concerns to the areas with food insecurity experience. Besides, the government should make policies which empower households with food insecurity experience.

Keywords: Demographic Factor, Economic Factor, Food Insecurity, Social Factor

INTRODUCTION

Food insecurity is the leading global issue in not only poor countries but also developing and developed ones. This issue is so crucial and regarded as the primary discussion topic in a global meeting regarding MDGs and SDGs. If aggravating, the insecurity condition will lead to weight loss due to purchase power or food insecurity issues. Food insecurity is a condition in which food insecurity is absent or a condition in which an individual or a group of individuals living in one area cannot elicit sufficient food, hindering them from living healthily and doing their activities well.

In regard to food insecurity, Herleni Lesi (2017) argues that Gorontalo indicated the highest food insecurity experience rate by 19.65%. The percentage comprises households experiencing moderate insecurity by 19.65% and severe insecurity by 1.33%. Based on the percentage, Gorontalo evidently experiences high food insecurity. The high food insecurity in Gorontalo is probably due to the impoverishment and socio-economic condition of the city. The situation deteriorates due to the climate,

geographical, and cultural conditions of the local community. Akuba (2015) confirms this fact by his statement that Gorontalo is susceptible to food insecurity. Furthermore, Gorontalo had a low access index to food by 0.53 in 2013. In response to this issue, the government should pay more concerns to how to elevate the community's access to food. The Nutrient Adequacy Ratio (NAR) of Gorontalo in 2013 was 89.9%. Those with extreme food insecurity and food insecurity had a Nutrient Adequacy Ratio (NAR) of 52.63% and those with food security had a Nutrient Adequacy Ratio (NAR) by 47.37%.

As such, the food insecurity experience in Gorontalo is an appealing research subject. We are interested in factors influencing social factors (domicile status and education), demography (the number of family members, sex, age, and marital status), and economic factors (expenditure) in Gorontalo.

RESEARCH METHODOLOGY

This research used probability sampling, in which the samples were selected based on the highest education level accomplished. Finally, we got 3,000 households as the research sample.

Data Collection Technique

1. Data Source

The data of this research were the secondary data obtained from Susenas 2018 and relevant research in journals or books.

2. Data Collection Technique

The data were collected in the Statistics Indonesia in Gorontalo. We interviewed one of the staff/structural officials regarding the relevant information. The collected data were processed using SPSS 23.

Data Analysis

The data were analyzed quantitatively by describing the impact of the independent variables on the dependent variables and which independent variable gave the most impacts on the dependent variables (household food insecurity experience) using the binary logistic regression analysis. Subsequently, the coefficient acquired was described by discussing research findings built upon the relevant theory and literature.

In terms of the dependent variable, score one was rendered to households with food insecurity and 0 to households without food insecurity. The logistic regression model was considered best to analyze the data of this research due to the dependent variable, which was dichotomous or multinominal in nature. Therefore, it was embellished by more than one attribute (Hossain, 2001). Logistic regression with two options was often called binary logistic regression. As the model got using logistic regression was non-linear, the equation used to describe the model was more complex than that got using double regression. Variable Y was a probability of obtaining two results or more based on the non-linear function of a linear combination of several independent variables (predictors) (Mudrajad, 2001).

FINDINGS AND DISCUSSION
Research Findings

Considering the normal distribution of data, we used correlation

and regression analysis techniques to figure out if each factor influenced food insecurity in Gorontalo. Data correlated were the data of Variable X which were factor socials, e.g., domicile status, education, demographic factors, e.g., the number of family members, sex, marital status, and age, and economic factors, e.g., household expenditure. A logistic regression analysis was performed to observe the correlation between the factors and food insecurity.

1. The Impact of Social Factors on Household Food Insecurity Experience

The statistical test indicates a p-value of the variable status_urban of <0.05 at a significance level of 0.000, so H0 was rejected. We can see that domicile status ($X1_2$) had a significant impact on household food insecurity experience with a coefficient of 1.423. Meanwhile, the odds ratio was 4.150, implying that the rural domicile status had the inclination of household food insecurity experience 4.150 times higher than the urban one. Furthermore, the statistical test also indicates a p-value of the variable education ($X1_2$) of <0.05 at a significance level of 0.000 so H0 was rejected. Education ($X1_2$) apparently thus had a significant impact on household food insecurity experience with a coefficient of 0.248. Furthermore, the odds ratio was 1.281, implying that the education <junior high school had the inclination of household food insecurity experience 1.281 times higher than the education >senior high school.

Table 1. The Impact of Social Factors on Household Food Insecurity Experience

Variable	B	Significance	Exp. (B)
Domicile status ($X1_1$)	1.423	0.000	4.150
Education ($X1_2$)	0.248	0.000	1.281
Constanta	-4.763	0.000	0.009

Source: Secondary Data Processed (2018)

$$\pi_i \frac{exp.(-4.763 + 1.423X1_1 + 0.248X1_2)}{1 + exp.(-4.763 + 1.423X1_1 + 0.248X1_2)}$$

Where:
$X1_1$: Urban status
$X1_2$: Education

2. The Impact of Demographic Factors on Household Food Insecurity Experience

The statistical test indicates a p-value of the variable marital_status ($X2_1$) of <0.05 at a significance level of 0.000, so H0 was rejected. We can see that marital_status ($X2_1$) had a significant impact on household food insecurity experience with a coefficient of 1.100. Meanwhile, the odds ratio was 3.005, implying that the marital status of married had the inclination of household food insecurity experience 3.005 times higher than the unmarried one. Furthermore, the statistical test also indicates a p-value of the variable urban_status of <0.05 at a significance level of 0.000 so H0 was rejected. Sex ($X2_2$) apparently thus had a significant impact on household food insecurity experience with a coefficient of -0.201. Furthermore, the odds ratio was 0.810, implying that males had the inclination

of household food insecurity experience 0.810 times higher than females. Furthermore, the p-value of the variable the number of family members was <0.05 at a significance level of 0.000 so H0 was rejected. We can see that the number of housemaids (2) had a significant impact on household food insecurity experience with a coefficient of -0.233. Meanwhile, the odds ratio was 0.792, implying that the number of housemaids of 4-6 people had the inclination of household food insecurity experience 0.792 times higher than that of housemaids of >7 people. Furthermore, the p-value of the variable age was <0.05 at a significance level of 0.000, so H0 was rejected. Age apparently thus had a significant impact on household food insecurity experience with a coefficient of 0.057. Furthermore, the odds ratio was 1.059, implying that the age of <25 years old had the inclination of household food insecurity experience 1.059 times higher that of >50 years old.

Table 2. The Impact of Demographic Factors on Household Food Insecurity Experience

Variable	B	Significance	Exp. (B)
Marital status ($X2_1$)	1.100	0.000	3.005
Sex ($X2_2$)	-0.210	0.000	0.810
The number of family members ($X2_3$)	-0.233	0.000	0.792
Age ($X2_4$)	0.057	0.000	1.059
Constanta	-4.763	0.000	0.009

Source: Secondary Data Processed (2018)

$$\pi_i \frac{exp.\,(-4.763 + 1.100X2_1 - 0.210X2_2 - 0.233X2_3 + 0.057X2_4}{1 + exp.\,(-4.763 + 1.100X2_1 - 0.210X2_2 - 0.233X2_3 + 0.057X2_4}$$

Where:
$X2_1$: Marital status
$X2_2$: Sex
$X2_3$: Urban status
$X2_4$: Education

3. The Impact of Economic Factors on Household Food Insecurity Experience

Furthermore, the statistical test shows that the p-value of the variable the household expenditure of <0.05 at a significance level of 0.000, so H0 was rejected. We can see that household expenditure had a significant impact on household food insecurity experience with a coefficient of 1.571. Furthermore, the p-value of the variable age was <0.05 at a significance level of 0.000 so H0 was rejected. Age apparently thus had a significant impact on household food insecurity experience with a coefficient of 0.057. Furthermore, the odds ratio was 4.812, implying that the expenditure of <1,000,000 had the inclination of household food insecurity experience 4.812 times higher than that of the expenditure of >1,000,000.

Table 3. The Impact of Economic Factors on Household Food Insecurity Experience

Variable	B	Significance	Exp (B)
Household experience ($X3_1$)	1.571	.000	4.812

| | Constanta | -4.763 | .000 | .009 |

According to the statistical tests, three factors, social, demographic, and economic factors, had a significant impact on household food insecurity experience.

Discussion

1. The Impact of Social Factors on Household Food Insecurity Expenditure

A household was the place on where a family rested. A region where individuals had put their hearts in was the source of their living. The house they had been inhabiting for years gave them comforts and sufficient food and non-food needs they consumed. A clear distinctive line laid between life in rural and urban areas. Rural areas were susceptible to food insecurity experience due to its agriculturally supported economy. Moreover, urban areas were better in terms of economy and had more sectors, particularly the transportation and service sectors. Based on the statistical test, the null hypothesis (H0) was rejected if the p-value was <0.05. The rural status had a significance level of 0.000, indicating it had a significant impact. Besides, its odds ratio was 4.150 times higher, arguing that the rural status had an inclination to household food insecurity experience by 4.150 times higher than the urban one. This finding is aligned to Yunastiti Purwaningsih and Slamet Hartono (2015) that the majority of households who lived in rural areas encountered food insecurity. Meanwhile, some households living in rural areas had to face a lack of food. The latter households had a low share of expenditure but less energy consumption.

The status of domicile area was classified based on where a household had been living. The research findings reveal that the rural status had 61.7%, and the urban one had 38.3%. The domicile status indicated that the more the households with food insecurity living in rural areas, the higher the percentage of the rural status. On the other hand, the fewer the households with food insecurity living in urban areas, the lower the percentage of the urban status. Safitri *et al*. (2017) believed that a high dependence on rice as one of the energy sources brought about energy consumption which did not fulfil the energy adequacy ratio. If rice, as the primary energy source, was less consumed, the energy consumption rate would be low. A family-level need for food correlated with protein consumption rate, so the better the family food security, the better the protein consumption rate.

Education was a pivotal pillar of one's life. The less the education, the less the knowledge acquired. An individual's need for food was built upon education as the higher the education level accomplished, the more the knowledge elicited. An individual with high education could rest on his/her knowledge to fulfil his/her daily needs. Rather, low education would likely lead to food insecurity experience because an individual with such education often deliberately overlooked nutritional and good quality food due to his/her

unfortunate condition. They solely relied on the education they already had to fulfil their daily needs. Based on the research findings, the null hypothesis (H0) was rejected if the p-value was significant at <0.05. As of, education, significant at 0.000, had an influence. Besides, the odds ratio of education was 1.282, indicating household members with education <junior high school tended to have household food insecurity experience 1.281 times higher than those with education >senior high school. Suhardjo (2008) concluded that the factor of food consumption insecurity was a low education level for an individual or family's food consumption behavior had a strong connection to the insight or perspective s/he or the family had. The research graphic shows that education <junior high school had a higher percentage, which was 75.2%, than education >senior high school with 24.8%. Most people with education <junior high school lived in Boalemo, whereas those with education >senior high school preferred Gorontalo as domiciles.

The interviewee clarified that the first household group, who were junior high school graduates, were experiencing food insecurity. When interviewed, the household representatives stated their inability to consume nutritional and healthy food because of low income or other resources. Even, they chose not to eat occasionally due to limited food resources. Arida *et al.* (2015), in confirmation of the phenomenon, conveyed that education had an impact on household consumption. The head of the household was in charge of decision-making regarding food consumption. Hence, the higher the education of the head of the household, the higher the capacity s/he had of decision making in regard to household consumption.

2. The Impact of Demographic Factors on Household Food Insecurity Experience

Marriage was a legal relationship legitimated by the state. Building a family, a husband and wife, together, managed the household needs. Those who had married spent more time to fulfil their family's needs for food, avoiding a lack of food condition. Meanwhile, those who had married were susceptible to food insecurity experience as they needed nutritional and healthy food, which they often neglected due to the limited economy. Based on the research findings, the null hypothesis (H0) was rejected if the p-value was significant at <0.05. Marital status was significant at 0.000, indicating an influence, and with the odds ratio of 3.005, being married would likely lead to household food insecurity experience 3.005 times higher than being unmarried. Gundersen Craig and Ziliak O. James (2015) justified this finding and explained that being married led to food insecurity. This explanation was corroborated using a multivariate method which allowed the researchers to find a positive impact on food insecurity.

Furthermore, we figured out that in districts/cities, married people were higher in percentage, which was 96.9%, than unmarried ones (3.1.%). Most married people lived in Boalemo, while most unmarried ones lived in Gorontalo.

Damayanti and Khoirudin (2016) mentioned that households with a married status with low income, regardless of their cooperation in fulfiling their daily needs for food, remained incapable of fulfilment because their expenditure exceeded their income summed.

Males played a pivotal role in a household, whereas females had the position as household members. Decision-making in terms of primary needs was best handled by husbands, while wives best handled the economic management for the family. Based on the research findings, the null hypothesis (H0) was rejected if the p-value was significant at <0.05. Sex was significant at 0.000, so it had an impact. Also, with an odds ratio of 0.810, males would likely experience household food insecurity 0.810 times higher than females. This finding was in line with Hernayah (2016), who proposed that males were more inclined to experience food insecurity than females. Mubarok (2012) proved that women were more capable of managing their family economy wisely in accordance with the nutrient adequacy ratio and conducting food diversification for family. Males, in districts/cities, were higher in percentage, which was 86.1%, than females with 13.9%. Males were predominant in Boalemo, whereas females were predominant in Gorontalo.

A nuclear family comprised a father, mother, and child/children. Often, parents, parents-in-law, and other people who lived with a nuclear family for more than six months were included in the family. A family should have plentiful supplies of food, so the food consumed could fulfil the nutrient adequacy ratio. A family with many members would likely lack food or experience food insecurity for they could not consume healthy and nutritional food because of limited money or other resources. Based on the statistical test, the null hypothesis (H0) was rejected if the p-value was significant at <0.05. The number of housemaids in a household, which was 4-6 people, was significant at 0.000, revealing its impact. Furthermore, with an odds ratio of 0.792, a household with 4-5 housemaids inclined to experience household food insecurity 0.792 times higher than a household with <7 housemaids. Martianto and Ariani (2004) stated that food for a family would not fulfil the whole but partial family members' needs.

Households with 4-6 members (51.9%) were higher in percentage than that with 1-3 members (39.7%) and with more than seven members (8.4%). Most households with 4-6 members were identified living in Boalemo, while most households with 1-3 and >7 members lived in Gorontalo and Bone Bolango, respectively. This finding is aligned with Damayanti and Khoirudin (2016), who argued that the number of household members came with varied impacts. The high number of household members had an impact on the decline in food security and an increase in the need for food. Family members contributed to food security since the higher the number of family members, the higher the family burden regarding food.

Household members aged younger than 25 years old were susceptible to

food insecurity. A young head of household often gave dissimilar arguments to 25 years old or above in regard to fulfiling the need for food. S/he might have a minimum paradigm in terms of nutritional food and built upon crops available. Based on the research findings, the null hypothesis (H0) was rejected if the p-value was significant at <0.05. Age was significant at 0.000, indicating its impact. With an odds ratio of 1.059, it means that age <25 years old had an inclination to household food insecurity experience 1.059 times higher than age >50 years old. Gundersen, Craig, and Ziliak O. James (2015) believed that an individual at a young age tended to experience food insecurity. Besides, households with more than one child would more likely experience food insecurity than those without children.

People with an age of <25 years old had a higher percentage which was 47.1%, followed by those with an age of 26-49 and >50 years old with a percentage of 35.3% and 17.6% respectively. Most people aged <25 years old lived in Gorontalo Utara, whereas the two others were in Pohuwato. Arida *et al*. clarified that between men and women aged <25 years old and older people, they generated different perspectives of nutrition fulfilment so their need for food could not be fulfiled.

Based on the interview, we concluded that this household was experiencing food insecurity. The head of this household aged 25 years old and had five household members. The household found food inaccessible. Regarding access, the household claimed that they only ate a small portion of healthy and nutritional food due to a lack of other resources. Even, there was a day on which they did not eat anything. Both husband and wife in the household had tried their best to fulfil their daily needs.

3. The Impact of Economic Factors on Household Food Insecurity Experience

Economic factors covered the variable of household expenditure. Based on the partial test of the model variable, there was a significant relationship, less than $\alpha = 5\%$ between economic factors and household food insecurity experience, and a tendency showed by the odds ratio, observed from the exp. value (β), to household food insecurity experience.

Household expenditure rested on household income, and high household expenditure was in accordance with the needs. Households with an expenditure less than the average, which was 1,000,000, were susceptible to food insecurity experience, as the amount of income could not correspond to the household needs for food. Based on the research findings, the null hypothesis (H0) was rejected if the p-value was significant at <0.05. The expenditure <1,000,000 was significant at 0.000, indicated its impact. With an odds ratio of 4.812, it means that households with an expenditure of <1,000,000 would likely experience household food insecurity 4.812 times higher than those with an expenditure of >1,000,000. Almatsier (2006) confirmed that Indonesia was a low- and middle-income country. The amount of revenue could

hence impact the fulfilment of food, especially healthy food. Ernest Engel (1875, in BPS, 2014) conveyed that the percentage of expenditure on food would decline when the income increased. Thus, the composition of household expenditure could be regarded as an indicator of community welfare.

An expenditure of <1,000,000 showed a percentage of 61.9%, while that of >1,000,000 was 38.1%. The first expenditure was mostly in Gorontalo Utara, whereas the second was mostly in Gorontalo City. This finding is aligned with Arida *et al*., who conveyed that household expenditure was divided into food and non-food expenditures. Food expenditure comprised rice, drinking water, vegetable, fish, meat, fruit, frying oil, and cigarettes. Meanwhile, non-food expenditure comprised educational fees, garment costs, transportation fees, and kerosene costs. The largest portion of household expenditure was spent on non-food. Expenditure less than 1,000,000 was susceptible to both food and non-food insecurities.

CONCLUSIONS

Based on the research findings, we concluded that:

1. Social factors included domicile status and education. Rural domicile status had a significant impact on household food insecurity experience by 61.7%, while urban domicile status had a significant impact of 38.3%. Besides, education <junior high school had a significant impact of 75.2%, whereas education >senior high school had a significant impact of 24.8%.

2. Demographic factors were marital status, sex, the number of household members, and age. A married status had a significant impact on household food insecurity experience by 96.9%, whereas an unmarried one had a significant impact of 3.1%. Furthermore, the male had a significant impact on household food insecurity experience by 86.1%, while the female had a significant impact of 13.9%. 1-3 household members had a significant impact on household food insecurity experience by 39.7%, whereas 4-6 and >7 people had a significant impact of 51.9% and 8.4%, respectively. Then, the age of <25 years old had a significant impact on household food insecurity experience by 47.1%, whereas am age 24-69 and >50 years old had a significant impact of 35.3% and 17.6%, respectively.

3. Economic factors included household expenditure of <1,000,000 having a significant impact on household food insecurity experience in Gorontalo by 61.9%. Moreover, the household expenditure of >1,000,000 had a significant impact of 38.1%.

REFERENCES

Almatsier. 2006. *Prinsip Dasar Ilmu Gizi*. Gramedia Pustaka Utama. Jakarta.

Arikunto, S. 2006. *Metode Penelitian Kualitatif*. Jakarta: Bumi Aksara.

Badan Ketahanan Pangan. 2013. *Petunjuk Pelaksanaan Sistem Kewaspadaan Pangan dan Gizi*. Food Security Agency, Ministry of Agriculture. Jakarta.

Badan Ketahanan Pangan Pesisir Selatan. 2015. *Peta Ketahanan dan Kerentanan Pangan Kabupaten Pesisir Selatan (*Food Security and Vulnerability Atlas-FSVA*) Tahun 2015.* Painan: Badan Ketahanan Pangan dan Penyuluhan.

Badan Pusat Statistik. 2018. *Daerah Dalam Angka Provinsi Gorontalo Tahun 2018.* Statistics Indonesia in Gorontalo.

Boratynska., K., & Huseynov, R.T. 2016. An innovative apporoach to food security policy in developing countries. *Journal of Innovation & Knowledge, 2,* 6-11. Doi:1016/j.jik.2016.01.007.

Chandra, Budiman. 2008. *Metodologi Penelitian Kesehatan.* Jakarta: EGC

Craig Gundersen & James O. Ziliak Amerika Serikat, 2015. Food Insecurity and Health *Impacts. Jurnal Amerika Serikat Tahun 2015*

Dewan Ketahanan Pangan and WFP. 2009. Peta Ketahanan dan Kerentanan Pangan Indonesia (*A Food Security and Vulnerability Atlas of Indonesia*). Jakarta.

Ghozali., Imam. 2011. *Aplikasi Analisis Multivariate Dengan Program SPSS.* Semarang: Badan Penerbit Universitas Diponegoro.

Mardiana Ratna Sari & Bambang Prishardoyo. 2009 Faktor-faktor yang Mempengaruhi Kerawanan Pangan Rumah Tangga Miskin di Desa Wiru Kecamatan Bringin Kabupaten Semarang. *Jurnal tahun 2009*.

Pop, MD, Eropa 2018. *Food Insecurity and Children's Rights to Adequate Nutrition in Europe.. https://doi.org10.1016/j.jpeds.2018.04.042.* retrieved November 11th, 2019.

Purwanti Tri Bastuti. 2014. Pendekatan Rawan Pangan dan Gizi, Besaran, Karakteristik, dan Penyebabnya. http://ejurnal.litbang.pertanian.go.id/index.php/fae/article/view/3824/3173 retrieved November 7th, 2019.

Rusthamrin H. Akuba, Arif Murtaqi Akhmad Mutsyahidan. 2015 Peta Ketahanan dan Kerentanan Pangan Provinsi Gorontalo Tahun 2015. *Jurnal Jtech 5(2), 67-83.*

Sari Ratna Mardiana & Prishardoyo Bambang. 2009 Faktor-faktor yang Mempengaruhi Kerawanan Pangan Rumah Tangga Miskin di Desa Wiru Kecamatan Bringin Kabupaten Semarang. *Jurnal, Volume 2 Number 2, September 2009.*

Saputro Jodi Andi Hakim. 2017 Analisis Kerawanan Pangan Rumah Tangga dan Status Gizi Balita pada Daerah Rawan Banjir di Kelurahan Kejaten Timur, Jakarta Selatan. *Jurnal 2017.*

Sudjana, 1996 *Metode Statistika.* Bandung: Tarsito

Sugiyono. 2016. *Metodologi Penelitian Kuantitatif, Kualitatif dan R&D.* Bandung: PT. Alfabeta.

Suhardjo. 2008. *Perencanaan Pangan dan Gizi.* Jakarta: Bumi Aksara