



Measurement Needs of Food Security during Flood Disaster in Bera, Pahang

NUR ATIQA ALIAS* and NORAZMIR MD NOR

Centre of Nutrition and Dietetics, Universiti Teknologi MARA, Puncak Alam, Malaysia.

Abstract

Food preferences with dietary needs for an active and healthy life were achieved when there have physical and economic access to sufficient, safe and nutritious food in all time. It is also known as food security. It comprises of food utilization, food availability, food access and food stability. This paper studies the flood situation in Bera district area, Pahang by assessing the intensity of flood damages and its impacts on food security, which comes out with the measurement of needs of food security during the flood. A cross sectional study was performed on 100 samples of the population living in the affected area by using questionnaires adapted from Cambodia Post-Flood Relief and Recovery Survey 2012 and District and Community Questionnaire. These samples were selected randomly regardless of gender and age category. This study reveals that household composition and family income was affected the food composition in household food security. There is a significant effect on the number of meals and quantity of the food consumed which shows less than usual, in particular among the low-income family and more household composition in the family. Therefore, further studies on measurement of needs of food security during a disaster are required to find out better coping strategies of food insecurity faced by flood victims.



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Introduction

Permanent changes to the natural environment, significant physical damaged or destruction and loss of life will occur because of flood. Excessive rainfall which leads to the overflow of water from the river, rising above the normal level and covering the land surrounding it, is troublesome for the population

living in the affected area¹. In December 2014, above average rainfall resulted in severe flooding along the Sungai Pahang basins area, Malaysia affecting 8 of Pahang's 11 districts, including Bera. The floods were reportedly the second worst Bera had experienced in three decades².

CONTACT Nur Atiqah Alias ✉ atiqahalias_89@yahoo.com 📍 Centre of Nutrition and Dietetics, Universiti Teknologi MARA, Puncak Alam, Malaysia.

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This research intended to measure the needs of food security during the flood and to relate it with the most appropriate emergency preparedness regarding the assistance from the government. It is because the climatic change or natural disaster such as flood can lead to a state of food insecurity since it can threaten the food availability, food access, food utilization, and also food stability³. The first key dimension of food security which is food availability refer to the availability of sufficient quantities of food with appropriate quality. Whereas, food access is defined as adequate resources to acquire the appropriate foods for a nutritious diet whereby the individuals or organisation with the authority, legal, political, economic and social arrangements in the community serve its role. Food utilization is the utilization of food through adequate diet, clean water, sanitation and also health care that leads to the state of nutritional well-being. Hence all physiological needs are met. This key dimension emphasises the importance of non-food inputs in food security. The fourth key dimension of food security is the food stability. It is described as the ability of access to adequate food at all times independently of shocks such as economic strain or climate-related crises or cyclical patterns⁴.

All of these four key dimensions make up the needs of food security that intended to be measured through this study. When the needs of food security during flood have been determined, a suitable approach or coping strategies can be developed to ensure households can have access to adequate, safe and nutritious food aid during a disaster. The preparedness is one of the key foundations in emergency management⁵. It is stated that one of the main goals of preparedness activities is to identify problems and come out with the possible solutions. On the other hands, the purpose of preparedness is to anticipate problems in disasters so that ways to cope with the problems and the resources needed for an effective response are in place before hand⁶. As the consequences, if the policy frameworks on food and nutrition and disaster preparedness and management have not been implemented fully, it may lead to a considerable problem for assuring the right to adequate food during disaster situations⁷. People's normal sources of food, the type of disaster, their ability to find alternative sources of food and other

strategies to cope with food insecurity, can influence the vulnerability to food insecurity⁸.

Materials and Methods

Study Area

A cross sectional study was conducted in Sungai Pahang basin area settlement in Bera, Malaysia, which covering a total of 12 affected villages. Pahang is the third largest state in Malaysia after Sarawak and Sabah, and it is located in Peninsular Malaysia while Bera is a district which is located in the south-west of Pahang. The water level had reached within the range of 0.6 to 1.5 meter in the affected areas. According to Malaysian Meteorological Department, massive rainfall with continuous downpour ranging from 5 to 184 mm has been recorded across the district which had caused the water levels in Sungai Pahang began to rise rapidly and touched almost 33.81 meters. Our locations of the study were being selected for several factors, one of the factors is that the settlements or the houses are located within 1.5-2.5 km radius from Sungai Pahang. Most of the houses were flooded with water and had experienced loss or damages of assets due to the destructive flooding. Besides that, the locations are easy to be reached since the houses are located along the main road, and geographically, the type of settlement is considered as orderly, and it is not scattered.

Sampling

The sampling design selected for this study is non-probability or non-random sampling designs which do not follow the theory of probability in the choice of elements from the sampling population⁹. This design is used because the number of elements in our population is unknown and the elements cannot be individually identified. Therefore, upon this consideration, a convenience sampling design was selected. Convenience sampling is guided by the convenience to this research since it is easier in terms of accessibility, geographical proximity, known contacts, ready approval for undertaking the study and also the readiness to be a part of the group. This sampling design is almost similar to the accidental sampling designs whereby it is based on selecting a place where we are likely to find the potential respondents, whether the place may or may not be most convenient. The collection

of data was stopped when the required number of respondents we decided to have in the sample has been achieved.

As for this study, the required sample size has been estimated as 100 respondents. The process of data collection is continued until a total of 100 respondents have been achieved. The samples comprises of the people who are living in 12 different affected villages in our study area. Since the study design selected is a non-probability or non-random sampling, the element in the study population does not have an equal or dependent chance of selection in the sample. Hence, bias had occurred in the selection of sample in this study since it is done by a non-random method and this study does not cover the sampling population accurately and completely. However, a total of 100 respondents in our study can achieve maximum precision according to our estimation as the predetermined number of sample size.

Data Collection

The methods that have been used in our study including questionnaires and direct observation by which we were not only assessed the physical condition of the surroundings, but we also assessed and observed the physical appearance of the people and their living condition, visiting people in their homes and also the sites relating to the floods such as the relocation centers. The participants were asked to answer the questionnaire with assistance from team member. The questionnaire being used was actually adapted from Cambodia Post-Flood Relief and Recovery Survey 2012 and District and Community Questionnaire which comprises of sociodemographic section (including marital status, education level, family income, occupation, and household composition), nutritional status section (anthropometric data, food consumption score, and food assistance), non-food assistance section and also risk factors section (common water sources in the community, current water sources for drinking, and impacts of flood on livelihoods including loss of crops, loss of livestock, health, water access, sanitation, property, housing and telecommunication). The frequency distributions of key variables and association between socio-demographic variables and household situation was assessed. For the categorical variables, results are presented as the frequency and its percentage.

Results and Discussion

As for this study, a total of 100 respondents were involved by taking part in answering the questionnaires being distributed. The socio-demographic data were analysed in terms of gender, marital status, age categories, household income and also household composition during flood events as shown in Table 1.

Table 1: Socio-demographic data of respondents

Description of the respondents	Respondents	
	n	%
Gender		
Male	38	38
Female	62	62
Marital Status		
Marriage	67	67
Single	20	20
Widowed	12	12
Divorced	1	1
Age Categories		
Children	3	3
Adult Men	20	20
Adult Women	41	41
Elderly	36	36
Household Incomes		
< RM 500	43	43
RM 500 – RM 1000	33	33
RM 1000 – RM 2000	15	15
> RM 2000	9	9
Household Composition		
1 – 2 members	34	34
3 – 5 members	45	45
> 5 members	21	21

The present study demonstrated that household composition and family income affect the household food security in terms of food consumption. Also, out of total samples, 7 percent had skipped meals in their households due to financial strain after affected by the flood. In addition, there is also a significant effect

on the number of meals and quantity of the food consumed which shows less than usual, especially among the low-income family and in family with more household composition. About 26 percent of samples experienced a decrease in the number of meals and quantity of food eaten in their household as compared than that of before flood had occurred. In addition, more than half of samples (69%) eat three times and less per day.

The distribution of food assistance during and after the flood was not sufficient to certain households (4%). However, most of the households receive the food assistance from government adequately (73%). Whereas, about 23 percent of the households receive the food assistance more than adequate. Besides, there were also certain households who received food aid from the religious organisation and family members or individuals (16% and 29% respectively). Our survey reveals that more than half (56%) of total respondents had experienced crops damages such as vegetable crops, local fruit plants, small rubber trees and palm oil plants. Whereas, 25 percent experiences loss of livestock, including cow, chicken, and duck. The impact of the flood on water access was severe, with the percentage of 56. During the flood disaster, the majority of the victims in the population greatly depends on other resources instead of tap water since the tap water supply was closed in the affected area. A total of 72 percent depends on bottled water, 30 percent also depends on well water at certain areas.

Adequate food availability and access do not necessarily means that household, community or societal levels are in the state of food security. This is because not only food access influenced by the availability of food, but it is also influenced by the household's purchasing power and access to resources that allow the household to pursue activities which meet their monthly incomes and also meet the food security objectives¹⁰.

A study conducted in the Khammam region of Andhra Pradesh, India among the IDP (Internally Displaced People) who were affected by the flood, also reported that about 42.7 percent of them revealed that they could not feed their children due to the exhaustion of household food stocks. Besides, the average quantity of meals eaten by adults in the households

decreased drastically during the prolonged flood period. This drastic reduction in food intake related to the lack of household's income to buy food from the market after the flood¹¹.

There are several factors that contribute to the adequateness of food assistance given to the households, such as how many sources from which the food assistance was received by the households, the number of household composition, and availability of other food stocks. The more the sources of food assistance received, the more adequate the food to meet the needs of a household. This is because, in the state of acute emergencies where people are cut off from their normal food sources, the initial response is usually food aid and feeding programmes that will increase their access to food¹². In addition, people who have lost their major source of food entitlement through the displacement as the impacts of flood, therefore, a majority depend entirely on external assistance¹².

Natural disasters such as flood cause harmful impacts which include direct mortality and morbidity and also cause indirect displacement and widespread damage of crops, livestock, health, water access, sanitation, housing, infrastructure and property. This climatic hazard can threaten both the biophysical and socioeconomic dimensions of food security by damaging food production and physical assets. It can also exacerbate the pre-existing socioeconomic conditions that determine food access and availability¹³.

The state of being in a condition of food insecurity can negatively affect the quality of the diet and diversity by which the consequences could lead to malnutrition and micronutrient deficiencies. In addition, indicators of food insecurity should stress on the individual food and nutrient intakes, household food and nutrient acquisition, and dietary diversity^{10,14}. Food insecure is also stated as the condition of deprivation in this one area of basic needs by which its measurement represents the severity of deprivation due to resource constraint in this one specific area of need, as directly experienced and described by respondents¹⁵.

On the other hand, food security is an essential, universal dimension of household and personal well-

being. The deprivation of basic need represented by food insecurity and hunger are undesirable in their own right and also are possible factors to nutritional, health, and developmental problems. Hence, monitoring food security can help to identify and also understand the basic aspect of the well-being of the population and to identify population subgroups or regions with unusually severe conditions¹⁶. The normal sources of food, the type of disaster, and the ability to find other sources of food, as well as other strategies to cope with food insecurity, could also affect people's susceptibility to food insecurity. Effective food security interventions depend on effective targeting of the vulnerable subpopulation(s) and of the causes of insecurity, as well as a prompt response in order to cope with the problems¹⁷.

Conclusion

As the conclusion, natural disaster such as flood brings harmful effects on food security in terms of food availability, food access, food stability and also utilization of food. Therefore, there is a need to assess the appropriateness and adequacy of the food and non-food aids distributed to the flood victims

as it could determine whether the households which involved in this natural disaster are in the state of food secure or insecure, since food insecurity can lead to loss and irreparable damage to livelihoods which consequently reducing self-sufficiency. Hence, it is an important matter to be discussed by the related governmental bodies regarding the food and non-food assistance due to the fact that food security is an important issue worldwide as it makes up the human rights. The discussion should highlight and emphasize on many aspects in order to ensure the flood victims are in the condition of being food secured. Several aspects that to be considered in distributing food and non-food assistance including the household composition during flood events, socioeconomic status and also how many sources of food and non-food assistance received by the households affected by the disaster.

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