

EDUCATING THE EMPTY STOMACH? PREVALENCE OF FOOD ACCESSIBILITY AMONG COLLEGE OF BUSINESS EDUCATION STUDENTS IN TANZANIA

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ABSTRACT

The prevalence of food insecurity among college students has received little attention in academic literature, despite previous studies suggesting increased risk and potentially high rates of food insecurity among students. This study assessed the prevalence of food inaccessibility among the college students, and explored its relationship with socio-demographic characteristics. A cross-section design was applied and data were gathered from a random sample of 287 undergraduate bachelor students using a standard questionnaire which included the three domains from the Household Food Insecurity Access Scale (HFIAS). Descriptive analysis was conducted using SPSS version 20. Using the HFIAS tool, about 43% of the surveyed students were not experiencing food accessibility. Overall, more than a half (57%) of all students who were not experiencing food accessibility were males. Year three students were relatively better compared to year one and year two students. Students residing on-campus or with parents experienced food accessibility than those staying off campus alone. Also, students who sourced most of their income from salaried jobs were better off than those depending on a lover or Higher Education Students' Loans Board. To conclude, inadequate food accessibility is a significant problem among students in this college. Future studies need to investigate the impact of food insecurity on college students' academic performance and formulate strategies to reduce the problem and its consequences.

Keywords: College Students; Food Insecurity; Tanzania.

1.0 INTRODUCTION

Food insecurity – the lack of reliable access to sufficient quantities of affordable, nutritious food – is a growing problem among college and university students worldwide, potentially affecting academic performance of untold thousands of students (Dubick *et al.*, 2016). Despite its potential impact, the understanding of this issue is far too limited most especially in developing countries. Studies in high-income countries have found food insecurity to be consistently higher among college students than that reported in the general population (Gallegos *et al.*, 2014; Micevski *et al.*, 2014; Cady, 2014). Between 14 and 59% of students in the USA were reported to be food insecure at some point during their college career (Chaparro *et al.*, 2009; Gaines *et al.*, 2014; Hughes *et al.*, 2011; Maroto *et al.*, 2015; Patton-Lopez *et al.*, 2014; Twill *et al.*, 2016). About 47% of undergraduate students in Australia were reported to have experienced some degree of food insecurity in 2011 (Hughes *et al.*, 2011).

In Africa, the experience of food insecurity among college students is not well documented or researched. Using one-item measure in a study in South Africa's university, nearly two-thirds of university students (65.1%) were found to be food insecure in 2013 (Van den Berg, 2015). The highest prevalence of food insecurity was among black students (79%) and coloured (65.5%) students. In Tanzania, the literature about food insecurity among schoolchildren is abundant (Lwambo *et al.*, 2000; URT, 2010; Pereira *et al.*, 2017). However, hardly any studies have been conducted to firmly establish the prevalence of food insecurity among college students. Understanding food accessibility among this group is important because students represent a big group that will contribute to the future progression of the country.

Food insecurity among college students is a neglected field of research, possibly owing to the traditional, unstated assumptions that higher education being an expensive, elite and non-mandatory education avenue, would not be pursued by students if they do not already have access to the basic needs including food (Hughes *et al.*, 2011). On the contrary, food insecurity is a growing problem at higher education institutions because many of today's students provide for their own living expenses while also paying for their education. In addition, today's typical student is not a recent high school graduate who lives in a dormitory and is supported by parents (Dubick *et al.*, 2016). Most college students either attend college part-time, are employed full-time, are financially independent, must provide for dependents, are a single parent, or do not have a high school diploma and hence cannot secure a well-paying job (National Centre for Education Statistics, 2015).

Food insecurity problem among college students is hard to see because of the fact that most students who experience food insecurity prefer to keep it hidden due to stigma and shame (Cady, 2014). Regardless of its lack of visibility, literature

supports the fact that food insecurity negatively affects not only physical growth and health of students but also their cognitive function and academic performance (Belachew *et al.*, 2011). A study by Maroto *et al.* (2015) in Maryland, USA noted that food insecure students were more likely to report lower GPAs of between 2.0 and 2.49 than food secure students. In addition, food insecurity is associated with various indicators of poor mental health such as depression, suicide ideation and substance use among college students (McLaughlin *et al.*, 2012; Tarasuk *et al.*, 2013; Davison *et al.*, 2018).

To my knowledge the status of food accessibility among college students has not been explored in Tanzania. Assessing the prevalence of inadequate food accessibility among college students will facilitate understanding of the magnitude of the problem and hence enable policy makers to formulate effective strategies to reduce the problem. Consequently, an attempt was made to assess the prevalence and severity of inadequate food accessibility among college students in a Tanzanian college in Dar es Salaam as a baseline study for further investigation into the causes and consequences thereof. Two specific objectives of this study were: (i) To assess the prevalence of inadequate food accessibility among the students, and (ii) to investigate the relationship between food accessibility and socio-demographic characteristics of the students including sex, marital status, duration of living in the city of Dar es Salaam, year and mode of study, living arrangement, access to loan from HESLB, and main source of income.

2.0 DESCRIPTION OF THE STUDY SITE

The College of Business Education (CBE) is a Tanzanian public academic institution established in 1965 with aim of providing commercial education to middle-cadre Tanzanians. It provides several courses ranging from certificate, diploma as well as bachelor, master and PhD degree programmes. The survey took place at the main Campus, which is located at the heart of the commercial city of Dar es Salaam. Other campuses are located in Dodoma, Mwanza and Mbeya Regions. CBE is one of the oldest colleges in the country admitting students from almost all regions in the country and also a few international students mostly from the Seychelles and Comoro islands. The college offers limited on-campus residence; otherwise most students stay off-campus in nearby private hostels or homes.

3.0 METHODOLOGY

A cross-sectional research design was employed whereby data were collected from 287 undergraduate bachelor students in June 2016 using a structured questionnaire. The questionnaire included questions on student's demographic information and food insecurity. Data on the status of food accessibility were collected using a standardized questionnaire developed based on previous research (Hughes *et al.*, 2011; Munro *et al.*, 2013; Gaines *et al.*, 2014). The questionnaire was based on the three domains from the standard Household Food Insecurity Access Scale (HFIAS) (Coates *et al.*, 2007). Unlike the HFIAS, however, questions on the status of food accessibility were designed to apply to the individual student and not a household. To assess clarity and applicability of the questions, a pilot test was conducted using a convenient sample of 15 CBE students from different departments and academic years. The pilot study students were asked to fill out the questionnaire independently and then as a group to openly discuss all of the questions. Each question was assessed for readability and relevance to the college population. Suggestions and clarifications were included in the final questionnaire. The sampled respondents for the pilot study were not included in the finals study sample.

The standard procedure for scoring a 9-item HFIAS questionnaire was used in filling the formulated questions. Zero was recorded if the event described by the question never occurred, 1 point if it had occurred once or twice during the previous 30 days, 2 points if it had occurred 3–10 times, and 3 points if it had occurred more than 10 times. For each participant, the HFIAS score corresponded to the sum of these points which according to Coates *et al.* (2007), could range from zero (food accessibility) to 27 (severely food inaccessibility). A student was considered to have experienced food accessibility if his or her total number of HFIAS score was ≤ 11 . On the other hand, a student with total score of more than 11 was considered not experiencing food accessibility (Coates *et al.*, 2007). The HFIAS has been found to be valid and reliable approach in numerous previous studies, including those conducted in Tanzania (Knueppel *et al.*, 2010).

Statistical Package for Social Sciences (SPSS), version 20, was used for all data analyses. Descriptive statistics were used to summarise the prevalence of inadequate food accessibility and the characteristics of the sample. Demographic data included sex, marital status, duration of time lived in the City of Dar es Salaam, year of study, mode of study, living arrangement, access to loan from HESLB, and main source of income. Chi-square test was used to find relationship between food accessibility situation and the socio-demographic variables with a significance level specified as $p \leq 0.05$.

Approval of the study was obtained from the Directorate of Postgraduate Studies, Research and Publication of the College of Business Education. All students were informed that survey completion implied consent for their responses to be used in the study.

4.0 RESULTS

4.1 Socio-demographic characteristics of surveyed students

Results in Table 1 show that out of 287 undergraduate students who participated in this study, more than a half (55.1%) were female. The mean age of the respondents was 26 ± 4.7 years, and only 15% were married. Most participants have lived in the City of Dar es Salaam for more than three years. Year one students accounted for about 45% of all the participants. At the time of the survey the total number of enrolled year one students was nearly equals to that of year two and year three students combined. About two-thirds of the respondents were enrolled in day programme compared to just over a third who were registered in evening programme. The day programme session starts at 7.00 am in the morning until 5.00 pm. This programme is mostly attended by students who are in their 20s of age and fresh from secondary school education level. Evening programme session, which starts from 5.00 pm to 9.00 pm is mostly preferred by students who are employed in various locations of the City of Dar es Salaam. Due to limited accommodation facilities on-campus, only a few respondents (5.6%) lived on campus; otherwise most of participants lived off campus alone, with parents, a family friend, relative or guardian. Less than 14% of the participants received bursary from the Higher Education Students' Loans Board (HESLB) and nearly two-thirds of the participants depended on their parents for their direct and indirect students' costs. Some respondents (4%) depend on assistance from their lovers.

Table 1. Socio-demographic characteristics of surveyed students

Socio-demographic characteristics	n	Frequency (%)
Sex:		
Female	158	55.1
Male	129	44.9
Marital status:		
Single	243	84.7
Married	44	15.3
Duration of time living in the City of Dar es Salaam:		
Less than three years	32	11.1
Three years of more	255	88.9
Year of study:		
Year one	128	44.6
Year two	77	26.8
Year three	82	28.6
Type of study programme enrolled:		
Evening program session	104	36.2
Day program session	183	63.8
Living arrangement:		
Living on campus	16	5.6
Living off campus in a hostel	40	13.9
Living off campus with parents	161	56.1
Living off campus with a relative	70	24.4
Access to bursary from HESLB		
Don't have access	248	86.4
Has access	39	13.6
Source of income:		
Depend on salaried income	36	12.5
Depend on wage income	22	7.7
Depend on assistance from parents and relatives	184	64.1
Depend on assistance from a lover	12	4.2
Depend on loan from HESLB	33	11.5

4.2 Status of Food Insecurity Among College Students

Using Household Food Access Insecurity Scale (HFIAS) tool, about 43% of the surveyed students (n = 287) were not experiencing food accessibility. These results appear to be similar to findings conducted elsewhere in the world. For example, 21% of the students at University of Hawaii in Manoa were reported to be food insecure (Chaparro et al., 2009) while the Queensland University of Australia reported the prevalence of food insecure students to be 46.5% among undergraduate students (Hughes et al., 2011). A study in Oregon found that 59% of students were food insecure at some point during the school year (Patron-Lopez et al., 2014). Morris et al. (2016) found that 35% of students at Illinois University were food insecure. The variation from these studies may be due to several factors, including different geographical locations and institutional variability. The high rates of college student food insecurity reported in this study and other studies (Chaparro et al., 2009; Lindsley and King, 2014; Patton-Lopez et al., 2014; Bruening et al., 2016; Morris et al., 2016) suggest that this population is more vulnerable than what is expected, and that interventions should be taken in order to improve their mental or emotional well-being for academic success.

4.3 Students' Socio-demographic Characteristics and Food Insecurity

Using Chi-square test (X^2), about a half of all male students (48.8%) experienced inadequate food accessibility as compared to just over a third (36.7%) of all female students (Table 2). One possible explanation could be that male students have fewer sources of income as compared to female students who seem to have multiple sources of income. At some point, during data collection, some female respondents declared that on top of the financial assistance that they get from their parents and relatives, they also rely heavily on their boyfriends for cosmetics, outfit, renting (hostel), meals, etc. Another reason could be that most of male students have more responsibilities than female students whereby some of them are obliged to take care of their relatives and parents back home. These reasons are likely to make male students run short of money which subjects them to inadequate food accessibility. A study conducted by Nguyen et al. (2017) across 83 countries reported a significantly higher male prevalence of food insecurity compared to female students. These findings also compare well with results of a study by McArthur et al. (2017) in the Appalachian region, USA where greater food insecurity was noted among male students.

Significant relationship between food accessibility status and academic year of study ($X^2 = 9.592$, $p = 0.008$) was noted (Table 2). Specifically, students in their third year were relatively better than their counterparts of first year and second year. These results are consistent with previous studies that have determined food insecurity rates among college students (Hagedorn and Olfert, 2018; McArthur et al., 2017; Hughes, 2012) whereby the prevalence of food insecurity was higher among junior year students as compared to senior students. One explanation could be that senior students have established certain networks with other students or people around the campus in form of social capital which enables them to get some money either in form of gift, donation or loan.

Other socio-demographic variables that showed significant relationship with food security situation included living arrangement, mode of study and main source of income. Generally, larger proportions of students living off-campus either alone or with friends or relatives experience more food accessibility than those living on-campus or off-campus in a family. In most cases students who reside with a family friend or relative are those with inadequate income to pay for accommodation in hostel either on or off-campus. These findings conform to the results of a study from the University of Manoa which reported that students most likely to experience food insecurity included those living off-campus with roommates (Chaparro et al., 2009). Similarly, the Queensland University of Australia found that students renting, boarding or sharing accommodation were at higher risk for food insecurity (Hughes et al., 2011). It appears that parental or guardian assistance with food costs is an important aspect for students living off-campus. However, further investigation is necessary to elucidate this relationship.

Findings in Table 2 shows that larger proportions of students who sourced most of their income from waged job, assistance from parents, guardians or relatives experienced inadequate food accessibility than those whose main source of income was from salaried jobs, assistance from a lover or loan from HESLB. These findings are consistent with those of the study by Van den Berg (2015) at the University of the Free State, South Africa, expressing that, students who were studying while employed experienced much lower food insecurity compared to those obtaining their upkeep assistance from parents, guardians or study loan. However, a study by Holland et al. (2017) at a South-eastern University (Florida) observed that students who reported part-time or full-time employment were at higher risk of being food insecure than those who did not. This implies that it doesn't matter whether one is employed or not; it is actually about how much one earns out of the employment or gets from the financial assistance. However, there are only limited studies on the relationship between food insecurity and financial support in higher education (Morris et al., 2016).

Table 2. Distribution of demographic characteristics by food security status

Demographic characteristics	Food-secure (%)	Food-insecure (%)	Chi-Square (X ²)	P-value
Gender				
Female (n = 158)	63.3	36.7		
Male (n = 129)	51.2	48.8	6.046	0.014*
Marital status				
Not married (n = 243)	55.1	44.9		
Married (n = 44)	65.9	34.1	1.759	0.185
Duration of living in the City of DSM				
Less than 3 years (n = 32)	56.2	43.8	1.327	0.515
More than 3 years (n = 255)	57.1	42.9		
Year of Study				
Year 1 (n = 128)	53.1	46.9		
Year 2 (n = 77)	48.1	51.9	9.592	0.008**
Year 3 (n = 82)	70.7	29.3		
Mode of study				
Evening programme (n = 104)	67.3	32.7		
Day programme (n = 183)	50.8	49.2	7.347	0.007**
Living arrangement				
On campus (n = 16)	68.8	31.2		
Off campus alone (n = 40)	35	65		
Off campus in a family (n = 161)	65.8	34.2	17.544	0.001***
Off campus with a family friend or relative (n = 70)	45.7	54.3		
Access to bursary from HESLB				
No (n = 248)	56.5	43.5		
Yes (n = 39)	59	41	0.087	0.768
Main source of income				
Salary (n = 36)	83.3	16.7		
Wage (n = 22)	45.5	54.5		
Parents (n = 184)	51.6	48.4	14.127	0.007**
Lover (n = 12)	58.3	41.7		
Loan from HESLB (n = 21)	63.6	36.4		

5.0 CONCLUSION AND RECOMMENDATIONS

This study concludes that inadequate food accessibility is a significant problem among students in this college. There are also significant relationships between food accessibility status and some socio-demographic characteristics, such as sex, year and mode of study, living arrangement and main source of income. Future studies need to investigate the impact of food insecurity on college students' academic performance and strategies these students use to cope with their food insecurity. Additionally, an investigation of the prevalence of food insecurity on other colleges, to include those outside the City of Dar es Salaam, would enable assessment of food insecurity across a variety of college student demographics. Identification of food insecurity and its determinants among college students across the country can enable policy makers

to both assess the magnitude of the problem and to formulate effective strategies to reduce the problem and its consequences. In addition, focus group discussions, in-depth interviews and other qualitative assessments should be applied to gain greater insights into the underlying and basic causes of inadequate food accessibility among this group.

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