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Research Article

Estimation of relationship between eating habits and body mass index of students in Mount Kenya University, Rwanda

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ABSTRACT

Background: Eating habits are a major concern among university students especially due to the transition from home environment where parents determine what to be eaten, to new environments where they or their peers choose the diet. Eating habits are considered determinants of health conditions and has been linked to death from Non-communicable diseases.
Methods: This cross-sectional study was conducted in school of Health Sciences at Mount Kenya University. A total of 630 students from entire school of health science constituted the target population for the study. Sample size of 245 students was established. Stratified sampling technique was used to select students from department of Medical laboratory science, Nursing, Pharmacy and Public health who formed sample size for the study. Close-ended questionnaire was used as a tool for data collection.
Results: The study found that majority of students had normal weight (65%) but there is a fairly high occurrence of overweight (20%) among the students. Further, female students skipped the three main meals i.e. breakfast, lunch and supper more frequently than male students. In addition, this study found that, the P-values of the chi-square test were greater than 0.05 hence there was not conclusive evidence of a statistical significant relationship between frequency of taking breakfast (P = 0.070), lunch (P = 0.167), or supper (P = 0.217) and body mass index of the students. Further the study found that food availability (61%), friends (6%), cost (1%) and accessibility of food (32%) were the factors that influenced students eating behaviors. The finding showed no statistical relationship between eating home cooked food (P = 0.114), eating self-cooked food (P = 0.056), frequency of taking sweet beverages per week (P = 0.567). However there was statistically significant relationship between frequency of taking fast food per week (P = 0.000), frequency of consuming snacks per week (P = 0.001), frequency of consuming vegetables per week (P = 0.000), frequency of consuming fruits per week (P = 0.033), frequency of consuming deep fried food per week (P = 0.026), frequency of consuming chicken per week (P = 0.008) and body mass index of the students. Additionally the study found out that students considered either the cost of food 29%, availability of food for purchase, 22%, favorite meals 15% or balanced diet when making food choices. A significant relationship between meals planning and BMI (P = 0.000) was realized as well as between living arrangement of the students and body mass index (P = 0.000).
Conclusions: The study concluded that the frequency of taking breakfast, lunch and supper has no relationship with body mass index of the students. However, frequency of taking fast food, frequency of consuming snacks, frequency of consuming vegetables, frequency of consuming fruits, frequency of consuming deep fried food and frequency of consuming chicken per week is statistically related to body mass index of students. The study also concluded that meal planning and living arrangement relates with student's body mass index significantly.

Keywords: Eating habit, BMI

INTRODUCTION

Unhealthy eating habits have been identified as major risk factors for cardiovascular disease and other non-communicable diseases.[1] In addition unhealthy diet is associated with overweight and obesity which are both associated with increased total mortality and increased risk of disease or death from cardiovascular diseases, diabetes, and several types of cancer.[2] Chronic non-communicable diseases (NCDs) are the largest cause of death in the world, contributing to 36 million deaths annually, and accounting for 47% of the global burden of disease.[1] NCDs are defined as diseases which are not transmissible or caused by injury.[3] Overweight and obesity is a major public health problem currently, and its prevalence has steadily risen.[4] The rise in the prevalence of overweight and obesity, more so among the younger people, in many developing countries like Rwanda due to unhealthy eating and inactiveness, is an indicator of future chronic disease burden unless proper measures are taken.[5]

The percentage of University students in the United States who were overweight and obesity have been reported to almost 40%.[6] It has been found that most of the students who are either overweight or obese are not aware of the increased health risk they are exposed to.[2] argues that eating patterns are prerequisites to health life and links them to body mass index. Most of the current illnesses and diseases such as heart diseases, type-2 diabetes and cancer can to a larger extent be prevented through a healthy eating, observing good nutrition and ensuring physical activeness.[7]

University and colleges are better grounds for prevention of behaviors that exposes people to NCDs. They are in a better position to provide the youth with relevant information necessary to use this knowledge to promote health. Increasing access to healthy diet, advising students on healthy choices and allowing for physical activity has the potential to create a health promoting culture within a university.[2] As a result obesity or overweight which are major risk factor in natural history of chronic and non-communicable diseases would be avoided.[3]

Increased rate of fast food consumption has become a major exposure to obesity and overweight. Exposed to unhealthy eating habits has been reported as the major cause of weight gain among University students.[2] Young people have found fast food being too convenient especially among university students were time factor is of great interest, consumption of fast food is common.[8] This among other factors has contributed to the growth of fast food businesses and industries which further deepens the frequency of fast food consumption.[9] The introduction of fast food in almost all developing counties is evidenced by the reported rise in obesity.[9] According to fast food consumption is higher among adolescent, young adults and people from high social economic class.[8,10] found a positive relationship between fast food and soft drink consumption they further associated fast food consumption with low level of vegetables consumption as well as fruits and milk in both adult.

High consumption of foods such as grains, fruits, vegetables, low-fat meat and milk and milk products have been found to produce favorable health conditions among university students including a reduced prevalence of obesity lower rates of weight gain in the long run.[11,12] According to consumption of low-nutrient and high intakes of sweets, desserts, and high-fat dairy products are significantly related to higher rates of obesity in young and adults.[13]

According to body mass index (BMI) which is the ratio of weight in kilogram to height in meter square is the most common measure used to assess body weight status.[14] Low BMI, or underweight, a risk factor for increased mortality among critically ill individuals more so among older adults.[1] Overweight or obesity which is normally linked to an increase in the severity of illness among the elderly is indicated by high BMI.[15] Most of chronic health conditions prevalent among adults including diabetes, hypertension, and cardiovascular disease among others are associated to high BMI.

Eating habits plays a major role in influencing one's body mass index (BMI) and hence, quality of life. This study will examine the relationship between eating habits and BMI of students at Mount Kenya University. Eating patterns, food choices and student Living arrangements are the variables that will be discussed.

METHODS

Research design

This cross-sectional study was conducted in school of Health Sciences at MKU. It adopted a cross-sectional descriptive study design which included questionnaire development, quantitative data collection and analysis. Descriptive research determines and reports the way things are and also helps a researcher to describe a phenomenon in terms of attitude, values and characteristics.[16] According to, descriptive case study is a method of collecting information by interviewing or administering a questionnaire to a sample of individuals.[17]

Target population

Target population for this study consisted of all students in the school of health sciences from Mount Kenya University. Both male and female regardless of their religious backgrounds and area of residence were targeted for the study. According to the Head of departments within the school, the school had a total of 630 continuing students. The school of health science trains individuals who intends to work as health care providers

in various communities and health facilities. Knowing the eating habits of the future health providers could indicates how well they would assist patients and the communities in general to adopt health diet to manage and prevent NCDs whose prevalence has been on the rise. It is in this regards that the school of health sciences was chosen for the study.

Sample size

Sample size refers to the number of units or people that are chosen from which the researcher wish to gather information or data.[18] A sample size of 245 respondents was selected for the study. The sample size was determined using the formula below;

$$n = \frac{N}{1+N(e)^2}$$

Where;

n-the sample size 245

N - the population size (630)

e - the acceptable sampling error (0.05)

$$n = \frac{630}{1+630(0.05)^2} = 245$$

From the sample size calculation above, the total sample size from the study was 245 students. This was constituted by sample sizes from the stratums calculated through proportionate stratification such that the sample size of each stratum is proportionate to the population size of the stratum. Strata sample sizes were determined using the following formula:

$$n_h = (N_h / N) * n$$

Where,

nh is the sample size for stratum h,

Nh is the population size for stratum h,

N is total population size,

n is total sample size

Four students were added to the sample size to cater for those who might not turn up for the study. The total sample size for the study from which data was collected was 249

Sampling technique

The stratified sampling technique was used to obtain the samples. The choice of this technique was based on the fact that it is more convenient when the population is very large and that it provides greater precision. The technique involved dividing the entire school of health science population into strata i.e. Medical laboratory science, Public health Nursing and Pharmacy and then applying random sampling methods on each stratum to obtain the final study sample size.

The researcher prepared a list of all the students from each stratum who were to take part in the study and then assigned each name a number. The numbers were then placed in a bowl and thoroughly mixed. The researcher then pick one paper at a time from the bowl until a complete number (245) was obtained. Students whose names were written on the picked paper became the study samples.

Data collection instruments

The close-ended questionnaire was designed to capture students' information regarding meal pattern, choice of food and living arrangement. Questionnaires were chosen for this study due to their efficiency in that, data collection takes less time; they are less expensive and permits collection of data from a wide population.[19] Anthropometric measurements i.e. height and weight were taken using digital weighing scale. Using the obtained measurements, BMI of the respondents were calculated as weight over height squared (kg/m^2).

Administration of data collection instruments

The questionnaires were distributed to the student at the beginning of morning lectures when they were not tired and their level of concentration was high. The researcher verbally explained to the student the purpose of the exercise, in order to influence them to take the questionnaires seriously. Administering the questionnaire to respondents when they are gathered together helps in maximizing the response rate.[20] According to a response rate of 70% and above is excellent and can be used to draw conclusions for a study.[19] Study participants were requested to remove shoes and step on a zeroed digital weighing scale. The researcher ensured that the weighing scale reads zero kilograms before weighing the next participant. This helped to avoid biased weight due to additional weight of their shoes. Their weight were then be taken and recorded rounding off to the nearest 0.1 kg.

Reliability

According to reliability is the degree to which a research tool produces stable and consistent results over time.[21] The purpose of reliability test is to determine the extent to which a measurement instrument gives the same result when the process is repeated again and again under the similar conditions. Test retest method of determining the reliability was carried out at the same school using the same respondents. This method involves giving the same test to the same respondents on two separate occasions.

The scores on the two occasions are then correlated. This correlation is known as the coefficient of stability. The closer each respondent's scores are on T1 (first test) and T2 (second test), the more reliable the test measure. A coefficient of stability of one (1) indicates that each respondent's scores are perfectly correlated. That is, each respondent score the exact same thing on T1 as they did on T2. A coefficient correlation of zero (0) indicates that the respondents' scores at T1 were completely unrelated to their scores at T2; therefore the test is not reliable.

One week duration was allowed between the first test T1 and the second test T2. SPSS was used to generate the coefficient. Cronbach coefficient value of 0.7 was obtained and this indicated satisfactory consistency hence reliability of instrument according to.[22]

Validity

According to validity of research tool has three components; construct validity, focuses on the consistency of the questions.[23] This validity was assured by structuring the questionnaire according to the specific objectives. Content validity that entails the ability of a tool to collect the required data for the analytical techniques to be used.[24] Validity was ensured by using close ended questions which avoided irrelevant answers. To ensure internal validity of the questionnaire, the researcher gave the draft questionnaire to the supervisors for review and recommendations made were included in the final questionnaire.

Data analysis procedure

Collected data was organized and analyzed as quantitative. All the data were cleaned, coded and entered in the Statistical Package for Social Sciences (SPSS) for analysis using descriptive statistics to generate frequency tables. Inferential statistics, specifically correlation analysis were carried out to determine the direction and strength of association that could exist between eating habits and the BMI of the study participants. Chi-square was used to determine if there is any relationship between eating habits and the BMI of the study participants. Pearson Chi-Square $p<0.05$ indicated that the relationship was statistically significant while $p>0.05$ indicated that the relationship was not statistically significant. Results of the analysis were presented in pie charts, bar graphs and tables.

RESULTS

Demographic characteristics of respondents

Of the 242 respondents, 57% were female while 43% were male. This indicated that both genders were fairly represented in the study. Majority of the respondents 70% aged between 21-30 years, 20% aged below 20 years while 10% were above 31 years. Most of the respondents 89% were from resided in urban areas while 12% were from rural areas. Thirty two (32%) of the respondents represented the department of medical laboratory science, department of public health 23%, department of nursing was represented by 24% while department of pharmacy had the least number being represented by 21% of the respondents.

Table 1: Strata sample sizes.

Stratum	Population	Formula	Sample size
Department of Medical Laboratory science	203	n_h = (202 / 630) * 245	78
Department of Nursing	150	n_h = (150 / 630) * 245	58
Department of Pharmacy	137	n_h = (137 / 630) * 245	53
Department of Public Health	145	n_h = (145 / 630) * 245	56
Total	630		245

Prevalence of overweight and obesity among the university students

The prevalence of overweight and obesity among the study participants was 20% and 1% respectively while that of underweight was 14%.

Eating habits of students in Mount Kenya University basing on gender

The study revealed that 32% of those who indicated to never have breakfast within a week were and 68% of female never took breakfast. Majority of female 55% and male 45% participants took breakfast at times in a week. 68% of female students took breakfast always compared to 32% of male. In a week, 80% female and 20% male students indicated never to have lunch. Majority of students who only had lunch sometimes in a week were 59% female and 41% males. More female students 52% than male 48% always took lunch in a week. 59% of the female and 41% male students indicated to take supper always in a week.

Table 2: Prevalence of overweight and obesity among the study participants.

Nutrition status	N	Percentage (%)
Underweight	37	14
Normal weight	161	65
Over weight	49	20
Obese	2	1
Total	249	100

Factors influencing eating habits

Majority of students (61%) indicated that food availability influenced their eating habits, 6% indicated friends, cost 1% and accessibility of food 32%. These findings are consistent with those of a study conducted by that revealed that food availability within and around the college influenced the eating habits of students in Belgrade University. [25]

According to a study conducted by food accessibility and cost of food influence the eating habits of university students.[26] This is in agreement with the findings of this study.

In agreement with this study, prices of food were found to influence the eating habits of students at the University of Arizona with students seek out cheaper, often unhealthy food choices (Figure 2).[8] The chi-square and the p values were used to indicate if the relationship was statistically significant or not.

This finding indicates that female students skip the three main meals i.e. breakfast, lunch and supper more frequently than male students.

From table 3 the p-values of the chi-square test were more than 0.05 hence there was not conclusive evidence of a statistical significant relationship between frequency of taking breakfast (P = 0.070), lunch (P = 0.167), or supper (P = 0.217) and BMI of the students.

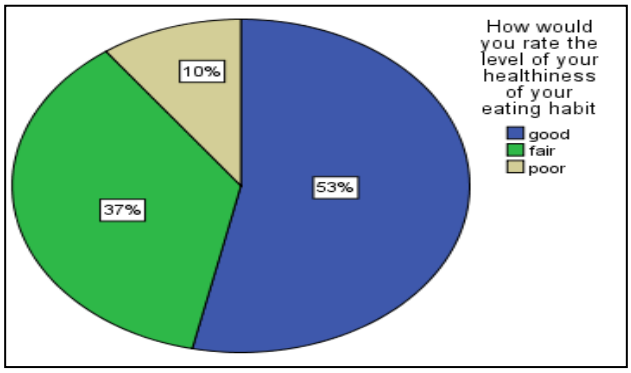

Figure 1: Rating of students' level of healthiness of their eating habit.

Relationship between food choices and BMI of the students

From table 4 chi-square test indicated no statistical relationship between eating home cooked food (P = .114), eating self-cooked food (P = .056), frequency of taking sweet beverages per week (P = .567). The significant value of all this variables was greater than 0.05 hence no conclusive evidence of a relationship between this food choices and BMI.

The chi-square test however revealed a statistically significant relationship between frequency of taking fast food per week (P = .000), frequency of consuming snacks per week (P = .001), frequency of consuming vegetables per week (P = .000), frequency of consuming fruits per week (P = .033), frequency of consuming deep fried food per week (P = .026), frequency of consuming chicken per week (P = .008) and BMI of the students.

The significant values of all this variables were less than 0.05 hence there is a conclusive evidence of a relationship between this food choices and BMI.

Relationship between meals planning and BMI

The chi-square test indicated that there was a statistically significant relationship between meals planning and BMI (P .000). The P value was less than 0.05 and this provided evidence for the relationship (Table 5).

Relationship between living arrangement and BMI

The chi-square test indicated that there was a statistically significant relationship between living arrangement of the students and their BMI (P 0.000). The P value was less than 0.05 providing evidence for the relationship. Majority of those who were overweight 39% lived alone, 37% lived with a student while 16% lived with parents while 8% lived with spouse. All the participants who were obese (100%) lived alone. Majority of those who had normal weight 71% lived with their parents, 20% lived with students, 6% lived alone while 3% lived with spouse. Most of those who were underweight lived with fellow students, 35% lived alone, 1% lived with parents while 11% lived with spouse.

These findings are in line with those of a study conducted by that showed a significant relationship between living arrangement and BMI of student.[27]

The study revealed that students living at parental home displayed more healthy nutrition habits compared to those who lived alone or with fellow students (Table 6).

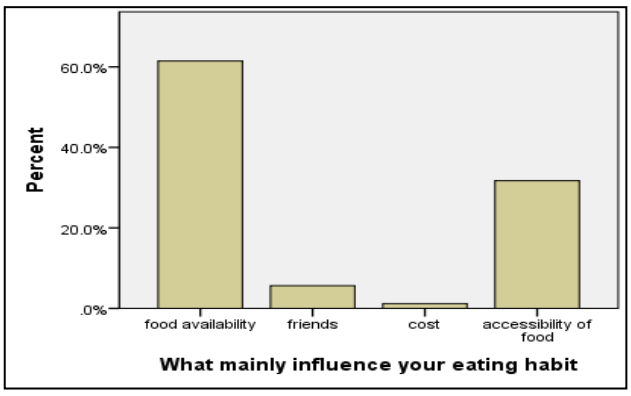

Figure 2: Factors influencing eating habits.

Table 3: Eating habits of students in Mount Kenya University basing on gender.

Question on eating behavior	Responses	Gender	
		Male	Female
Frequency of eating Breakfast/week	Never	14 (32%)	30 (68%)
	Sometimes	66 (45%)	80 (55%)
	Always	19 (32%)	40 (68%)
Frequency of eating Lunch/week	Never	2 (20%)	8 (80%)
	Sometimes	59 (41%)	85 (59%)
	Always	46 (48%)	49 (52%)
Frequency of eating supper/week	Sometimes	10 (38%)	16 (62%)
	Always	97 (41%)	142 (59%)
Frequency of eating home-cooked food/week	Never	14 (35%)	26 (65%)
	Sometimes	48 (47%)	54 (53%)
	Always	45 (42)%	62 (58%)
Frequency of eating fast-food/week	Never	13 (62%)	8 (38%)
	Sometimes	70 (36%)	125 (64%)
	Always	9 (27%)	24 (73%)
Frequency of eating self-cooked food/week	Never	26 (70%)	11 (30%)
	Sometimes	59 (38%)	95 (62%)
	Always	22 (38%)	36 (62%)
Frequency of consuming snacks per week	Never	33 (59%)	23 (41%)
	<3 times	36 (30%)	84 (70%)
	>3 times	31 (46%)	36 (54%)
	Always	0%	4 (100%)
Frequency of consuming vegetables per week	<3 times	44 (52%)	41 (48%)
	>3 times	51 (40%)	75 (60%)
	Always	15 (39%)	23 (61%)
Frequency of consuming fruits per week	Never	11 (55%)	9 (45%)
	<3 times	80(54%)	68 (46%)
	>3 times	27 (41%)	39 (59%)
	Always	3 (20%)	12 (80%)
Frequency of consuming sweet beverages per week	Never	33 (69%)	15 (31%)
	<3 times	92 (70%)	40 (30%)
	>3 times	21 (53%)	19 (47%)
	Always	16 (55%)	13 (45%)
Frequency of consuming Deep fried food per week	<3 times	48 (43%)	64 (57%)
	>3 times	88 (64%)	49 (36%)
Frequency of consuming chicken per week	Never	26 (44%)	33 (56%)
	<3 times	60 (37%)	104 (63%)
	>3 times	14 (54%)	12 (46%)

Table 4: Relationship between eating pattern and BMI of the students.

Question on Eating habit	Responses	Distribution of Nutritional status				$\chi 2$	P
		UW	NW	OW	O		
Frequency of eating Breakfast/week	Never	1	24	11	0	11.649	0.070
	Sometimes	24	82	25	0		
	Always	12	55	13	2		
Frequency of eating Lunch/week	Never	10	52	13	1	9.114	0.167
	Sometimes	8	54	10	0		
	Always	19	55	26	1		
Frequency of eating supper/week	Sometimes	6	23	13	0	4.445	0.217
	Always	31	138	36	2		

Table 5: Relationship between food choices and BMI of the students.

	Responses	Distribution of nutritional status				χ2	P
		UW	NW	OW	O		
Frequency of eating home-cooked food/week	Never	15	52	15	1	7.114	0.114
	Sometimes	8	50	13	0		
	Always	14	60	21	1		
Frequency of eating fast-food/week	Never	1	14	6	0	43.698	0.000
	Sometimes	33	139	21	2		
	Always	3	8	22	0		
Frequency of eating self-cooked food/week	Never	10	17	12	1	12.301	0.056
	Sometimes	10	55	13	1		
	Always	17	89	24	0		
Frequency of consuming snacks per week	Never	7	51	2	0	33.439	0.001
	< 3 times	22	59	5	0		
	> 3 times	6	51	49	2		
	Always	0	0	3	0		
Frequency of consuming vegetables/week	< 3 times	6	43	34	2	46.81	0.000
	> 3 times	25	95	6	0		
	Always	6	23	9	0		
Frequency of consuming fruits per week	Never	13	34	12	0	18.212	0.033
	< 3 times	10	30	35	2		
	> 3 times	14	88	2	0		
	Always	0	9	0	0		
In-take of sweet beverages /week	Never	4	20	5	0	7.676	0.567
	< 3 times	20	111	32	2		
	> 3 times	11	27	9	0		
	Always	2	3	3	0		
Frequency of consuming Deep fried food per week	< 3 times	3	175	1	0	17.231	0.026
	> 3 times	7	4	59	0		
In-take of chicken per week	Never	13	51	1	0	20.218	0.008
	< 3 times	19	125	0	0		
	> 3 times	1	10	27	2		

Table 6: Relationship between meals planning and BMI.

		Distribution of nutrition status				χ2	P
		UW	NW	OW	O		
Planning meals in advance	yes	12 (9%)	105 (80%)	15 (11%)	0	28.046	.000
	no	25 (21%)	56 (48%)	34 (29%)	2 (2%)		

Table 7: Relationship between living arrangement and BMI.

		Distribution of Nutritional status				χ2	P
		UW	NW	OW	O		
Living arrangement	Alone	13 (35)	9 (6%)	19 (39%)	2 (100%)	58.630	0.000
	with parents	1(3%)	114 (71%)	8 (16%)	0		
	with students	19 (51%)	33 (20%)	18 (37%)	0		
	with spouse	4 (11%)	5 (3%)	4 (8%)	0		

DISCUSSION

The prevalence of overweight and obesity among the study participants was 20% and 1% respectively while that of underweight was 14%. This finding differs with the study done by on university students in Malaysia which reported a prevalence of 13.0% overweight and 3% obese.[28] In addition; the study stated that the prevalence of underweight was higher than overweight and obesity. This is partly in agreement with the current

study in which the prevalence of underweight 14% was higher than that of obese (1%) but lower than that of overweight 20%.[29] in slightly lower population reported a lower prevalence of underweight (13.6%), overweight (17.4%) and a much higher prevalence of obesity (25.6%), compared to the current study. A Similar study conducted by among undergraduate medical students in tamil nadu using a slightly lower population recorded a lower prevalence of underweight (10%) and a higher prevalence of both overweight (24%) and obesity (9.3%) compared to this study.[30] Although the prevalence of overweight clearly indicates poor eating habits among the students, 53% felt that the level of healthiness of their dietary habits was good.

This study shows that female students skip the three main meals i.e. breakfast, lunch and supper more frequently than male students. These findings are in agreement with those of similar study conducted by where majority of those who never had breakfast were female students (74%) as well as those who sometimes had breakfast (58%).[31] Among those who never and those who sometimes had lunch, female students were 82% and 64% respectively. Likewise female students were majority among those who sometimes (67%) had supper within a week.

Majority of female student 65% and 35% male students never took home-cooked food in a week. Most of the female 53% and male 47% indicated to take food at home only for some times within a week. These findings are similar with those of a similar study conducted by where among those who never and those who sometimes ate home-cooked food in a week female students were 68% and 62% respectively.[32] More female 58% than male students 42% however indicated to always take home cooked food within a week. Students who never took fast food in a week were 62% male and 38% female; those who sometimes took fast food were 64% female and 36% while those who always ate fast food were 73% female and 27% male students. Similar study by showed that male students were the majority (70%) among those who never took fast food within a week while among those took only for sometimes in a week, his study found female students to be the majority (57%).[13] This finding concurs with findings of the current study. Of those who never took self-cooked food in a week 70% were male and 30% females. Those who took self-cooked food only for sometimes in a week were 62% female and 38% male students. These findings are in agreement with those reported by where majority of male students (63%) never ate self-cooked food while more female (52%) than male ate only for sometimes in a week.[13] Those who never took snacks in a week were 59% male and 41% females; 30% male and 70% females took snacks for less than three times, 46% males and 54% females took snacks for more than three times while 100% of those who indicated to take snacks always were female students. These results are similar to those of a study conducted by on the relationship between snacking patterns and body mass index in college students where majority of female students 76% consumed snacks for more than three times a week.[33]

Of the study participants who took vegetables for less than three times a week 52% were male while 48% were female students. Those who took vegetables for more than three times a week were 40% male and 60% females. Vegetables were taken always by 39% of male and 61% of female students. Among those who never consumed fruits in a week were 55% male and 45% female students respectively. Majority of those who took fruits for less than three times in a week were female 46%. Female students were the majority 59% of those that indicated to eat fruits for more than three times a week. Of those that took fruits always in a week females were 80% while male were only 20%. These findings are in agreement with a study conducted by where female students were reported to consume vegetables and fruits more frequently than males.[34]

Sixty nine (69%) of those that never took sweet beverages in a week were male while 31% were female students. Female students were 30% of those who took the beverages for less than three times in a week while male students were 70%. Female students were 47% of those that consumed sweet beverages for more than three times a week, while males were 53%. Those that always took sweet beverages were 55% male and 45% female students. A similar study conducted by showed that female students took sweet beverages more frequently than males.[32] This is in disagreement with the current study where male student took sweet beverages more frequently that female. Of those that consumed deep fried food for less than three times a week were 43% males and 57% female. Deep fried food was taken for more than three times by 64% males and 36% female.[35] conducted a study in a similar population and reported that male students were that majority (57%) of those that ate deep fried food for at least three times a week this is in line with findings of the current study. Among those who never consumed chicken in a week male students were 44% and females 56%, females were the majority 63% of those who took chicken for less than three times a week while males were 37%. Majority of those who took chicken for more than three times a week were male 54% while female students were 46%. These findings concurs with the findings reported by in their similar study which showed that male students consumed chicken more frequently (69%) in week compared to female students (31%).[36]

The study found no statistical significant relationship between frequency of taking breakfast (P = 0.070), lunch (P = 0.167), or supper (P = 0.217) and BMI of the students. These findings agrees with those of a similar study by which showed no significant relationship between frequency of taking breakfast (P = 0.860), lunch (P = 0.468), or supper (P = 0.058) and BMI of the students.[37,38]

In a similar study showed that lack of time was the factor that influenced eating habit of majority of the students (37.7%). These findings contrast with the current study where food availability is indicated by majority of student (61%) as the factor influencing their eating habit.

Result from the chi-square test indicated no statistical relationship between food choices and BMI.[27] Found no significant relationship between home cooked food (P = 0.909), frequency of taking sweet beverages per week (P = 0.058) and students BMI. Likewise found no significant relationship between frequency of eating self-cooked food (P = 0.786) and BMI. These two studies are in agreement with findings of the current study.

The chi-square test however revealed a statistically significant relationship between frequency of taking fast food per week (P = 0.000), frequency of consuming snacks per week (P = 0.001), frequency of consuming vegetables per week (P = 0.000), frequency of consuming fruits per week (P = .033), frequency of consuming deep fried food per week (P = 0.026), frequency of consuming chicken per week (P = 0.008) and BMI of the students. The significant values of all this variables were less than 0.05 hence there is a conclusive evidence of a relationship between this food choices and BMI. These findings agrees with a study conducted by which found a significant relationship between frequency of taking fast food per week (P = 0.024), frequency of consuming snacks per week (P = 0.020), frequency of consuming vegetables per week (P = 0.001) and BMI of the students.[38] Studies by and however, showed no significant relationship between frequency of consumption of fast food per week and students BMI (P = 0.927).[26,37,39] found no significant relationship between frequency of consuming vegetables per week (P = 0.535), frequency of consuming fruits per week (P = 0.574) and students BMI findings that differs from the current study.[41] showed no significant relationship between frequency of consuming chicken per week (P = .081) and BMI of the students.

Table 5 indicated that there was a statistically significant relationship between meals planning and BMI (P .000). Similar study by showed a significant relationship between meal planning and BMI. This finding agrees with findings of the current study.[25,40] However, found no significant relationship between the two variables

Table 6 showed there was a statistically significant relationship between living arrangement of the students and their BMI (*P* .000). These findings are in line with those of a study conducted by[36] that showed a significant relationship between living arrangement and BMI of student.[27]

CONCLUSION

Majority of students in the school of health science in Mount Kenya University has a normal weight. However there is a high occurrence of overweight among the students. Regardless of the clear evidence of poor eating habits among the students such as skipping the main meals and snaking most of the students feels that they have a healthy eating habit.

Although female students skipped the three main meals i.e. breakfast, lunch and supper more frequently than male students, female students consumed fruits and vegetables more frequently than males. Most of the students did not consider having a balanced diet or nutritional value of foods so they just took what was available thus indicating poor dietary and nutritional practices.

Frequency of taking breakfast, lunch and supper has no statistical significant relationship with BMI of the students. Frequency of eating home cooked food, frequency of eating self-cooked food and frequency of taking sweet beverages per week has no significant relationship with BMI of student in the University. Frequency of taking fast food per week, frequency of consuming snacks per week, frequency of consuming vegetables per week, frequency of consuming fruits per week, frequency of consuming deep fried food per week and frequency of consuming chicken per week has a statistical significant relationship with BMI of the students. Cost of food determined the choice of food made by the students. Meal planning relates with students BMI significantly. There is a significant relationship between living arrangement and BMI of student where students living at parental home display more healthy nutrition habits compared to those who live alone or with fellow students recommendations the university should consider developing improved healthy lifestyle educational programs that will encourage students to purposefully make wiser dietary choices and develop healthier habits.

The students should be encouraged to adopt healthy dietary practices and embrace physical activities and various sports. Focusing on the known role of overweight and obesity in development of NCDs there is need to determine the prevalence of overweight and obesity nationally among different groups of population. This will serve as a baseline for the ministry of health to advocate for resources to address the conditions. This study recommended the following areas for further study; 1). The study first recommends a similar study that would recruit more students from different universities, so that the results could be generalized to the entire population of university students in Rwanda. 2). Study that will determine the relationship between consuming snacks at different times of a day with different BMI status of students

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