

Food Security Status among College and University Students in Mwanza, Tanzania

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Ikisiri

Tafiti nyingi zinazohusu uhakika wa chakula huzingatia ngazi ya kaya. Tafiti chache zimejielekeza kwenye ngazi ya mtu mmoja mmoja, hasusani wanafunzi katika vyuo vya kati na vikuu, licha ya athari zake kwenye masomo na tabia. Utafiti huu umechunguza hali ya uhakika wa chakula miongoni mwa wanafunzi wa vyuo vya kati na vikuu katika taasisi mbili za elimu ya juu nchini Tanzania. Washiriki wa utafiti walichaguliwa kwa kutumia mbinu ya bahati nasibu. Njia ya mahojiano ilitumika kukusanya takwimu za msingi kutoka kwa washiriki 140. Takwimu zilichakatwa na kuchambuliwa kupitia programu ya IBM SPSS. Uhakika wa chakula ulipimwa katika nyanja tatu: upatikanaji, matumizi, na ufikiaji. Matokeo ya utafiti yanaonesha licha ya upatikanaji wa chakula kuwa juu (81.7%), 44.3% ya wahojiwa walikula chini ya milo 3 kwa siku na 68% hawakufikia chakula kwa aina anuwai, ikiwa ni pamoja na kiwango kidogo (32%), wastani (32 %) na kiwango kikubwa (3.9%). Ukosefu wa chakula ulijidhihirisha kupitia kuwa na wasiwasi juu ya kukosa rasilimali za kutosha kununua chakula (66.4%), kula chakula kisichotakikana sana (64.3%), kupunguza kiasi cha chakula (59.3%), kushinda njaa siku nzima (54%) na kukosa chakula mchana na usiku (47%). Utafiti huu unahitimisha kuwa wanafunzi katika vyuo vya kati na vikuu wanaunda kundi lingine linalokabiliwa na kutokuwa na uhakika wa chakula na hivyo kuhitaji hatua za haraka za kisera.

Abstract

Most studies concerning food security focus on the household level. Less attention has been paid to the individual level specifically, students in colleges and universities, despite its potential impacts on students' academics and behaviour. This cross-sectional study investigated food security status among college and university students based on two higher learning institutions in Tanzania. A simple random sampling technique was used to select the study participants whereas 140 respondents were interviewed using an interview schedule. The IBM Statistical Package for Social Science software was used to process and analyse the collected data. Three proxies: availability, utilisation, and access were used to measure food security. The results show food availability was high (81.7%), 44.3% of respondents ate less than three meals per day (utilisation) while 68% experienced various forms of food insecurity (access) ranging from mild (32%), moderate (32%) to severe (3.9%). Food insecurity manifested through worrying about not having an adequate resource to buy food (66.4%), eating less desired food (64.3%), reducing meal sizes (59.3%), not eating anything over a whole day time (54%) and going hungry day and night (47%). The study concludes food insecurity existed in the study area; making students food security risk groups requiring immediate policy interventions.

Keywords: Food security, food insecurity, higher learning institutions

1. Introduction

There is a multitude of definitions of food security, but the most used is 'Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for active and healthy life (FAO, 2002). This definition underscores the proxies currently used to measure food security: Access, availability, utilisation and stability of the fore-mentioned three proxies. Conversely, food insecurity occurs when the accessibility to nutritious and safe food is constrained or the ability to get acceptable foods in socially acceptable ways is restricted or uncertain (Bakar *et al.*, 2019; Mukigi and Brown, 2018). Food insecurity continues to be one of the development

challenges of the twenty-first century at the global, national, community, household and individual levels (Sulaiman *et al.*, 2021).

The first Millennium Development Goal (MDG) sought to eradicate extreme poverty and hunger. To date, the second Sustainable Development Goals (SDG) seeks to end hunger, achieve food security and improved nutrition and promote sustainable agriculture (Osborn *et al.*, 2015). Nonetheless, globally, the 2019 FAO report on food security and nutrition indicates more than 820 million people in the world were still hungry, underscoring the prolonged food insecurity decline reported in the first decade of the 21st century and the global prospects of achieving the Zero Hunger target by 2030 (FAO, IFAD, UNICEF, WFP and WHO, 2019). On a gender basis, food insecurity was slightly higher for women than men, with the biggest differences found in Latin America. Regional wise, food insecurity (moderate or severe) was higher in Africa than in any other part of the world (FAO, IFAD, UNICEF, WFP and WHO, 2019). Like many Sub-Saharan African countries, Tanzania suffers from the problem of food insecurity. According to URT (2005), the problem is transitory and chronic in nature. Transitory food insecurity arises from instability in the ability to produce or access enough food to maintain a good nutritional status over a short time while chronic food insecurity occurs when people are unable to meet their minimum food requirements over a sustained period (FAO, 2008; URT, 2005).

Food insecurity has serious consequences for those affected. At the household level, Hamelin *et al.* (1999) classify the consequences of food insecurity into physical (hunger, exhaustion, illness), psychological (inability to observe to agreed norms and values, stress) and socio-familial (alteration of eating pattern, disturbance of household dynamics, and alteration of ways used to attain and manage food). At the individual level, food insecurity affects nutritional health, growth and development during childhood and in the adolescence period (Arage *et al.*, 2019; Cordeiro *et al.*, 2012). In addition, long term consequences of food insecurity affect the life choices of individuals, households and increase the burden to the health care system of the country (Bakar *et al.*, 2019).

Academically, food insecurity can affect students' academic performance and behaviour (Bakar *et al.*, 2019; Patton-Lopez *et al.*, 2014). Studies show an association between food insecurity and poor academic achievement (Fernandez *et al.*, 2019; Patton-Lopez *et al.*, 2014; Bakar *et al.*, 2019; Hagedorn and Olfert, 2018). Food insecure students are more likely to lower academic

performance than food-secure students (Dubick *et al.*, 2016; Mukigi and Brown, 2018; Fernandez *et al.* 2019). Furthermore, poor nutrition can adversely affect the mental ability of a student leading to reduced learning ability and attentiveness (Arage *et al.*, 2019). Despite the potential impact of food insecurity on students' academics in college and universities, so far, the subject has received little attention in the academic literature (Patton-Lopez *et al.*, 2014; Bakar *et al.*, 2019). Following the promulgation of the entitlement theory in the 1980s, studies about food security are mainly focused on household food accessibility and entitlement (Masanyiwa *et al.*, 2014). Nonetheless, the individual level, is similarly very crucial, especially for individuals separated from their families, particularly youth students in higher learning institutions. Upon admission, youth students become heads of households of their own and manage their lives using the incomes at their disposal to fund both educational and non-educational expenses (Blagg *et al.*, 2017). Undoubtedly, most college and university students are youth who had just graduated from secondary education and therefore, experiencing leading an independent life for the first time could be a challenging endeavour for them (Ramlee, *et al.*, 2019).

Studies about food security conditions among college and university students indicate its existence in both developed and developing countries. Studies by Patton-Lopez *et al.* (2014), Fernandez *et al.* (2019), and El Zain *et al.* (2019) confirmed the existence of food insecurity among students in higher learning institutions in the United States at varying levels of severity. Sulaiman *et al.* (2021) showed that 22.0 to 70.0 per cent of university students in Malaysia were food insecure. Similar results were established in studies about food security among college and university students in Canada and South Africa (Fernandez *et al.*, 2019; Patton-Lopez *et al.*, 2014; Van den Berg and Raubenheimer, 2015). A study by El-Zein *et al.* (2019) identified limited financial resources, decreased purchasing power of federal aid, and increase in costs of tuition, accommodation and food as main causes of food insecurity among study participants. These studies provide useful insights about the status, determinants, consequences of food insecurity among college and university students, they were conducted mostly in first and second world countries, and therefore, contextually different from Tanzania.

A study by TWaweza (a Swahili name meaning “we can”), a civil society based in Tanzania, found that eight in ten households interviewed reported their income did not cover their daily needs (TWaweza, 2017). Implicit to these results, most Tanzanian college and university

students originate from relatively poor families, which cannot adequately support their children to meet college and university expenses such as tuition fees, accommodation, meals and other expenses. As such, poverty and financial hardships at home can render students from poor families' food insecure. Arguably, students with total inaccessibility to the government loan scheme for students in a higher learning institution are most likely to be affected by food insecurity. However, one's financial liquidity does not necessarily guarantee food security (Van den Berg and Raubenheimer, 2015). In the light of the foregoing discussions, the main questions raised by the current study is: Are students in higher learning institutions in Tanzania, food secure or not? The current study, therefore, using the conventional proxies for measuring food security at the household level (food availability, accessibility and utilisation) investigated the food security status among college and university students in Tanzania. The aim is to inform higher learning institutions, policy and decision-makers on the status of food security amongst college and university students in Tanzania for further action.

2. Methodology

This study was done at the Institute of Rural Development Planning, Lake Zone Centre (IRDP-LZC) and Saint Augustine University of Tanzania (SAUT), Mwanza Campus as they are higher learning institutions in Mwanza with a higher number of students. It employed a cross-sectional design to allow the collection of data at a single point in time. Data were collected mainly from primary sources, which were higher learning institution students. The main methods of data collection used were surveys, Focus Group Discussion (FGD) and observation. Data collection instruments were interview schedule, and FGD and observation checklist. The interview schedule collected data about respondents' socio-economic and demographic characteristics, arrangements for accommodation, monthly income earned and expenditure for food, availability, utilisation and access to food over the four weeks preceding the data collection. The observation checklist was used to collect data about the presence of food selling facilities (cafeterias and restaurants), food prices and the trend of students in purchasing food. The unit of analysis was a higher learning institution individual student. FGD checklist collected data on views of students about availability, access and utilisation of food. The study involved 140 respondents, which was considered optimal for rigorous analysis (Bailey, 1994). IRDP-LZC and SAUT- Mwanza campuses were selected purposively for being the largest higher learning institutions in the Lake Zone of Tanzania, with students recruited all over the country. Simple random sampling was

used to select study respondents because each student had an equal chance to participate in the study. Quantitative data collected using the questionnaire were processed by establishing codes, then entered into IBM SPSS version 20, for cleaning. Data analysis was done through descriptive statistics to generate frequencies and percentages. Chi-square analysis was used to establish the associations between food security status and respondents' socio-economic and demographic characteristics.

Individual student food security was measured by adapting the Household Food Insecurity Access Scale (HFIAS). The tool comprises nine questions that probe food insecurity conditions and the frequency of occurrence of that condition. A question about food insecurity condition which was responded "no" was scored "0" for both condition and frequency of occurrence. But, if a question was responded "yes", it was scored 1 (rarely), 2 (sometimes) or 3 (often), depending on the frequency of occurrence. Rarely implied the condition was experienced once or twice in the past four weeks, sometimes implied three to ten times in the past four weeks and often implied more than ten times in the past four weeks. Based on HFIAS, an index of continuous scores ranging from 0 to 27 was developed to determine the status of food security/insecurity among students. Students whose scores ranged from 0-6 were food secure; scores ranging from 7-13 were mild food insecure, scores ranging from 14-20 were moderately food insecure and scores ranging from 21-27 were severely food insecure (Coates, *et al.*, 2007).

3. Results and Discussions

3.1 Study respondents' socio-economic characteristics

This study sought to establish the status of food security among students. Preliminary analyses sought to ascertain an association between food security and respondent's socio-economic and demographic characteristics. As previously found by Hagedorn and Olifert (2018), Chi-square test results in Table 1 indicate there was an association between being food secure and off-campus housing (significant at $p < 0.1$). Possible reasons could be freedom of choice on what to cook and eat. Respondents ageing between 18-23 years (54.3%) were food insecure compared to other age groups. The results, however, were not statistically significant ($p = 0.329$). Possible reasons for food insecurity among this age group could be the failure to manage life on their own as noted by Ramnee *et al.* (2019). On sex, though not statistically significant, more females (55.5%) than males (44.5%) were food insecure. This reflects a similar pattern at the household level, as

reported by FAO *et al.* (2019). About 64.9% of interviewed students earned between up to TZS 100,000 monthly while only 35.1% earned above TZS 100,000. This suggests the earnings of about two-thirds of interviewed students were too meagre to enable them to meet their monthly food and non-food requirements.

Table 1: Socio-economic characteristics of the respondents (n=127)

Socio economic variable		Food security status		Combined	χ^2 values
		Food secure	Food insecure		
Age (years)	18-23	40 (48.8)	24 (53.3)	65 (50.4)	p=0.344 $\chi^2 = 3.329$
	24-29	36 (43.9)	19 (42.2)	55 (43.3)	
	30 and above	6 (7.3)	2 (4.4)	8 (6.3)	
Sex	Male	37 (45.1)	20 (44.4)	57 (44.9)	p=0.941 $\chi^2 = 0.005$
	Female	45 (54.9)	25 (55.6)	70 (55.1)	
Marital status	Single	73 (89.0)	38(84.4)	111 (87.4)	p=0.457 $\chi^2 = 0.553$
	Married	9 (11.0)	7 (15.6)	16 (12.6)	
Accommodation arrangements	In campus	14 (17.1)	14 (31.1)	28 (21.9)	p=0.068 $\chi^2 = 3.332$
	Off-campus	68 (82.9)	31 (68.9)	100 (78.1)	
Off-campus student's living arrangements	Alone	32 (48.5)	19 (59.4)	51 (52.0)	p=1.463 $\chi^2 = 1.196$
	Room mate	24 (36.4)	9(29.0)	33 (34.0)	
	Family	10 (15.2)	3 (9.7)	13 (13.4)	
Monthly earnings	0 -50,000/=	24(30.4)	20(44.4)	44(35.5)	p=38.81 $\chi^2 = 0.422$
	51,000-100,000/=	26(32.9)	11(24.4)	37(29.8)	
	101,000 – 150,000/=	11(13.9)	4(8.9)	15(12.1)	
	151,000 - 200,000/=	4(5.1)	4(8.7)	8(6.5)	
	> 200,000/=	14(17.7)	6(13.3)	20(16.1)	

Note: Figures in brackets are percentages

3.2 Status of Food Security

3.2.1 Food availability

Students are not engaged in the production of food products. Instead, they do purchase them for their consumption. So, the availability of food was determined through the food trade. To determine the availability of food for students, they were asked whether the food was available in places where they usually purchased food or not. Study results show that 82.8% of students living on campus and 80.6% of students living off-campus affirmed food to be available in places

they could access it. Through observation, it was noted the food was sold in canteens and cafeterias available within and outside the premises of the institutions involved in the study.

3.2.2 Food utilization

The second proxy of food security was food utilization. In this study, food utilization was measured by the number of meals consumed by individual students interviewed. Students who consumed one or two meals per day were considered food insecure while those who consumed three or more meals per day were considered food secure. Study results in Table 2 show 55.7% of the students interviewed were food secure while 44.3% were food insecure. Since food utilisation can be influenced by numerous confounding factors, an analysis of students' earnings and expenditure on food was made. Results in Table 2 show that 45 (72.8%) of those who earned up to 100,000 TZS were food insecure. Similarly, 45(72.6%) of those who spent up to 60,000 TZS on food were food insecure. Statistically, there is an association between food security and students purchasing power ($p=0.036$). Though previous studies (eg. Van den Berg and Raubenheimer, 2015) has indicated not always having enough money for buying food is a strong predictor of food insecurity, in this study food insecurity was decreasing with an increase in both monthly earning and expenditure on food. This suggests food insecurity among study respondents is largely attributed to funding limitations.

Qualitative results from FGD participants affirmed most students had monthly earnings that did not meet their basic requirements, specifically on food. The shortage of money to buy food compelled some students to skip some meals in a day, especially lunch. In one of the institutions involved in this study, skipping lunch is such popular that it has been nicknamed as striking a long pass. These results reiterate previous results by TWaweza (2017) whereby eight in ten households interviewed reported to have earnings that did not meet their daily needs, signaling inability to adequately cover the living expenses for their children studying in higher learning institutions. According to Matunga *et al.* (2009), eating less than three meals for people aged above five years can lead to poor health status and general body weakness for people aged above five. It can also lead to decreased learning ability, poor concentration and impaired school performance (Arage *et al.*, 2019).

Table 2: The number of meals taken relative to the number of funds earned (n=140)

Number of meals per day	Frequency			Percentage
1 or 2 meals	62			44.3
3 or more meals	78			55.7
Amount of funds earned by students per month (TZS)	Number of Meals Taken:			χ^2 values
	1 or 2 meals	3 meals or more	Total	
0-50,000	30(48.4)	24(32.0)	54(39.4)	p=5.483 $\chi^2=0.241$
51,000 - 100,000	15(24.2)	24(32.0)	39(28.5)	
101,000 - 150,000	7(11.3)	8(10.7)	15(10.9)	
150,000 and above	10(16.7)	19(25.5)	29(21.1)	
Amount of funds spend on food				
< 40,000	16(25.8)	10(12.8)	26(18.6)	p=0.036 $\chi^2 =11.903$
40,000 - 60,000	29(46.8)	26(33.3)	55(39.3)	
61,000 - 80,000	4(6.5)	10(12.8)	14(10.0)	
81,000 - 100,000	4(6.5)	16(20.5)	20(14.3)	
101,000 - 120,000	5(8.1)	7(9.0)	12(8.6)	
121,000 +	4(6.5)	9(11.5)	13(9.3)	

Note: Figures in brackets are percentages

3.2.3 Food accessibility

Study results in Table 3 show 66.4% of respondents worried about not having enough food while closer to two-thirds of respondents (64.3%) sacrificed quality by eating less desired food and/or reducing food varieties/or eating undesired food. About 59.3% of respondents sacrificed quantity by reducing meal sizes while 54% skipped some meals (food insecure without hunger). Closer to half of the respondents (47%) experienced hunger by going to sleep without eating or without eating for a whole day and night. These results suggest the number of interviewed students who experienced food insecurity was declining with an increase in food insecurity severity.

Table 3: Individual student food experience in the past four weeks

In the past four weeks, did you:	Response		If yes, how frequent?		
	Yes	Rarely	Sometime	Often	Total
1. Worry about food/money to buy food?	101(72.1)	51(36.4)	35(25.0)	7(5.0)	93(66.4)
2. Not able to eat the kinds of foods preferred because of a lack of resources to purchase food?	99(70.7)	42(30.0)	32(22.9)	16(11.4)	90(64.3)
3. Eat a limited variety of foods due to a lack of resources To purchase food?	107(76.4)	45(32.1)	32(22.9)	13(9.3)	90(64.3)
4. Eat some foods that did not want to eat because of a lack of resources to buy food?	91(65.0)	45(32.1)	39(27.9)	11(7.9)	95(67.9)
5. Eat a smaller meal than felt needed because of lack of resources to purchase food?	99 (70.7)	36(25.7)	31(22.1)	16(11.4)	83(59.3)
6 . Eat fewer meals in a day because there was not enough The resource to purchase food?	102(72.9)	42(30.0)	22(15.7)	25(17.9)	83(59.3)
7. Fail to eat any kind of food because of lack of resources To purchase food?	4(60.0)	39(27.7)	28(20.0)	9(6.4)	76(54)
8. Slept hungry because there were not enough resources to purchase food?	78(55)	36(25.7)	21(15.0)	13(9.3)	70(50)
9. Spent whole day and night without eating anything because there were not enough resources to purchase food?	75(53.6)	34(24.3)	20(14.3)	13(9.3)	67(47)

Note: Figures in brackets are percentages

Based on results about individual student experience about food security (Table 3) further analysis was done to establish food insecurity statuses among study respondents. In the context of this study, a food secure student experienced none of the food insecurity (access) conditions, or just experienced worry, but rarely. Medium food-insecure students worried about not having enough food sometimes or often, and/or were incapable to eat favourite foods, and/or ate a more repetitive diet than wanted and/or some foods not considered desirable, but only rarely. Moderately food insecure students sacrificed quality more frequently by eating a repetitious diet or undesirable foods sometimes or often, and/or had started to reduce diet or unwanted foods sometimes or often, and/or had started to reduce the quantity by decreasing the size of meals or number of meals, rarely or sometimes. Severely food insecure students reduced the number of meals often or experienced any of the three most severe situations, that is, running out of funds to purchase food, going to sleep hungry, or not eating for whole day and night), even as seldom as rarely (Coates *et al.*, 2007).

The overall results about the status of food security, show closer to one-third of respondents (32.0%) were food secure while the remaining were food insecure at various level, ranging from

mild (low) (32.0%), moderate (32.0%) to severe (3.9%) food insecurity. These results are similar, but higher, to Van den Berg and Raubenheimer (2015) who reported food insecurity among students at the University of the Free State, South Africa to be 65% (one item measure) and 60% (using multi-item measure). Elsewhere, Bakar *et al.* (2019) reported 54.4% of students at Pahang University in Malaysia to be food insecure. These results imply that food insecurity is an issue in higher learning institutions, not only in Tanzania but also in other parts of the globe.

4. Conclusion and Recommendations

The current study investigated food security status among two selected higher learning institutions in Tanzania. The results have shown that food is readily available in places students to live. In terms of access, only less than one-third of interviewed students were food secure. The remaining, more than two-thirds, were food insecure. In terms of utilisation, less than half of respondents ate one or two meals. From these results, it can be concluded that food insecurity exists among students in higher learning institutions involved in this study with various levels of severity. It is further concluded that college and university students comprise another food insecurity risk population in the country. The study recommends more studies involving a diversity of institutions across the country and examine the influence of food insecurity on academic performance and students' behaviour, and exploring the viability of food insecurity coping strategies deployed by students. Besides, policymakers should take on board the necessity of addressing food insecurity in higher learning institutions in the country.

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