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Food Insecurity among University Students in Kenya: An Analysis of Associated Factors

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Abstract

The realities of a shrinking economy in Kenya, reduced government financial support to universities, effects of inflation and the outbreak of COVID-19 pandemic have exposed university students to hardships including food insecurity. This has happened in the face of high demand for higher education and therefore mitigation measures informed by scientific findings are necessary. This study investigated the factors associated with food insecurity among students in Moi University and University of Eldoret. It was established that food insecurity among university students was prevalent. Family background, stakeholders' support and financial responsibilities have the highest influence on food insecurity. The high cost of living, inadequate earnings from work-study programs and poor financial management skills were associated factors. It was concluded that the food insecurity compromised the academic performance of students. It was recommended that HELB financial support to needy students should be enhanced, universities need to engage bursary-giving/charitable organizations to support needy students as well as institutionalization of financial management trainings for students.

Keywords

Food insecurity, security, factors, Kenyan Universities

1. Introduction

Food insecurity exists whenever the availability of nutritionally adequate and safe foods in socially acceptable ways is limited or uncertain. This is brought about by circumstantial and economic barriers that bring about challenges that limit access to sufficient and nutritious food by populations [1]. Globally, food insecurity is a growing public health concern and a barrier to achieving adequate nutrition [2]. The threat of food insecurity is more in low and middle-income countries (especially in Sub-Saharan Africa and South-eastern and Western Asia) where the burden is huge and national prevalence is high [3]. It has been reported that 1 in 3 Kenyans suffer from severe food insecurity and poor nutrition [4]. Food insecurity at higher learning institutions is not a new phenomenon, but it is not openly addressed, especially at an institutional leadership level [5]. Studies have shown that university students are vulnerable to food insecurity especially in African universities. Multiple factors are responsible for food insecurity worldwide, including population growth, climate change, increasing cost of food, unemployment, poverty, and loss of biodiversity [6]. Food insecurity may be long term or temporary and it may be influenced by a number of factors including income, employment, race/ethnicity, and disability [7].

In Kenya, university students have been reported to go without food due to lack of or insufficient money to buy food. This has caused a lot of concern for students who may fail to attend classes because of hunger or may defer their studies or drop out of campus. Moreover, it has been reported that students skip meals so that they can be able to pay rent or cater for other personal needs. A study on food insecurity among university students at Karatina University in Kenya established that students live on cheap foods, skip some meals and avoid animal protein food products such as beef, chicken and eggs for a part of the semester [4]. Another study in Kenya relying on secondary data found that the high food prices was one of the factors that lead to food insecurity [8]. The outbreak of COVID-19 pandemic worsened the already existing problem of student food insecurity. The effects of COVID-19 go beyond university students affecting all people and all economies globally. A study in three campuses in a state-funded university, US on prevalence and social determinants of food insecurity among college students during the COVID-19 pandemic concluded that there was a high prevalence of food insecurity among college students and the two strongest predictors among students were change in living arrangement and/or loss of employment as a direct result of the COVID-19 pandemic [9]. While it is well documented that food insecurity impacts many children and families, there is limited research on factors contributing to food insecurity among university students in Kenya. Thus, this study sought to examine food insecurity among university students and analyzed some of the contributory factors.

2. Methods

2.1 Design and Methods

The study was conducted in two public universities in Kenya, Moi University and University of Eldoret. The empirical data collected was conducted during the months of June to August, 2021. A survey approach was employed on a sample which included students, Deans of students, students' counselors and students' leaders. A combination of questionnaires and interview schedules were used to collect data. A sample of 1,000 students randomly selected from the two universities responded to the questionnaire items. The other respondents were interviewed. The student respondents were selected from the faculties of Education, Business, Engineering, Agriculture, Science, Law, IT, Medicine and Environmental Studies. The responsiveness of the questionnaires was 87.2% (n=872) while interview was 100% (n=24, 12 for each university). Descriptive and inferential statistics were employed in data analysis.

3. Results

3.1 Descriptive analysis

The student respondents were drawn from various faculties proportionate to the enrolment populations. One of the questionnaire items required the students to respond to some statements as strongly agree (SA), agree (A), neutral (N), disagree (D) or strongly disagree (SD). On the factors contributing to food security status of students while at campus, Table 1 below summarizes the responses to this item.

Table 1. Factors contributing to Food Security Status

Statement		SA	A	N	D	SD	Mean	Std.Dev
1. Enough loan amounts	F	87	212	110	333	130	2.76	1.25
	%	10.0	24.3	12.6	38.2	14.9		
2. Enough salary/wage amount	F	42	212	157	227	234	2.54	1.25
	%	4.8	24.3	18	26	26.8		
3. Manageable cost of living	F	127	238	144	224	139	2.99	1.32
	%	14.6	27.3	16.5	25.7	15.9		
4. Expenditure skills	F	219	264	140	205	44	3.47	1.24
	%	25.1	30.3	16.1	23.5	5		
5. Family background	F	162	167	131	247	165	2.9	1.4
	%	18.5	19.2	15	28.3	18.9		
6. Adequate stakeholder support	F	101	213	211	193	154	2.29	1.28
	%	11.6	24.4	24.2	22.1	17.7		
7. Financial responsibilities	F	181	274	151	176	90	3.32	1.29
	%	20.8	31.4	17.3	20.2	10.3		
8. Manageable/none/few religious responsibilities	F	244	262	171	88	107	3.51	1.32
	%	28.0	30.0	19.6	10.1	12.3		
9. Manageable Social responsibilities	F	286	244	163	114	65	3.66	1.26
	%	32.8	28.0	18.7	13.1	7.5		

The findings indicated that majority 463 (53.1%) of the student respondents disagreed that there were enough loan amounts for their upkeep at campusand therefore food insecure. However, 299 (34.3%) of the respondents agreed that there were enough loan amounts hence food secured. The study findings in terms of mean standard deviation revealed that majority of respondents disagreed that there were eenough loan amounts (Mean=2.76, Std.Dev=1.25). On enough salary/wage amounts 461 (52.9%) disagreed while 254 (29.1%) agreed that they had enough (Mean=2.5424, Std.Dev=1.24977). On manageable cost of living, 365 (42%) agreed while 363 (42%) disagreed (Mean=2.9885, Std.Dev=1.32359). on good expenditure skills, 483 (55%) agreed while 249 (29%) disagreed, (Mean=3.4690, Std.Dev=1.23532). Considering family background, 329 (38%) agreed while 439 (50%) disagreed, (Mean=2.9014, Std.Dev=1.40260). On adequate stakeholder support, it was found that 314 (36%) agreed while 347 (40%) disagreed, (Mean=2.29014, Std.Dev=1.27572). On manageable financial responsibilities 455 (52%) agreed while 266 (31%) disagreed, (Mean=3.3211, Std.Dev=1.28762). On manageable/none/few religious responsibilities, 506 (58%) agreed while 195 (22%) agreed, (Mean=3.5138, Std.Dev=1.32270). Regarding manageable social responsibilities, 530 (61%) agreed while 179 (21%) disagreed, (Mean=3.6560, Std.Dev=1.26182). The study findings implied that these factors moderately contributed to food security of students while on Campus and most of them were unable to access continuous supply of resources to cater for their daily food supply.

One of the questionnaire items sought to find out whether the students were food secure or not. The responses were that 502 (57.6%) indicated there were food insecure while 370 (42.4%) said they were food secure. On the number of meals per day, 492 (56.4%) had two meals per day while 380 (43.6%) had three meals per day. It was found that only 38 (4.4%) of students responded that they had nutritionally balanced diets and 65 (7.5%) acknowledged to have unbalanced diets. The rest of the students who were 769 (88.2%) remained neutral on this item. It is possible that most of those who were neutral had unbalanced diets but did not want to confirm so.

3.2 Inferential analysis

The correlation and regression models were used to show the relationship between the independent and dependent variables.

Table 2. Multiple Correlation Results

		Food security
Food security	Pearson Correlation	1
	Sig. (2-tailed)	
Loan amount	Pearson Correlation	-.500**
	Sig. (2-tailed)	.000
Salary/wage amount	Pearson Correlation	.647*
	Sig. (2-tailed)	.057
Cost of living	Pearson Correlation	-.557**
	Sig. (2-tailed)	.000
Expenditure skills	Pearson Correlation	-.674**
	Sig. (2-tailed)	.000
Family background	Pearson Correlation	-.608**
	Sig. (2-tailed)	.000
Stakeholder support	Pearson Correlation	-.658**
	Sig. (2-tailed)	.000
Financial responsibilities	Pearson Correlation	-.654**
	Sig. (2-tailed)	.000
Religious responsibilities	Pearson Correlation	.675*
	Sig. (2-tailed)	.182
Social responsibilities	Pearson Correlation	.664*
	Sig. (2-tailed)	.271
	N	872

**. Correlation is significant at the 0.01 level (2-tailed[1]).

Pearson correlation analysis was carried out to show the strength and direction of the association between independent and dependent variables. Table 2 presents the results. The findings in Table 2 indicated that loan amount had a neg-

[1] The key is misleading since FS2, FS8 and FS9 are not significant in 2-tailed.

ative significant correlation with food security among the students (r-.500**: p <0.01). Salary/wage amount has no significant correlation with food security among the students significantly and negatively (p>.01). There was a negative significant relationship between cost of living and food security among the students (r=-.557**; p<.01). Expenditure skills correlated with food security among the students significantly and negatively (r=-.674**; p<.01). Family background correlated with food security among the students significantly and negatively (r=-.608**; p<.01). There was a negative significant relationship between stakeholders' support and food security among the students (r=-.658**; p<.01).

There was a negative significant relationship between financial responsibilities and food security among the students (r=-.654**; p<.01). There was no significant correlation between religious responsibilities and food security among the students (p>.01). There was no significant relationship between social responsibilities and food security among the students (r=.664**; p>.01). A strong correlation means that two or more variables have a strong relationship with each other while a weak or low, correlation means that the variables are hardly related [10]. Correlation coefficient can range from -1.00 to +1.00. The value of -1.00 represents a perfect negative correlation while a value of +1.00 represents a perfect positive correlation. A value of 0.00 means that there is no relationship between variables tested.

3.3 Multiple Regression analysis

Multiple regression analysis was used to establish the effect of independent variables on independent variable. The coefficient of determination (R^2) and correlation coefficient (R) shows the degree of association between dependent and independent variables. The results are presented in Table 3 below.

Table 3. Multiple Regression Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.778[a]	0.605	0.601	0.92629

The results of the regression in Table 3 indicated that R^2 value was 0.605 and R-value was 0.778. R value of 0.778 gave an indication that there was a strong linear relationship between dependent and independent variables. The R^2 indicates that explanatory power of the independent variables was 0.605. This implied that about 60.5% of the variation in food security among students is explained by the regression model. The adjusted R^2 of 0.601, which is slightly lower than the value of R^2.

3.3.1 Regression Model Fitness Test

Model fitness was used to find out if the model best fits the data. The study results were presented in Table 4 below.

Table 4. Regression Model Fitness Results

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	1132.045	9	125.783	146.597	.000[b]
Residual	739.613	862	.858		
Total	1871.658	871			

Table 4 shows that the respondents F-statistics produced (F =146.597) which was significant at p=0.000 thus confirming the fitness of the model. This implies that the multiple regression model was fit for the data. Hence the independent variables influence food security among students. The F-value indicates that all the variables in the equation are important hence the overall regression is significant.

4. Discussion of the findings

4.1 Discussion quantitative findings

This study sought to find out whether the students in the studied universities were food secure or food insecure. An analysis of the data derived revealed that most of the students constituting 57.6% indicated that they were food insecure. This finding agrees with a study in Pahang, Malaysia on prevalence and factors contributing to food insecurity among university students which found that 54% of the students were food insecure, 33% were low food secure and 21% were very low food secure [11]. It was further found that 56.4% of the students afforded only two meals per day and only a minority could afford three meals per day. On the issue of consuming balanced diets, 7.5% of respondents acknowledged to be having unbalanced diets. It was also noted that 88.2% of the students chose to remain neutral on whether or not they consumed balanced diets. It is most likely that a majority of those who chose to remain neutral consumed unbalanced diets but did not want to take a position. These findings agree with the four main dimensions of food security thus, food supply, food access, food utilization and food stability, where the absence of any of these results in food insecurity [12].

In Kenya, food security is one of the priority areas of focus as espoused by the President's Big Four Agenda which are Food Security and Nutrition, Manufacturing, Universal Healthcare and Affordable Housing [13]. Access to food is one of the four pillars of food security, alongside food availability, utilization and stability. The Kenya Government is also committed to achieving equity in education including higher education however; food insecurity is a threat to higher education students' completion rates. Moreover, the issue of food insecurity among university students has not received adequate attention. A study on prevalence of food insecurity among university students in Kenya concluded that food insecurity negatively affects the retention and academic performance of university students [14]. A Survey in US also indicates that food insecurity exists among university students and is a barrier to students' well-being and success [15]. The ability of students to excel in their academics strongly depends on sound nutrition, and this is compromised if incidences of food insecurity persist. In addition, university students are also at greater risk of poor dietary choices, overweight/obesity and physical inactivity.

On the factors contributing to the university students' food security status, it was found that 53.1% of the students indicated that the loan amounts they received were not enough for upkeep while at campus. Further, 52.9% of the students disagreed that they had enough salary/wage amounts for their expenses. The findings also showed that 50% of the students disagreed that their family backgrounds contributed to their food security status. Further 40% of the students disagreed that there was adequate stakeholder support while they were at campus and 55% of the respondents agreed that good expenditure skills were important towards food security status. These findings agree with an earlier study on university students in Nigeria which outlined factors such as financial hardships, cooking skills, poverty and unemployment as contributory to food insecurity [16]. This also resonates with a study South-Eastern US on the student specific factors which include increased cost of housing and tuition, low income, inadequate financial resources, poor food management skills, increased reliance on borrowed finances and ineligibility for food assistance programmes [17]. Further, a study on prevalence and factors contributing to food insecurity among university students in Pakistan, found that time management, expenditure on books, income of guardians, type of scholarship, academic programmes and miscellaneous items contributed to food insecurity [11].

In Africa, some of the factors that cause food insecurity are war and political instability, urbanization, population growth, poor agricultural sector development and climate change [18]. A study of food insecurity as a result of socio-economic factors at household levels in Pakistan found that 40% and 36% of rural and urban respectively experience calorie deficiency [19]. Some of the factors that were linked to food insecurity included age and gender of the household head, education, household size and persons per room. It was also found that poverty, sanitation facilities, cooking fuels, safe water and agricultural related indicators contributed to food insecurity at both regional and national levels in the country. A study in Benue, Nigeria found that unavailability of credit, inadequate land for farming, unfertile soils, poverty and lack of alternative sources of income were factors that contributed to food insecurity [20].

On the manageable cost of living as factor contributing to food security, the results of this study indicated a balance between those students who agreed and those who disagreed (42%). It was also found that 52% of the students agreed that manageable financial responsibilities contributed to food security. Further, it was also found that 58% agreed that manageable/none/few religious responsibilities contribute towards food security status. It was that 61% of the students agreed that manageable social responsibilities contribute to their food security status.

4.2 Discussion of inferential analysis findings

4.2.1 Regression Model Coefficients

Regression model coefficients were used in the regression equation. The study results are presented in Table 5 below.

Table 5. Regression Model Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	Beta	Std. Error	Beta		
(Constant)	.609	.073		8.331	.000
Loan amount	-.123	.046	-.116	-2.663	.008
Salary/wage amount	.351	.042	.274	8.357	.157
Cost of living	-.362	.057	-.334	-6.396	.012
Expenditure skills	-.337	.047	-.316	-7.141	.027
Family background	-.511	.082	-.455	-6.221	.000
Stakeholders support	-.334	.060	-.306	-5.536	.000
Financial responsibilities	-.301	.065	-.274	-4.606	.000
Religious responsibilities	.157	.046	.148	3.389	.172
Social responsibilities	.315	.070	.274	4.518	.149

The study results in Table 5above revealed that there was a negative linear influence of loan amount on food security among students (β_1=-.123, p=0.008). This reveals that a decrease in loan amount leads to decrease in food security among students by 0.123 units[2]. However, it was established that salary/wage amount has no statistically significant influence on food security among students (p>0.05). This implies that an increase in salary/wage amount has no significance on food insecurity. It was further established that cost of living has a negative and significant influence on food security among students (β_3=-.362, p=0.012). This implies that an increase in cost-of-living leads to decrease in food security among students by 0.362 units. Furthermore, the study findings revealed that expenditure skills have a negative and significant influence on food security among students (β_4=-.337, p=0.027). This implies that decrease in expenditure skills leads to increase in food insecurity among students by 0.337 units. Furthermore, the study findings revealed that family background have a negative and significant influence on food security among students (β_5=-.511, p=0.000). This implies that a decrease in poverty level in family background leads to increase in food insecurity among students by 0.511 units. Also, the study findings revealed that stakeholders support has a negative and significant influence on food security among students (β_6=-.334, p=0.031). This implies that a decrease in stakeholder's support leads to increase in food insecurity among students by 0.334 units.

Additionally, the study findings revealed that financial responsibilities have a negative and significant influence on food security among students (β_7=-.301, p=0.029). This implies that increase in financial responsibilities leads to increase in food insecurity among students by 0.301 units[3]. However, study findings revealed that religious responsibilities have no significant influence on food security among students (p>0.05). This implies that increase in religious responsibilities has no significant influence on food insecurity among students. Moreover, the study findings revealed that social responsibilities have no significant influence on food security among students (p>0.05).

Thus, the regression equation model becomes;

$$\mathbf{Y = 0.609 - 0.123X_1 + 0.351X_2 - 0.362X_3 - 0.337X_4 - 0.511X_5 - 0.334X_6 - 0.301X_7 + 0.157X_8 + 0.315X_9 \ldots\ldots \text{ Equation 1}}$$

5. Conclusion

This study sought to find out the factors contributing to food insecurity among university students and generate a model. It was found that lack of enough funds, inadequate loan amounts awarded to students, home backgrounds, financial management skills and social responsibilities contributed to food insecurity among university students. Family background had the highest negative and significant influence on food insecurity while stakeholders support had a negative and significant influence on food security. This implied that decrease in stakeholders support leads to increase in food insecurity among students. On the other hand, financial responsibilities had a negative and significant influence on food security. This implied that increase in financial responsibilities led to increase in food insecurity among students. However, social responsibilities had no significant influence on food insecurity implying that increase in these responsibilities on campus does not lead to increase in food insecurity among students.

It was concluded that food insecurity among university students is brought about by high cost of living, family background and poor expenditure skills which culminates into poorly balanced meals, taking less than three meals per day which are of low nutrients. Most of students suffered from food insecurity and struggled during their stay in campus, a situation which negatively affected their academic performance.

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[2] Negative influence means an increase in one variable leads to a reduction in the other. In this case it has been presented as increase in one leads to increase in the other, which should be for positive case Although the interpretation there of will not be logical but that is what the statistic is showing.

[3] This is also a negative relation meaning increase in one variable leads to decrease in another.

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