NUTRITIONAL STATUS, NUTRITION KNOWLEDGE AND ATTITUDES OF STUDENTS IN JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

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Abstract
University students are faced with the challenge that results from transition from the organised home and school environment to the freedom of choosing their diets. Recent studies suggest deterioration in nutritional and physical activity habits of college students. In the USA, the highest increase in overweight and obesity among adults occurred among 18-29 year olds. This may lead to future health burdens later in life (Huang *et al*., 2003). To determine the nutritional status, nutrition knowledge and attitudes of students in Jomo Kenyatta University of Agriculture and Technology. A self administered questionnaire was administered to 220 students randomly sampled from third and fourth year students in the Faculties of Agriculture and Science. Data was collected on socio-demographic characteristics, nutritional knowledge and attitudes. Weight and height were taken and BMI was calculated to determine nutrition status. The student's t-test and Chi-Square were used to analyse numerical data and categorical data respectively. The mean age of the study group was 22.5 years. Overall the prevalence of overweight and obesity was 18.4% and 3.2% respectively, while underweight was 9.7%. Overweight and obesity was 21.0% and 3.4%, and 15.8% and 3.0% among males and females, respectively. Underweight among girls was higher than among males, although the difference was not significant ($p < 0.05$). Knowledge on food sources of fat and fiber, and cholesterol lowering foods ranged from 26% to 55%, while only 22.3% were knowledgeable about food labeling. There was no significant difference in nutritional knowledge across gender, faculties and based on nutritional status. However, there was a significant difference across gender in meal frequency ($p < 0.01$) and females were more concerned about staying thin than males ($p < 0.001$). The nutritional knowledge of the students was moderate, and may have implications on future nutritional status. Overweight and obesity was high in the study group, and there is need for strategies to improve nutrition knowledge among young adults.

Key words: Nutrition status, students, nutrition knowledge, attitudes

1.0 Introduction

Poor eating habits and lack of nutritional knowledge are important public health issue that has serious health implications. Many food preferences are established early, but because people make more and more independent eating decisions as they move through adolescence, the transition to independent living during the university days is an important event.

It is well recognized that university students have poor dietary habits which may become hard to break once acquired. Individuals who have basic nutrition knowledge and attitude apply these principles when selecting foods. Therefore improving nutrition knowledge, attitude and dietary practices through nutritional education may help to prevent nutritional related diseases (Frederick and Hawkins, 1992).

University students are an appropriate target audience for nutrition education, because their lives are in transition and have the potential for positive changes (Yuecheng, and Yi-Chia, 1999). Several studies have reported that college students frequently have misconceptions about nutrition, fail to make nutrition a priority in food selection, and are poorly informed about dietary guidelines (Mitchell, 1990).

The best possibility of measuring abilities and knowledge is the use of multiple choice tests when all items show the same number of alternatives and only one of the answers to choose from is correct (Ben-Simon A, Budescu DV, Nevo B. 1997). To allow cross-cultural comparisons in nutritional knowledge and to link the data to food habits, a validated multiple choice questionnaires designed for adults was considered the best option to assess nutritional knowledge.

There is assumption that a knowledge deficit exists in those who are overweight. However, research has demonstrated that people are aware of what they should be eating, particularly in relation to avoiding fat in their diet. This suggests that increase in knowledge alone does not lead to behaviour change and that a knowledge deficit explanation of unhealthy dietary behavior may be oversimplified.

The objective of this research was to determine the nutritional status, knowledge and attitudes of students in Jomo Kenyatta University of Agriculture and Technology.

2.0 Methodology

A cross-sectional study was conducted between May and October 2010. The target population was third and fourth year students in the faculties of Agriculture and Science. 220 randomly sampled students from the two faculties participated in the study. Students filled out a self-administered questionnaire. Data collected using the questionnaire included socio-demographic characteristics, dietary habits, nutritional knowledge and attitudes. Anthropometric measurements were also taken to determine the nutrition status of the students. Weight was measured using a bathroom scale with the student wearing minimum clothing and recorded to the nearest 0.1 kg. Height was measured using a height meter. The students stood barefoot on the floor with the shoulder, back, buttocks and back of the heels touching the wall. The meter was then lowered gently to touch the head and the reading taken to the nearest 0.1cm. All readings were taken three times.

Data was cleaned and entered in Excel programme. Data analysis was done using SPSS and Nutrition status was determined by calculating BMI using the following formula Weight (kg)/ (Height (m^2). Using the WHO cut-offs, a BMI of <18.49 kg/m^2 represented underweight, 18.5-24.99 kg/m^2 normal weight, 25.0-29.99 kg/m^2 overweight and >30.0 kg/m^2 obese. The Deans of Faculties of Agriculture and Science as well as the students gave consent to the study.

3.0 Results and Discussion

3.1 Demographic Characteristics of the Sample

A total of 220 students (54.1% males), aged between 20-29 participated in this study. The mean age was 22.5 years. Majority of the students were in their fourth year of study (61.8%) and were residents within the university premises.

3.2 Nutrition Status

Overall, 9.7% of students were underweight, 18.4% students were overweight and 3.2% obese. The prevalence of both overweight/obesity was higher among male than female students. Overweight among males was 21.0% compared to 15.8% among females. Similarly, obesity among males was 3.4% and 3% among females. A

higher proportion of females students (11.9%) were underweight as compared to 7.5% male students, although the difference was not significant (p>0.05).

The prevalence of overweight reported in this study is higher than reports from other developing countries. In a study among young Chinese University students (mean age 20±1.9 years), 2.5% and 0.5% were overweight and obese respectively (Sakamaki *et al.,* 2005). In Japan, the prevalence among female students was 5.8% and 0.0% for overweight and obesity, respectively (Amamoto *et al.,* 2004, as cited by Sakamaki *et al.,* 2005)According to the US National College Health Risk Behavior Survey, college students have poor nutritional and physical activity habits (The American College of Health Association, 2005). In the same study it was found that the greatest increase in overweight and obesity between 1991 and 1998 had occurred within the age group of 18-29. Unhealthy eating habits developed in college may be carried on into adulthood, with inevitable weight gain and obesity-related disorders, such as stroke, heart disease, diabetes, and cancer, occurring later in life.

3.3 Nutrition Knowledge

Knowledge of students on cholesterol was moderate. Only 26.8-55.0% of the students were knowledgeable about dietary cholesterol. When asked to name the foods they should eat less in order to reduce their cholesterol levels, 57.7% indicated cakes and biscuits, 57.3% indicated ice cream and 67.7% indicated fat on meat and these were correct responses. Only 48.2% agreed that it's important to eat less saturated fat in order to reduce cholesterol levels. Nearly two thirds of the students were Knowledgeable on food labeling (62%).

A study conducted among college students in the US reported that increased knowledge of dietary guidelines (*Dietary Guidelines for Americans 2005)*, appeared to be positively related to healthier eating patterns thus the better eaters had a higher level of knowledge about nutrition [Kolodinsky J, Harvey-Berino JR, Berlin L, Johnson RK, Reynolds TW, 2007].

3.4 Nutrition Related Behaviours

Less than two thirds of the students reported taking breakfast regularly (Table 1). Red meat as consumed regularly by slightly over one third of the study students, but consumption was significantly higher among male than female students (p<0.01). While over sixty per cent of the students consumed fried foods regularly, there was no significant difference in consumption between male and female students (p>0.05). Consumption of soft drinks was significantly higher among male than female students (p<0.001). The opposite was however true for whole milk consumption with female students consuming it more regularly than make students (p<0.01). Snacking was more popular among males than females, although the difference was not significant (p>0.05). Only 37% of the students engaged in some regular physical activity.

The intake of breakfast reported in this study is low compared to that found among Chinese university students (almost 80%) (Sakamaki *et al.,* (2005). While Sakamaki *et al.,* (2005) found a gender difference in regular breakfast intake, with significantly more females taking breakfast regularly compared to males, no gender difference in breakfast consumption was established in this study this study. This could be as a result of inadequate resources that would make nearly 30% of the students to skip breakfast regularly. Regular breakfast intake ha been linked to stable family connections. Red meat was more popular among males than female students, possibly because of social behaviours. Consumption of animal products and energy-dense foods has been associated with overweight/ obesity in countries undergoing nutrition transition (Popkin & Gordon-Larsen, 2004).

Other undesirable eating habits reported in this study included low consumption of recommended servings off fiber-rich cereals, fruits and vegetables. In addition the high consumption of soft drinks would increase the intake of excess calories, which may lead to weight gain. The low prevalence of regular physical activity indicated a highly sedentary lifestyle, which may increase the risk for obesity and the related cor-morbidities.

3.5 Nutrition Related Attitudes

Female students were more conscious of the content their diet and their body weight when compared to male students (Table 2). Significantly higher proportion of females were terrified of being overweight, avoided eating even when hungry, were pre-occupied with food, deliberately avoided foods high in sugar and carbohydrate foods in general, displayed self control in the presence of food and were preoccupied with a

desire to be thinner. However, there was no significant difference in proportions of male and female students who reported engaging in dieting behavior, were conscious of calories content of food and exercised to burn calories ($p>0.05$).

Female students were more conscious about diet and weight than the male student. These results are similar to those reported among Chinese university students (Sakamaki *et al.,* (2005). After adolescence, girl have heightened body image concerns and increased vulnerability for developing eating disorders (Neumark-Sztainer *et al.,* 2006). Girls are also more likely to try to attain body images of magazine, Television and movie stars (Henry Kaiser Family Foundation, 2004).

4.0 Conclusion

Poor dietary behaviors were common among the students, in line wit the high prevalence of overweight and inadequate nutritional knowledge. Developing nutrition education programs that promote healthy eating habits for university students should be encouraged. Alcohol intake and smoking were not common in our sample of students.

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Table 1: Diet related behaviours of the students (%)

Behavior	Males n=119	Females n=101	All N=220	p-value
Usually take breakfast	58.8	65.3	61.4	0.264
Usually eat red meat (≥3 times per week)	47.1	24.8	36.8	0.001
Usually eat fried foods (≥3 times per week)	58.8	65.3	61.8	0.321
Usually use whole milk or milk products	33.6	57.4	44.5	0.000
Usually eat high fiber cereals on most days	46.2	44.6	45.5	0.805
Usually eat 5 or more servings daily of fruits and vegetables	40.3	46.5	43.2	0.355
Usually have ≥2 soft drinks per day	38.7	24.8	32.3	0.028
Usually have ≥2 servings of sweet snacks per day	49.6	40.0	45.2	0.156
Usually have ≥2 alcoholic drinks per day	19.3	14.9	17.3	0.381
Exercise for about 30 minutes on ≥5 per week	41.2	32.7	37.3	0.194

Table 2: Weight related attitudes of the students (%)

Attitude	Male (n=119)	Female (n=101)	p-value
Terrified about being overweight	36.1	70.3	0.000
Avoid eating when I am hungry	27.7	51.5	0.000
Preoccupied with food.	17.6	32.7	0.010
Engage in dieting behaviour	37.8	39.6	0.786
Avoid foods with sugar	31.1	55.4	0.000
Consider calories content when choosing food	43.7	45.5	0.784
Avoid high carbohydrate foods	20.2	51.5	0.000
Display self-control around food	20.2	59.4	0.000
Preoccupied with a desire to be thinner.	17.6	48.5	0.000
Think about burning up calories when I exercise	50.4	57.4	0.299