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308 Lasani Town, Sargodha Road, Faisalabad - Pakistan
Mob: +92 300 3008585, Fax: +92 41 8815544
E-mail: editorpjn@gmail.com

Pilot Study on the Prevalence of Food Insecurity among Sub-Urban University Students During Holy Ramadan

¹Khairil Anuar, ²Norazlanshah Hazali, ¹Farah Syafeera Ibrahim,

³Nazrul Hadi Ismail and ⁴Muhammad Ghazali Masuri

¹Department of Basic Sciences, Faculty of Health Sciences,
Universiti Teknologi MARA Puncak Alam, Malaysia

²Department of Nutrition Sciences, Kulliyah of Allied Health,
International Islamic University Kuantan, Malaysia

³Department of Dietetics, ⁴Department of Occupational Health,
Faculty of Health Sciences, Universiti Teknologi MARA Puncak Alam, Malaysia

Abstract: A cross-sectional study was conducted to assess the prevalence of food-insecurity among university residential students during the month of Ramadan. Results revealed that seventy per cent of students surveyed were food-insecure, while 30% were at risk of food insecurity. Food insecurity is a significant problem among residents at Kolej Jasmine. The establishment of on-campus food banks is necessary to help student decrease the burden. Future studies should assess the prevalence of food insecurity in other UiTM residential college nationwide.

Key words: Food insecurity, university students, public health

INTRODUCTION

Food insecurity has been defined as “uncertainty or limited availability and access to healthy food in socially unacceptable ways” (Anderson, 1990). In relation to that definition, food insecurity has become global public health issues related to nutrition and happened, not just in developing countries but also developed countries (Alaimo *et al.*, 1998; Khor *et al.*, 2009; Kuku *et al.*, 2011). Previous study in Malaysia has shown that food insecurity happen almost 14% in the household level and 9.5% for individual level (Shariff and Khor, 2005). However, there is no evidence available to differentiate the level of food insecurity between household with or without children. Previous study conducted by Carlson *et al.* (1999), in the United States of America shows that the prevalence of household with children was about twice that for household without children.

In recent years, there has been many studies indicate that food insecurity may have negative impact on academic outcomes among children irrespective to their age group (Casey *et al.*, 2005; Jyoti *et al.*, 2005). The negative consequences of food insecurity ranging from cognitive problem, psychosocial dysfunction and also degradation of physical wellbeing (Casey *et al.*, 2005; Jyoti *et al.*, 2005). Despite of many negative consequences has been reported among children, there has been little discussion on the extent, determinants or consequences of food insecurity in young adults especially in university students. Therefore, it is important to investigate how prevalent food insecurity among that population, if any.

To the best of our knowledge, the prevalence of food insecurity in our local university setting is lacking. This study finding should help policy makers to find solution to minimize this problem in our higher education system. Previous study done among college students in Hawai'i showed a very shocking result in relation to that problem where 21% were food insecure and 24% were reported at risk of food insecurity (Chaparro *et al.*, 2009). For that reason, the aim of this study is to estimate prevalence of food insecurity among students resides at sub-urban university setting.

MATERIALS AND METHODS

This study was a cross-sectional study of a convenience sample of university students reside in Kolej Jasmine, UiTM Puncak Perdana, Shah Alam, Malaysia. The study was conducted during the end of 4th week of fasting month in 2012. During that particular month or known as Ramadan in Islamic calendar, food and fluid intake is restricted to the pre-sunrise and post-sunset hours. Healthy adult Muslims are required to abstain from eating, drinking and smoking from sunrise to sunset during this month. Prior to initiation, the study was reviewed and approved by the institutional human subjects review board. The study participants included all students who were available at the cafeteria prior to 'iftar' or the evening meal when Muslims break their fast at the time of sunset, right at the time of maghrib adhan before Maghrib prayer. Participants were excluded if they

were under 18 years of age, post graduate student and unable to understand English, since the questionnaires was in English.

The US Adult Food Security Survey Module (AFSSM), which is a subset of the US Household Food Security Survey Module (HFSSM), was used to measure food security status in this survey. The AFSSM consists of ten questions; each question addressed conditions and behaviours that may have occurred in the previous 12 months and that attempt to characterize individual with difficulty meeting basic food needs. AFSSM results were summarized by summing positive responses and collapsing the results into four food security categories; high food security, marginal food security, low food security, very low food security (Table 1). Prior to statistical analysis, those four food security categories were then collapsed into two categories; food secured (high food security+marginal) and food unsecured (low +very low food security). The HFSSM, from which the AFSSM is derived, has been found to be valid and reliable for Asians (Chaparro *et al.*, 2009).

Table 1: Food security categories based on the number of affirmative responses to food insecurity questionnaires

Affirmative responses	Food security category	Food security status
0	High food security	Food secure
1-2	Marginal food security	
3-5	Low food security	Food-insecure
>5	Very low food security	

Adapted from Nord and Hopwood (2007)

We examined frequency distributions for key variables and assessed the association of sociodemographic variables and lifestyle habits with food insecurity using chi-square tests or fisher exact test depending on the data adequateness. All numerical variables were analyses using independent t-test. For the categorical variables results are presented as the frequency and its percentage and for numerical variables results are presented as the (Mean±SD). Significance level was set at $\alpha = 0.05$.

RESULTS

The prevalence of food insecurity among the participants surveyed was 70% (95% CI: 53-87%), with 37% (N = 11) having low food security and 33% (N = 10) reported in very low food insecurity category. Only 9 (30%) students reported in food security category, classifying them as marginally food secure group.

Table 2 shows the demographic characteristics of the participants according to food insecurity status. Gender was not significantly different between food-secure and food-insecure group. Even though the BMI among food-secured group was higher when compared to food-insecure group, however the difference was not significant. Employment status and scholarship type

were also not significantly different across those groups. Surprisingly there was also no significant difference among those receiving Zakat between the groups observed. Estimated monthly money usage was also reported as not significantly different in relation to food-secure and food-insecure groups.

DISCUSSION

Malaysian population is considered food secure as a whole, however pockets of food insecurity have been identified among estate workers and some rural and urban people that at social or geographical disadvantage (Mohamadpour *et al.*, 2012; Shariff and Khor, 2005; Sulaiman *et al.*, 2011). Recent findings from Australian and Hawai'i university students are experiencing poverty and increasing financial stress thus increase the possibility that university students may be at risk of food insecurity (Chaparro *et al.*, 2009; Hughes and Serebryanikova *et al.*, 2011). However, none of the study done in Malaysia concentrates on young adults especially university students on this matter. At the same time, the Malaysian government is promoting greater participation in tertiary education as a strategy to address Malaysia's long term economic challenges, particularly among socioeconomically disadvantaged population group that are most at risk of food insecurity (Ihab *et al.*, 2012). Therefore, our understanding of food insecurity among university students are at greater importance since it would affect on government policy.

In this study, 70% of the students were surveyed in food-insecure category. The prevalence of food-insecurity among the students was nearly eight times more than reported by previous research among rural area. According Shariff and Khor (2005), high percentage of welfare recipients were seen having individual food insecurity at 9.5%. The study used Radimer/Cornell Hunger and Food Insecurity Instrument targeting to estimate rural community food insecurity problem in seven villages and two palm plantations in Malaysia. Whereby, the present study used the AFSSM subscale of such survey. The Radimer/Cornell Hunger and Food Insecurity Instrument, used a ten-question food security and thus has a different coding system, developed to measure food insecurity experience that reflecting four levels of food insecurity with increasing severity, namely; food secure, household food insecure, individual or adult food insecure and child hunger, suggesting it is not appropriate to compare with our findings. Our prevalence estimate was remarkably higher than the prevalence found among Australia and Hawai'i university students, at 46 and 21%, respectively (Chaparro *et al.*, 2009; Hughes *et al.*, 2011). However, the prevalence of marginally food-secure students found in the study somewhat higher than the Hawai'i study (30 vs. 21%). In the present study, the food insecurity was present at

Table 2: Demographic characteristics by food security status, (N = 30)

Demographic characteristics	Food-secure (%) N = 9	Food-insecure (%) N = 21	P-value
Gender			1.000 ^b
Female	5 (31.3)	11 (68.8)	
Male	4 (28.6)	10 (71.4)	
Age, Mean±SD	18.3 (0.5)	18.9 (1.1)	0.066 ^c
BMI, Mean±SD	22.3 (2.7)	21.4 (3.8)	0.535 ^c
Employment status			1.000 ^b
Employed	0	2 (100)	
Non-employed	9 (32.1)	19 (67.9)	
Scholarship/Financing			0.548 ^b
PTPTN	3 (25.0)	9 (75.0)	
MARA	2 (66.7)	1(33.3)	
JPA	3 (25.0)	9 (75.0)	
Others	1(30.0)	2 (70.0)	
Personal internet subscriber			0.681 ^b
Non-subscriber	7 (33.3)	14 (66.7)	
Subscriber	2 (22.2)	7 (77.8)	
Receiver of Zakat			0.534 ^b
Non-receiver	9 (33.3)	18 (66.7)	
Receiver	0	3 (100)	
Estimated monthly money usage			1.000 ^b
<RM 100	3 (33.3)	6 (66.7)	
RM 100-500	5 (29.4)	12 (70.6)	
RM 500-1000	1 (25.0)	3 (75.0)	

^aChi-square test; ^bFisher Exact test; ^cindependent t-test

same frequency between genders, suggesting food insecure is independent of gender. However, previous study done among Ethiopian adolescences observed that girls are more likely to reporting food insecure compared to the boys (Hadley *et al.*, 2008). This could be because all the participants in current study were not married and they do not need to distribute their food to others, but additional research is needed to answer this argument further. We also observed the Zakat receiver also not improving food insecurity status among our participants. Zakat is the money that every adult, mentally stable, free and financially able Muslim, male and female, has to pay to support specific categories people such as students or poor peoples. This finding should suggest the Zakat manager should increases the amount of money for the receiver. The finding also in agreement with estimated monthly money usage among students where there was no significant difference observed between those groups. This finding also similar with the results from Hawai'i study where money usage was also observed not significantly different between food secure and food insecure groups (Chaparro *et al.*, 2009).

The present study has sampled a small cross-section of the University students residents using non-probability sampling procedure susceptible to sampling bias, suggesting the results should be interpreted with caution. Additional survey with a bigger population sample containing adequate numbers of relatively food insecure individual is needed to reconfirm our findings. Even though the sample is relatively small, however this

is the first evidence of food insecurity prevalence among our local university population and the results should serve as a basis for future studies with larger population to investigate further this matter. Future studies need to investigate the impact of food insecurity on university students coping behaviour and their academic performance. Additionally, an investigation of the monthly spending pattern among students is also worth noting.

Conclusion: The main findings of this study show that the food insecurity is a significant problem in every seven out of ten students surveyed at our residence college. Establishing on-campus food banks is necessary to increase food availability and accessibility on campus.

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