Original Research Article

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Dietary and physical activity habits of All Saints University College of Medicine Students, St Vincent and the Grenadines

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ABSTRACT

Background: The purpose of this research was to assess the dietary and physical activity habits of All Saints University College of Medicine students to determine if they were meeting the Saint Vincent and the Grenadines government's dietary guidelines and to ascertain the prevalence of overweight and obesity among the students. **Methods:** Data were collected from the participants using a survey concerned with demographics, and self-assessment on dietary and physical activity habits. Descriptive statistics was used to report and analyse the data. **Results:** Study subjects consisted of 76 students. Eighty three percent of them were between the ages of 16 and 25 years. Sixty–one percent were female and 39% were male. The majority of the student respondents (76%) were aware of the importance of eating healthy and being physically active each day, and 50-66% of the respondents engaged in and enjoyed physical activity, achieved the recommended daily amount of vegetable intake, were at a normal body mass index (18.5-24.9 kg/m²) and reported satisfaction with their weight. However, majority (80%) of the respondents consumed fast food; about a third of them did not consume fruits nor exercise regularly, reporting lack of time, interest and self-discipline as major reasons.

Conclusions: The results indicate that the majority of All Saints University Medical College students had high level of knowledge of overweight and obesity and were involved in some healthy behaviours that helped them achieve normal BMI. However, the poor nutritional and physical activity habits of many of the students could benefit from intervention programs to moderate the tendency for overweight and obesity in the student population.

Keywords: Body mass index, Diet, Medical college students, Overweight, Obesity, Physical activity

INTRODUCTION

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair human health.¹ The body mass index (BMI), a person's weight in kilograms divided by the square of height in meters, is an easy-to-perform method of screening for weight categories. A person with a BMI of 30 or more is

generally considered obese. A person with a BMI equal to or more than 25 is considered overweight.² Overweight and obesity are major risk factors for chronic diseases, including cardiovascular disease, type 2 diabetes, obstructive sleep apnea, certain types of cancer, and osteoarthritis.³ Once considered problems only in high income countries, overweight and obesity are now dramatically on the rise in low- and middle-income countries.³ Saint Vincent and the Grenadines (SVG) is one of four Caribbean countries among the top 25 countries worldwide ranked by the United Nations Food and Agriculture Organization (FAO) with a prevalence of obesity as high as 25.1% of the adult (between the ages of 18-64 years old) population.⁴ The FAO/PAHO Panorama report points out that one of the main factors contributing to the rise of obesity and overweight has been the change in dietary patterns. Economic growth, increased urbanization, higher average incomes and the integration of the region into international markets have reduced the consumption of traditional preparations and increased consumption of ultra-processed products.4

The SVG government has launched food-based dietary guidelines aimed to promote a balanced diet, healthy eating habits and active lifestyles.^{5,6} Specifically, the goals for residents are consumption more of certain foods and nutrients such as fruits, vegetables, legumes and staples; consumption of fewer foods with sodium (salt), salted seasonings, fats and oils, added sugars, sweeteners and alcohol; and having regular physical activity to manage weight.⁷ Although, the dietary guidelines are widely available in a brochure form, aired on various radio outlets, communicated by community nutrition officers to group as well as through individual dietary counseling, adherence and compliance to the dietary requirements and life style changes remain less than ideal.^{7,8}

All Saints University College of Medicine (ASUCOM) is a private Caribbean university operated from two campuses located near the capital city, Kingstown, in the Saint George Parish of SVG. Most of the students in the university are from several different countries. While many different challenges accompany the transition of these young adults from high school to college or from their countries of origin to SVG, a newfound independence coupled with the social and physical environmental changes that occur may expose students to undesirable eating habits and less physical activity.9,10 Physical inactivity and bad eating habits can lead to weight gain, which could result in individuals becoming overweight and obese.¹¹ A few studies have examined the link between obesity and /or being overweight and academic performance in standardized college admission assessments as well as college-level learning cognition, problem-solving and academic performance.^{12,13} To authors knowledge, no research has been conducted regarding weight gain in medical college students enrolled at any of the four international medical schools in SVG. The purpose of this research was to assess the dietary and physical activity habits of students of ASUCOM to determine if they are meeting the dietary guidelines for SVG and to and to ascertain the prevalence of overweight and obesity among the students.⁵

METHODS

This study was carried out at the Arnos Vale and Belair campuses of ASUCOM over a period of 3 months (May-July) in 2017. A clearance from the Institutional Ethics Committee and written informed consent from the participants were obtained before conducting the study. A total of 76 students voluntarily consented to participate as the study population and were invited to complete the survey about their dietary and physical activity behaviours and to self-report their height and weight. The self-reported height and weight was used to calculate body mass index (BMI) using standard formula weight in kilograms/height in meters².²

Data were collected from a 17-question survey that was previously validated for content and used for a similar research study at East Tennessee State University.¹⁴ The questionnaire was divided into 3 parts. The first section was concerned with demographics of study participants including age, gender, weight, and height. The second part focused on nutritional/dietary habits comprising degree of importance of eating healthy daily, number of servings of fruits consumed daily, number of servings of vegetables consumed daily, and frequency of fast-food consumption weekly. The final and third section was devoted to a self-assessment on physical activity; degree of importance of physical activity each day, type of current regular exercise, number of days a week that regular exercise was done, number of minutes per day of exercise, degree to which getting regular exercise was enjoyed, and barriers to regular exercise. Descriptive statistics was used to report demographical information and to analyse self-reported levels of number of fruit and vegetable intakes and how many days per week and how many minutes per day exercised.

RESULTS

Participant characteristics

Of the 76 individuals who completed the survey, 44.7% were between the ages of 16 and 20 years old, and 38.2% were between the ages of 21-25 years old, 11.8% were between 26 and 30 years of age, and 5.3% were older than 30 years of age. There were 60.5% female participants and 39.5% male participants. The classification of the student participants were (19.7%) pre-medicine, and (80.3%) medicine. The majority of participants originated from West Africa (84.2%), 10.5% were from North America, and 5.3% were from the Caribbean region (Table 1).

Weight and body mass index

The weight of the participants varied; the majority of individuals reported a weight in the range of 41 to 80kilograms (85.5%). Thirteen percent of participants reported a weight in the 81 to 120kilograms range, and 1.3% in the 121 to 160kilograms range.

Table 1: Demographics.

Variables	Percent (%)
Gender	
Male	39.5
Female	60.5
Age (years)	
16 - 20	44.7
21 - 25	38.2
26 - 30	11.8
>30	5.3
Region of origin	
West Africa	84.2
North America	10.5
Caribbean	5.3
Classification	
Pre-Medicine	19.7
Medicine	80.3

Table 2: Body Mass Index (BMI) classification.

BMI Classification	Frequency (n)	Percentage (%)
Underweight (18.4 or less)	5	6.6
Normal weight (18.5-24.9)	47	61.8
Overweight (25.0-29.9)	14	18.4
Obese - class 1 (30.0-34.9)	8	10.5
Obese- class 2 (35 or greater)	2	2.6

The BMI of all participants were grouped according to the standard BMI classification:

- Five individuals (6.6%) were classified as underweight (BMI = 18.4 kg/m² or less) and
- 47 individuals (61.8%) were classified as normal weight (BMI = 18.5 24.9 kg/m²).
- Fourteen individuals (18.4%) were classified as overweight (BMI = 25.0 29.9 kg/m²),
- Eight individuals (10.5%) were classified as obeseclass 1 (BMI = 30.0 - 34.9 kg/m²) and
- Two individuals (2.6%) were classified as obeseclass 2 (BMI 35 kg/m² or greater).

Dietary and physical activity habits

Participants were asked -how important is it to you to eat healthy each day? Of the 76 individuals, four (5%) responded it was -extremely not important, seven (9%) - not important, 9 (12%) -neither, 22 (29%) -somewhat important, and 34 (45%) -extremely important. Therefore, the majority (74%) felt that it was important to eat healthy each day (Figure 1).

Participants were also asked about fast food consumption: -What is your fast-food consumption weekly? Only nine (12%) of these individuals never consumed fast food. Fast food consumption occurred 2 to 3 times per week for 22 (29%) participants, 4 to 6 times

per week for three (4%) participants, and once a week for 39 (51%) participants (Figure 2).



Figure 1: How important is it to you to "eat healthy" each day?".



Figure 2: "What is your fast-food consumption weekly?".

Participants were asked how satisfied they were with their weight. Thirty four individuals (45%) agreed or strongly agreed that they were satisfied with their weight while 20 individuals (26%) were neutral, and 21 individuals disagreed or strongly disagreed (29%) (Figure 3).



Figure 3: "How satisfied are you with your weight?".

Participants were asked -How important is it to you to be physically active each day? The majority, 58 individuals (76%) responded it was somewhat important or extremely important to be physically active each day. Seven individuals responded that it was somewhat not important (9%), and 11 individuals (15%) responded that it was neither important nor unimportant to be physically active each day (Figure 4).



Figure 4: "How important is it to you to be physically active each day?".

Participants were asked if they currently exercised (i.e. walking, jogging, aerobics, gym workout, swimming, tennis).

Table 3: Occurrence of exercise in study participants.

Variables	Frequency (n)	Percentage (%)		
Currently exercise daily				
Yes	50	66		
No	26	34		
If yes, how many days per week				
1 day	3	6		
2 days	7	14		
3 days	11	22		
4 days	8	16		
5 days	11	22		
6 days	8	16		
7 days	2	4		
How many minutes per day				
0-15 minutes	17	34		
16-30 minutes	20	40		
31-45 minutes	3	6		
46-60 minutes	7	14		
Over 60 minutes	3	6		

Of the 76 individuals who responded, 66% reported 'yes' and 34% reported 'no'. Of the 50 participants who answered yes, they were asked how many days per week they exercised and how many minutes per day. Three

individuals (6%) reported exercising one day a week, seven individuals (14%) reported two days per week, and 11 individuals (22%) reported three days per week. The majority, 29 individuals (58%) reported exercising four to seven days per week. Seventeen individuals (34%) reported exercising 0-15 minutes per day and 20 individuals (40%) reported exercising 16-30 minutes per day. However, only 13 individuals (26%) responded they exercised longer than 30 minutes each day (Table 3).

Participants were asked -to what extent do you enjoy getting regular exercise? The majority, 42 individuals (55%) agreed or strongly agreed that they enjoyed getting regular exercise, while 19 individuals (25%) were neutral, and 15 individuals (19%) disagreed or strongly disagreed that they enjoyed getting regular exercise (Figure 5).



Figure 5: Extent to which participants enjoyed getting regular exercise (N=76).

25 20 15 10 5 0 Not interested Lack of self-discipline Self-consciousness Environmental conditions Physical /medical Lack of facilities/ space Lack of knowledge Lack of time (temperature, safety) how to exercise limitations on

Figure 6: "If you do not exercise regularly, which are barriers for you?" (N=26).

Participants were asked -if you do not exercise regularly, which are barriers for you?

Of the 26 individuals who responded that they do not exercise regularly, the majority, 20 individuals (76.9%) reported lack of time, 14 individuals (54%) reported that they were not interested, 12 individuals (46%) reported lack of self-discipline, 10 individuals (38.5%) reported self-consciousness, eight individuals (30.8%) reported lack of facilities or space and six individuals (23%) reported medical or physical limitations while three individuals (11.5%) each reported environmental conditions (temperature, safety) or lack of knowledge on how to exercise as their barriers to getting regular exercise (Figure 6).

Self-reported fruit and vegetable intake

According to the Dietary Guidelines for SVG, one serving of fruit is equivalent to one small ripe banana or mango; medium size orange, golden apple, guava, plumrose; one slice pine apple, water melon and $\frac{1}{2}$ medium grape fruit.⁵ Participants were asked to answer the following question: -on average, how many servings of fruit do you eat daily? Twenty individuals (26.3%) did not consume any fruit, 27 individuals (35.5%) consumed one serving, 10 individuals (13.2%) consumed two servings, 12 individuals (15.8%) consumed three servings, 5 individuals (6.6%) consumed four servings, and only two individuals (2.6%) consumed five or more servings of fruit daily (Figure 7).



Figure 7: "On average, how many servings of fruit do you eat daily?"

One serving of vegetables, according to same guidelines,5 is equivalent to half a cup of cooked vegetables or 4 ounces of raw vegetables; dark green leafy such as callaloo, spinach, patchoi and lettuce. Yellow vegetables include carrot, pumpkin or squash. Other vegetables include eggplant, cabbage, string-beans, ochro, christophene, or green pigeon pea. Participants were also asked the same question concerning vegetable consumption. Fifteen individuals (20%) did not consume any servings of vegetables, 23 individuals (30%) consumed one serving, 15 individuals (20%) consumed two servings, 14 individuals (18%) consumed three servings, 4 individuals (5%) consumed four servings, two individuals (3%) consumed five servings, and three individuals (3%) consumed six or more servings of vegetables daily (Figure 8).



Figure 8: "On average, how many servings of vegetable do you eat daily?".

DISCUSSION

By using a 17 questions survey, All Saints University College of Medicine students self-reported their height and weight, fruit and vegetable intakes, and exercise habits. Obesity is a growing, widespread phenomenon in the Caribbean region.⁴ In 2014, adult (18+) male and female obesity prevalence for SVG, respectively, were 16.1% and 29.1%. These obesity prevalence rates indicate increasing average annual rate of 2.71% for females and 5.97 % for males over an 18 year period (1997-2014).^{15,16} During the last decade, SVG has become home to four international medical schools. however, studies on the prevalence of overweight/obesity and its associated factors among these medical students is lacking.17 Therefore, studies such as this one are important to find the underlying causes of this prevalence in order to develop preventative programs for medical college students.

Based on BMI classification of weight status, over half (62%) of the participants in this study were at a healthy weight.² Eighteen percent of the study participants were overweight and 13% were classified as obese, however, 7% were classified as underweight. Present findings compare favourably with the results of a previous work among students from universities in 22 low, middle income and emerging economy countries that reported prevalence of underweight 10.8%, normal weight 64.4%, overweight 18.9% and obesity 5.8%.¹⁷ In present study, the prevalence of overweight was 17% in males as compared to 20% in females. Obesity was moderately prevalent among male and female students; a total of 9% of the females were obese compared to 20% of the males. The lower rate of obesity among female students is

expected since females are more cautious about their weight status and strongly desirous of thinness than males, due to society perceptions which encourage females to be slender.¹⁸ This assumption was supported by the fact that none of the males was underweight as compared to 11% of females in the studied sample.

The majority of the study participants (74%) felt that it was important to eat healthy and be physically active each day which correlated with the high percentage (67%) of those respondents who claimed to currently exercise regularly. Present results also indicate that about 50%-60% of the participants enjoyed getting regular exercise, did so four to seven days per week and were satisfied with their weight. These may be due to increased awareness of young population regarding hazards of obesity and associated morbidity and mortality.^{19,20} Medical students are the future health care providers for the community and it bodes well that students of All Saints University College of Medicine are aware of some measures that help prevent overweight and obesity.

It is noteworthy, however, that only a quarter of the study participants who regularly exercised did so longer than 30 minutes each day. A third of the respondents that did not exercise regularly, most frequently reported lack of time, interest and self-discipline as barriers from physical activity. Furthermore, despite claim of the importance of eating healthy daily, majority of the survey respondents (80%) consumed fast food 1 to 3 times per week. About a third of the participants did not consume fruit in their diets, and of those who did, only 3% met the recommended daily amount (5 servings or more).⁵ These findings are consistent with results from several studies suggesting that many medical students have poor nutritional and physical activity habits despite having high level of knowledge of overweight and obesity and related chronic diseases.²¹⁻²⁴

Fifty percent of the respondents did meet the recommended daily amount of vegetable consumption (2-5 servings per day), although, another 20% did not consume vegetable on a daily basis.⁵ This finding contrasts with reports of previous studies that determined that adults ages 18 to 24 ate the fewest vegetables, with almost 80% reporting they regularly do not consume any vegetables.^{25,26} However, present finding compares favourably with the results of a recent study reporting at least 3 servings of vegetables consumption in medical college students in Iran.²⁷ Previous studies have shown that frequent consumption of vegetable was associated with low risk of cardiovascular disease.²⁸

A major limitation of this study is the self-report method of data collection involved in surveys. Errors in the data could be a result of intentional dishonesty, misapprehension of the question or poor memory of the study respondents. Like all anthropometric measurements, BMI is only a surrogate measure of body fatness, although the indirect relationship between BMI and measures of adiposity has been established. Due to the sample size, the data from this research could be inaccurate for the entire university, though it should be reiterated that the university population was small. The findings of this study are limited by the use of a sample of students from just one university medical college which may not be representative of all medical students in SVG. The composition and socioeconomic status of students as well as the physical environmental factors of the other international medical schools on the island may be different from All Saints University College of Medicine. However, baseline information about weight status, and dietary and physical activity habits among a sample of university medical college students was certainly obtained from the present study.

In conclusion, the results indicate that the majority of All Saints University medical college students had high level of knowledge of overweight and obesity and were aware of the importance of eating healthy and being physically active each day, they were involved also in some healthy behaviours that helped them achieve normal BMI. However, some of the students had poor nutritional and physical activity habits that could benefit from the intervention programs by the university administration to reduce the tendency of overweight and obesity among students, particularly males, and to encourage healthier lifestyle behaviours as proposed by the WHO Global Strategy on Diet, Physical Activity and Health.^{11,29}

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