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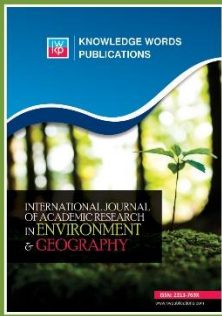
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Disaster Relief Foods and Food Consumption Practices of Low-Income Inhabitants in Eastern Visayas, Philippines

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Abstract

This study aimed to determine the disaster relief foods and the food consumption practices of low-income inhabitants in Eastern Visayas region right after a cyclone. Three hundred twenty randomly selected low-income inhabitants were interviewed and asked to answer a questionnaire. Demographic profile, disaster relief foods and consumption practices were presented in frequency and percent. Correlation analyses was also done among the consumption practices and profiles. Results showed that rice and canned goods were the leading disaster relief foods. Most of the respondents ate three times a day during times of cyclones. Furthermore, it was found out that there is a significant association between educational attainment and the number of times people eat their food. Similarly, monthly income and house ownership were significantly associated with the number of disaster relief foods. The monthly income and the number of sources of disaster foods, also, showed a significant positive correlation. Location and educational attainment had both significant negative associations with mode of cooking. Results of the study provide information to the government and nongovernment organizations, policy makers, humanitarian aid organizations, and researchers on the practices of the low-income inhabitants on the acquisition of food as a basic need after the disaster

Keywords: Cyclone, Disaster Relief Foods, Low-Income Inhabitants, Philippines.

Introduction

The Philippines being an environmentally vulnerable country is always threatened with hydrological disasters, especially tropical cyclones and floods (Stryjak, Sharma and Hatt, 2014). The country ranked as the most affected country for 2013 with a 2.17 score for climate risk index due to Typhoon Haiyan (Kreft, Eckstein, Junghans, Kerestan and Hagen, 2014). The said cyclone had strucked the land inflicting over US\$ 13 billion in economic loss (UNISDR, 2014). Also, based on the 2014 WorldRiskIndex (WRI) of the United Nations, individuals in the

Philippines have a 28.25 % chance of becoming a victim of a disaster resulting from an extreme natural event, which is the second highest probability next to Vanuatu (Welle, Birkmann and Rhyner, 2014). The index takes into account both external and internal factors, combining the exposure of countries to natural hazards and the social, economic and ecological conditions within these countries. The WRI of the Philippines is high due to a combination of exposure and susceptibility to extreme event or natural hazards, and limited coping and adaptive capabilities (Welle, Birkmann and Rhyner, 2014).

One of the strongest tropical cyclones that hit the country, Typhoon Haiyan (locally known as *Yolanda*) in 2013 had affected millions of people and resulted in over 6,000 deaths. Flattened by the typhoon and the resulting storm surge, the Eastern Visayas region was greatly affected. It is located in the eastern part of the Philippine islands, facing the Pacific Ocean with a total land area of 2,143,169 hectares accounting to approximately 7.14 % of the country's total land area (Regional Development Council, 2011). At present, it remains a challenge of the region to be always prepared and equipped on the unpredictability of the weather conditions and save itself from the natural calamities to which it is very prone and vulnerable. Currently, there was an increase in poverty level in the Eastern Visayas from 45.2 % in 2012 to 54.9 % in 2014, making the region the poorest in the country (Philippine Daily Inquirer, 2015). This was largely attributed to the destruction caused by Typhoon Haiyan, and on the aftermath of the typhoon, there was also an increase on the prices of food commodities where low-income inhabitants are significantly affected. The population of the region is 4.1 million people (National Statistics Office, 2010) and more than 2 million people now are wallowing in poverty.

Low-income inhabitants or people living on and below the poverty level make up more than half of the total population of the region. In disaster management, this means that the potential population at risk is very large and continually be a formidable task in the area (Luna, 2001). The vulnerability of local people to disasters is aggravated by poverty, poor health and the environmental degradation of the region (Bankoff and Hilhorst, 2009). After a disaster is a difficult situation wherein some people may not have food and water for days and perhaps even weeks especially the low-income inhabitants. It is known that disasters are a leading cause of hunger and it directly affect all the dimensions of food security which includes the economic and physical access to food, the availability and stability of supplies, and nutrition (De Haen and Hemrich, 2007). In most cases, there is an insufficient supply of the basic needs for the population after a calamity. This study therefore aimed to determine the socio-demographic characteristics of the respondents, and to identify and determine the disaster relief foods and the food consumption practices of low-income inhabitants in Eastern Visayas region right after the cyclone. Also, this study looked into the relationship of the demographic profile of the inhabitants to their consumption practices.

Materials and Methods

Respondent Selection and Data Collection

A survey on the socio-demographic characteristics, the disaster relief foods, and food consumption practices was conducted in the Eastern Visayas Region from October 2014 to January 2015, a year after the devastation of Typhoon Haiyan. The study utilized a researchers' designed questionnaire (in *Waray-waray* and *Cebuano*) to get the needed information. If the respondents were not able to comprehend and understand the questionnaire, a one-on-one

interview was done. Three hundred twenty randomly selected low-income inhabitants were the respondents of the study. Low-income inhabitants refers to the poor or individuals and families whose income fall below the poverty threshold. In 2014, the poverty threshold for a family of five is Php 8,778.00 (Philippine Statistics Authority, 2015). The 320 individuals volunteered to participate in the study and completed the survey. The survey was conducted across all the six provinces (Biliran, Eastern Samar, Leyte, Northern Samar, Samar, and Southern Leyte) of the Eastern Visayas region.

Statistical Analyses

Data from the questionnaires were entered into Microsoft excel and imported into the IBM SPSS software package version 17 (Statistical Package for the Social Sciences, SPSS Inc., IBM Corporation) for analysis. Basic descriptive statistics was used. In addition, correlation analyses (*i.e.* Spearman, Pearson r , Point Biserial) were created to examine the relationship between the socio-demographic characteristics and the food consumption practices of the respondents.

Results and Discussion

Socio-demographic Characteristics of Respondents

Table no. 1 presented the socio-demographic profile of the respondents on the study. More than half of the study participants are aged between 30 and 60 years old (66.87 %), the remaining are aged 60 years old and above (15.63 %), and, 29 years old and below (17.50 %). It can also be observed that majority of the respondents that were randomly selected are female. Females (64.69 %) are much more open to be part of the study than males (35.31 %), and they are more available and visible when the survey was conducted. Likewise about three quarters of the study population are married (75.31 %), and the remaining respondents are either single (10.94 %), separated (2.81 %) or widowed (10.94 %).

Among the six provinces in Eastern Visayas, the province of Leyte (39.38 %) had the highest number of respondents in the study and Biliran (8.75 %) had the least. The highest population in Eastern Visayas is in Leyte, followed by Samar, Northern Samar, Eastern Samar, Southern Leyte, and the least is Biliran (National Statistics Coordination Board Region VIII as cited by RDC, 2011).

Table no. 1 – Socio-demographic characteristics of the study population (n = 320)

Profile	Frequency (f)	Percent (%)
Age		
≤ 29	56	17.50
30-39	81	25.31
40-49	73	22.81
50-59	60	18.75
≥ 60	50	15.63
Sex		
Male	113	35.31
Female	207	64.69
Civil Status		
Single	35	10.94
Married	241	75.31
Separated	9	2.81
Widow	35	10.94
Province		
Biliran	28	8.75
Eastern Samar	49	15.31
Leyte	126	39.38
Northern Samar	32	10.00
Samar	55	17.19
Southern Leyte	30	9.38
No. of Members of the Family		
1-3	63	19.69
4-6	157	49.06
≥ 7	100	31.25
House		
Own	250	78.13
Renting	17	5.31
Live with Friends or Extended Family	53	16.56
Educational Attainment		
None	9	2.81
Elementary	79	24.69
Elementary Graduate	38	11.88
Secondary	90	28.13
Secondary Graduate	44	13.75
College Level	43	13.44
College Graduate	17	5.31
Occupation		
Farmer	63	19.69
Fisherman	14	4.38
Housewife	79	24.69
Helper	18	5.63
Sales Agent	9	2.81
Driver	31	9.69
Others	58	18.13
None	48	15.00
Monthly Income		
≤ 3,000	247	77.19
3,001-6,000	66	20.63
≥ 6,000	7	2.19

Source: research findings

Among the low-income inhabitants, it can be gleaned from Table no. 1 that respondents have higher number of family members, 31.25 % have 7 or more family members, and about half (49.06 %) have 4 to 6 family members. This shows that participants coming from the low-income inhabitants' tend to have higher number of family members. Virola (2008) further reported that in the Philippines, on the average, poor families are larger than non-poor families

by more than one member (5.87 versus 4.34 in 2003), specifically, 21 out of every 100 poor families had at least 7 members in 2003 compared to only 6 among the non-poor.

A huge percentage of the study population have owned a house (78.13%) and only few are renting (5.31 %) and living with friends or with extended family (15.56 %). On the other hand, only 5.31 % or 17 respondents have finished a degree in the university or college and the respondents did not finish their education. Nine respondents (2.81 %) have no education at all. The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2001) had been promoting education in poverty eradication, and in close cooperation with other social sectors. There is still a need for both parties to cooperate in poverty reduction by having educated members of the society. As an effect with their educational attainment, most of the respondents landed on a “blue-collar work” and quite a number of them are plain housewives (24.69 %) that do the household activities for their families. A high percentage of the respondents or 247 out of 320 (77.19 %) have a monthly income that is equal to Php 3,000.00 and below.

Disaster Relief Foods

The various disaster relief foods identified by the low-income inhabitants in the region are shown in Table no. 2. As a staple food for Filipinos, rice is the most important disaster relief food in times of emergencies and disasters. Azanza and Basman (1999) reported that rice is considered as a very important food commodity in local evacuation centers. More than half (183 or 57.19 %) of the respondents have rice as a food in times of disaster, Likewise, they also have canned goods (119 or 37.19 %), root crops (110 or 34.38 %), and noodles (79 or 24.69 %). As in previous natural disasters around the world, root and tuber crops (*e.g.* sweet potato, taro, etc.) fared much better than staple cereals and pulses, providing more proof of their potential for helping communities in difficult times (CIP, 2014). Root crops are recognized for their resilience to damage caused by cyclones, and place a very important role when there is a need for an immediate food in an affected area. Often dubbed “the poor man’s staples” (CIP, 2014), roots and tubers crops were common on traditional crops in the Philippines, that is commonly visited by natural disasters. Sweet potato is also known as a “survivor’s crop,” providing affected communities with a staple to rely on when roads were cut off by the disaster (CIP, 2014). Products that are root-crop based can be distributed as an emergency food ration. The root and tuber crops consistently provide immediate, much-needed food on location to populations in post-disaster. In the Philippines, root crops are known to be traditional disaster foods that is common to Eastern Visayas which is primarily an agricultural region. Canned goods and noodles are common disaster foods nowadays, because it is shelf stable and having an ease in preparation. Other identified traditional disaster foods by the respondents are fruits and vegetables, fish, coconut, and corn.

Presented in Figure 2, are the sources of the disaster foods among the low-income inhabitants on the disaster foods during cyclones. Most of the disaster foods are donations (112 or 35%) given by the government, other agencies (*e.g.* World Food Programme), and communities that assist the victims of the disasters. Although, in any disaster, it is still a major obstacle for the government and other agencies to immediately respond, most especially when the area is severely damaged. Residents in a disaster prone area learned to develop ways in acquiring food immediately after the disaster. Result shows that there are also high frequency

on the disaster foods bought from the market by the survivors/victims of the disaster (108 or 33.75 %). Considering as well that the region has a vast agricultural land, it can be distinguished that two major sources are from the back yard (74 or 23.13 %) and from the farm (72 or 22.50 %). Furthermore, inhabitants have their own practices in acquiring the basic needs having been used to natural hazards and disasters in the area. Traditional disaster foods such as root crops that can sustain disasters can be harvested and taken off from the farm or backyards. Likewise, in preparation for disasters, it is a common practice in the family to prepare and be ready on the basic needs like food and water, enough to sustain the ravage of the disaster. Since the geographical location of the region is surrounded by waters, the sea is a major source of foods among the residents of the region.

Table no. 2 – Disaster relief foods of low-income inhabitants in Eastern Visayas, Philippines during cyclone (n = 320)

Disaster Relief Foods	Frequency (f)	Percent (%)
Rice	183	57.19
Canned Goods	119	37.19
Root Crops	110	34.38
Noodles	79	24.69
Vegetables	56	17.50
Plantain/Banana	55	17.19
Others	49	15.31
Fish	41	12.81
Assorted Relief Goods	34	10.63
Coconut	22	6.88
Meat	19	5.94
Other Fruits	5	1.56
Corn	3	0.94

Source: research findings

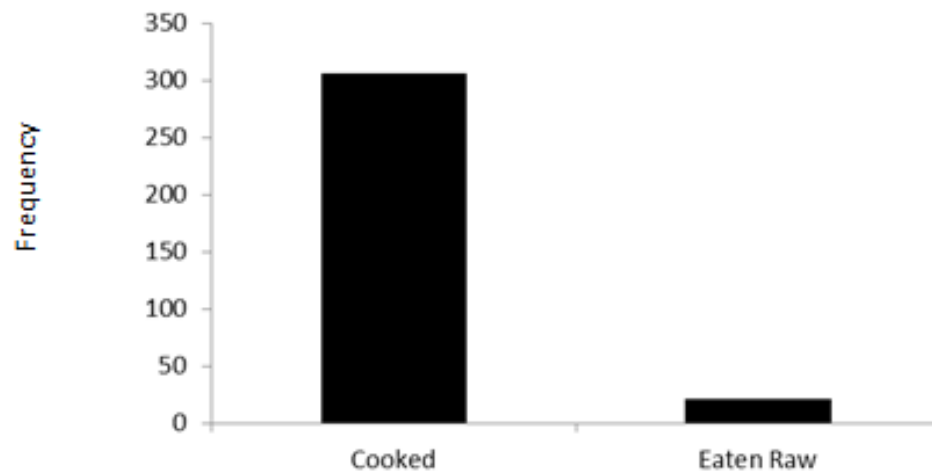
Table no. 3 – Sources of disaster relief foods among low-income inhabitants in Eastern Visayas, Philippines in times of cyclone (n = 320)

Sources of Disaster Foods	Frequency (f)	Percent (%)
Donation	112	35.00
Market (Bought)	108	33.75
Backyard	74	23.13
Farm	72	22.50
Friends and/or Relatives	32	10.00
Non-Government Organizations	11	3.44
Sea	9	2.81
Others	4	1.25

Source: research findings

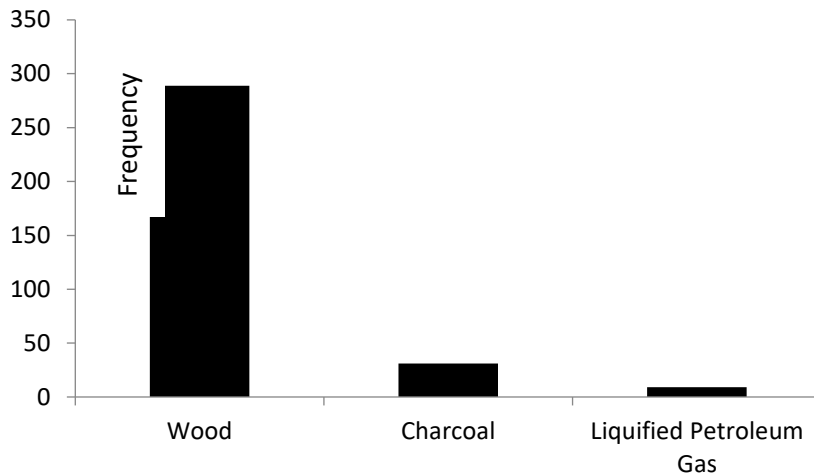
Food Preparation During Disasters

Describing the food preparation of the respondents during cyclones, represented in Figure 1 are the food preparation in times of disasters. Almost all of the inhabitants are used to cooking disaster foods (306 or 95.63 %), and a few would like to eat raw foods (21 or 6.56 %). There were also six among the respondents who wanted both (cooked and eaten raw). Result therefore indicates that, most respondents, in times of disaster, would like to eat cooked food rather than having it raw.



Source: research findings

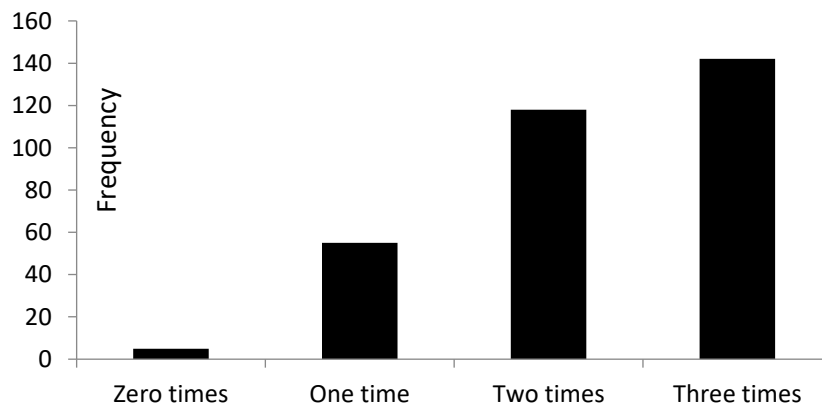
Figure 1. Food preparation among low income inhabitants in Eastern Visayas, Philippines during cyclone (n = 320)



Source: research findings

Figure 2. Mode of cooking of low income inhabitants during times of cyclone in Eastern Visayas, Philippines

Being used to food that is cooked, and as an individual that belongs to the low-income group, the most common mode of cooking is by using wood wherein 90.31 % of the respondents (289 %) used such. Considering that the Eastern Visayas region has an agricultural rural area, there are still enough sources for firewood. Only a small percentage had been utilizing charcoal (31 or 3.69 %) and liquefied petroleum gas (9 or 2.81 %) for cooking their food during disasters (Figure 2). Furthermore, it can be observed from Figure 3 that the number of times the respondents eat meals during disaster varies. A large fraction of the respondents eat meals three times a day (142 or 44.38 %), followed by twice (118 or 36.88 %), then once (55 or 17.19 %), and 5 respondents said that they did not eat at all (1.56 %). Although majority have their meals during disasters, there were still poor families in the region that has no food to eat during natural calamities. Assistance may arrive a few days after the disaster, or may be delayed due to inaccessibility of the area. This implies that there is a need for other means of acquiring food and basic needs in order to meet the necessity of the population especially for those who are vulnerable.



Source: research findings

Figure 3. Number of times low inhabitants eat meals during times of cyclones in Eastern Visayas, Philippines.

Correlation analyses on the consumption practices and demographic profile. Correlation analyses was done in order to look for association or relationship on the profile of the respondents and with their corresponding food consumption practices. At the 5 % level of significance, there is a significant association between educational attainment and the number of times people eat their food during typhoons ($r = 0.141$; $p\text{-value} = 0.012$). There is little correlation between the two variables. This means that the more educated a respondent is, the more frequent that respondent eats his/her food during typhoons. Similarly, the monthly income ($r = 0.182$; $p\text{-value} = 0.001$) and house ownership ($r = 0.115$; $p\text{-value} = 0.039$) are significantly associated with the number of disaster relief foods. Both have little correlation with the latter variable. As the monthly income increases, the number of choices in disaster relief foods increases. Moreover, low-income inhabitants who tend to own their own houses, tend to have smaller choices in disaster relief foods. The monthly income and the number of sources of relief foods, furthermore, have a significant little positive correlation ($r = 0.115$; $p\text{-value} = 0.039$). Respondents with large monthly incomes tend to have more sources of disaster foods. On the other hand location and educational attainment have both significant little negative associations with mode of cooking. Respondents who tend to live in barangays tend to use wood as the mode of cooking ($r = -0.132$; $p\text{-value} = 0.018$). Similarly, the more uneducated the inhabitant is, the more he/she prefers to use wood and charcoal as their modes of cooking ($r = -0.153$; $p\text{-value} = 0.006$).

Conclusions

After the onslaught of typhoon Haiyan, the poverty level in Eastern Visayas increased drastically. The access to education for all citizens and the cooperation of both the government and the people towards poverty reduction will not only benefit the individual but also contributes towards building a resilient environment. In addressing problems on disasters and risks, educating an individual on disaster preparedness and risk reduction will create more responsible individuals and inhabitants in a disaster prone area like the Philippines. Poor Filipinos tend to have higher number of family members, which may have cumulative effect such as the education of the members of the family may not be completed, resulting to having a low-wage job, and part of the low-income members of the society.

On the other hand, being a staple food for the Filipinos, rice is the leading and most important disaster relief foods of the inhabitants in Eastern Visayas. Shelf stable products such as canned goods and noodles were also identified as a common disaster food. Also, the use of traditional disaster relief foods that is readily available in the community such as root crops and fruits were also identified. These traditional foods had been used in times of emergencies for a long time, and is still very effective in addressing scarcity of food. Development of traditional based products that are shelf stable may be introduced to a disaster prone community. The major sources of disaster foods are donations and sometimes they bought some of those foods from the market. Inhabitants have also other means of acquiring food in times of disasters, such getting food from farm and backyard, as well as fishing, which is believed to be already a practice for those areas that is frequently visited by cyclones and floods.

Unfortunately, there are still low-income inhabitants that have no food to eat during disasters. As mentioned before, there is a need for these individuals to be educated on the preparedness during disasters. With the help of the government on its programs towards disaster and risk reduction management and the willingness of these individuals to participate on those programs, they may reduce or eradicate such kind of problems.

Lastly, some socio-demographic profile like education, house ownership and income have an association on some of the food consumption practices of the low-income inhabitants in Eastern Visayas. For example, with better educational attainment, respondents tend to choose other modes of cooking aside from using firewood, and the higher the income, the respondents tend to choose a number of sources of relief foods.

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